CORE ANALYSIS REPORT

FOR

MURFIN DRILLING COMPANY, INC.

HADLEY L NO. 4
BEMIS FIELD
ELLIS COUNTY, KANSAS

30 -11-17W

15-051-25131

Core Lab
PETROLEUM SERVICES

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July 17, 2002

KANSAS GEOLOGICAL SURVEY
University of Kansas
Campus West
1930 Constant Avenue
Lawrence, Kansas 66047

File No.: 57181-18487
Subject: Core Analysis
MURFIN DRILLING COMPANY, INC.
Hadley L No. 4
Bemis Field
Ellis County, Kansas

Gentlemen:

The subject well was cored using diamond coring equipment and water base mud to obtain 4 inch diameter cores from 3581.3 to 3632.9 feet from the Arbuckle formation.

Core analysis data is presented in tabular and graphical form for your convenience. A porosity vs. permeability plot was prepared for statistical evaluation. Core analysis data is contained on a 3 1/2 inch computer diskette.

We trust these data will be useful in the evaluation of your property and thank you for the opportunity of serving you.

Very truly yours,

CORE LABORATORIES LP

John Sebian
Laboratory Supervisor

JS/ym

PLUG ANALYSIS

The cores were preserved and shipped to Midland by Kansas Geological Survey personnel.

Core analysis was made on selected intervals requested on one inch diameter plug samples.

Fluid removal and saturations were determined using a Dean Stark/ gas solvent extraction method.

Plug direct grain volume measurement was made using Boyle's law helium expansion. Bulk volume was measured by Archimedes Principle on samples after cleaning. Porosity was calculated using bulk volume and grain volume measurements.

$$\text{Porosity} = \frac{\text{Bulk Vol.} - \text{Grain Vol.}}{\text{Bulk Vol.}} \times 100$$

Steady State Air Permeability was measured in a horizontal direction while the core was confined in a Hassler rubber sleeve.

The core plugs and clipped ends will be returned to the Kansas Geological Survey.

FULL DIAMETER ANALYSIS

The clipped full diameter cores were preserved and shipped to Midland by Kansas Geological Survey personnel.

Core analysis was made from selected intervals requested on full diameter samples.

Fluid removal was achieved using a gas solvent extraction method.

No saturation data was requested.

Full diamter porosity was determined by direct pore volume measurement using Boyle's law helium expansion. Bulk volume was measured by Archimedes Principle. Grain density was calculated from dry weight, bulk volume and pore volume measurements.

$$\text{Grain Density} = \frac{\text{Dry Weight}}{\text{Bulk Vol.} - \text{Pore Vol.}}$$

Steady State Air Permeability was measured in two horizontal directions and vertically while the core was confined in a Hassler rubber sleeve.

The core was boxed after analysis.

The full diameter samples will be returned to the Kansas Geological Survey.

CORE LABORATORIES

Company : MURFIN DRILLING COMPANY, INC.
Well : HADLEY L NO. 4
Location : 1315' FSL & 1825' FEL, SEC 30, T-11-S, R-17-W
Co,State : ELLIS COUNTY, KANSAS

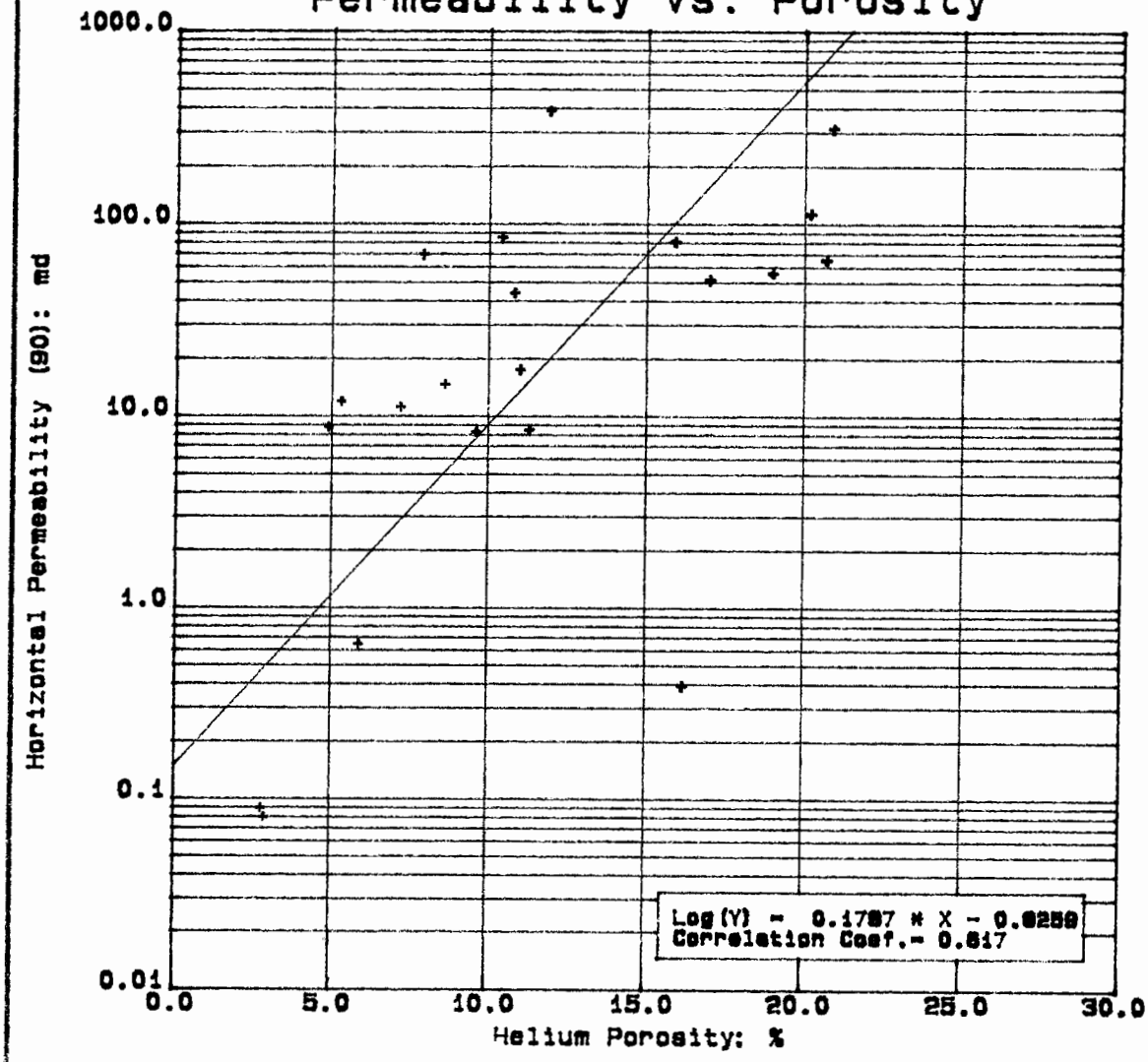
Field : BEMIS FIELD
Formation : ARBUCKLE
Coring Fluid : WATER BASED MUD
Elevation : 2097' KB

File No.: 57181-18487
Date : 7-15-02
API No. : 15-051-25131
Analysts: SEBIAN

CORE ANALYSIS RESULTS

SAMPLE NUMBER	DEPTH ft	PERMEABILITY (MAXIMUM) Kair md	PERMEABILITY (90 DEG) Kair md	PERMEABILITY (VERTICAL) Kair md	POROSITY (HELIUM) %	GRAIN DENSITY gm/cc	DESCRIPTION
			FULL DIAMETER ANALYSIS				
1	3581.0- 81.3	49.2	43.5	2.87	10.8	2.83	Dol, fxln, sl frac, 80% dull yel flu
2	3590.4- 90.8	165.	11.8	227.	5.3	2.80	Dol, fxln, sl frac, 65% dull yel flu
3	3592.0- 92.3	521.	313.	8.06	20.9	2.79	Dol, vfxln, lam, 100% dull yel flu
4	3595.7- 96.0	18.6	8.39	0.29	11.3	2.83	Dol, vf-sltxln, sl frac, 40% dull yel flu
5	3598.5- 98.7	94.3	80.9	3.79	15.9	2.81	Dol, fxln, lam, 100% dull yel flu
6	3602.3- 02.6	21.2	14.6	3.99	8.6	2.80	Dol, fxln, sl frac, terra rosa, brec, 80% dull yel flu
7	3604.7- 05.0	9.80	8.64	1.48	4.9	2.80	Dol, fxln, calc, 80% dull yel flu
8	3605.6- 06.0	70.3	69.1	37.8	7.9	2.79	Dol, vfxln, 90% dull yel flu
9	3611.7- 12.0	0.10	0.08	0.05	2.9	2.82	Dol, vfxln, terra rosa, 75% dull yel flu
10	3613.8- 14.1	0.67	0.39	0.04	16.2	2.82	Dol, sltxln, sl lam, 5% dull yel flu
11	3615.0- 15.4	0.73	0.64	0.16	5.9	2.73	Dol, sltxln, chty, terra rosa, 75% dull yel flu
12	3616.2- 16.6	158.	85.1	7.79	10.4	2.75	Dol, fxln, sl frac, terra rosa, lam, 70% dull yel flu
13	3617.0- 17.4	21.1	11.1	6.27	7.2	2.80	Dol, vfxln, sl terra rosa, 80% dull yel flu
14	3618.3- 18.6	57.1	51.4	8.03	17.0	2.82	Dol, sltxln, sl frac, sl rootlet, 100% dull yel flu
15	3620.4- 20.7	1.04	0.09	0.06	2.8	2.83	Dol, fxln, sl frac, 15% dull yel flu
16	3622.5- 22.8	539.	386.	7.52	11.9	2.83	Dol, vf-sltxln, sl frac, sl terra rosa, 90% dull yel flu
17	3623.3- 23.5	119.	113.	7.96	20.2	2.83	Dol, vfxln, sl frac, 100% dull yel flu
18	3626.6- 26.9	56.1	55.4	45.2	19.0	2.81	Dol, vfxln, 100% dull yel flu
19	3627.0- 27.3	65.5	64.9	13.9	20.7	2.82	Dol, vfxln, 100% dull yel flu
20	3631.5- 31.7	18.2	8.20	5.31	9.6	2.83	Dol, vfxln, 95% dull yel flu
21	3632.7- 33.0	30.3	17.5	10.9	11.0	2.80	Dol, vfxln, 90% dull yel flu

Permeability vs. Porosity



MURFIN DRILLING COMPANY, INC.
HADLEY L NO. 4
BEMIS FIELD

ARBUCKLE (3581-3633 feet)

Core Laboratories 7-15-02

- LEGEND -
ARBUCKLE

CORE LABORATORIES

Company : MURFIN DRILLING COMPANY, INC.
Well : HADLEY L NO. 4

Field : BEMIS FIELD
Formation : ARBUCKLE

File No.: 57181-18487
Date : 7-15-02

TABLE I

SUMMARY OF CORE DATA

ZONE AND CUTOFF DATA

ZONE:
- Identification -------- ARBUCKLE
- Top Depth ---------- 3581.0 ft
- Bottom Depth ---------- 3633.0 ft
- Number of Samples -------- 21

DATA TYPE:
- Porosity ---------- (HELIUM)
- Permeability ---------- (90 DEG) Kair

CUTOFFS:
- Porosity (Minimum) ------- 0.0 %
- Porosity (Maximum) ------- 100.0 %
- Permeability (Minimum) --- 0.0100 md
- Permeability (Maximum) --- 1000. md
- Water Saturation (Maximum)
- Oil Saturation (Minimum) -
- 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 ----- 21
- Thickness Represented - 6.5 ft

POROSITY:
- Storage Capacity ------ 71.2 ϕ-ft
- Arithmetic Average ---- 11.0 %
- Minimum ---------- 2.8 %
- Maximum ---------- 20.9 %
- Median ---------- 10.8 %
- Standard Deviation ---- ±5.9 %

GRAIN DENSITY:
- Arithmetic Average ---- 2.80 gm/cc
- Minimum ---------- 2.73 gm/cc
- Maximum ---------- 2.83 gm/cc
- Median ---------- 2.81 gm/cc
- Standard Deviation ---- ±0.03 gm/cc

PERMEABILITY:
- Flow Capacity --------- 400.6 md-ft
- Arithmetic Average ---- 61.6 md
- Geometric Average ----- 13.6 md
- Harmonic Average ------ 0.74 md
- Minimum ---------- 0.08 md
- Maximum ---------- 386. md
- Median ---------- 17.5 md
- Standard Dev. (Geom) -- $K \cdot 10^{\pm 1.050}$ md

HETEROGENEITY (Permeability):
- Dykstra-Parsons Var. -- 0.807
- Lorenz Coefficient ---- 0.582

AVERAGE SATURATIONS (Pore Volume):
- Oil ----------
- Water ----------

CORE LABORATORIES

Company : MURFIN DRILLING COMPANY, INC.
Well : HADLEY L NO. 4
Location : 1315' FSL & 1825' FEL, SEC 30, T-11-S, R-17-W
Co,State : ELLIS COUNTY, KANSAS

Field : BEMIS FIELD
Formation : ARBUCKLE
Coring Fluid : WATER BASED MUD
Elevation : 2097' KB

File No.: 57181-18487
Date : 6-04-02
API No. : 15-051-25131
Analysts: JOHN SEBIAN

CORE ANALYSIS RESULTS

SAMPLE NUMBER	DEPTH ft	PERMEABILITY (HORIZONTAL) Kair md	POROSITY (HELIUM) %	SATURATION (PORE VOLUME) OIL %	SATURATION (PORE VOLUME) WATER %	GRAIN DENSITY gm/cc	DESCRIPTION
				Plug Analysis			
1	3581.3	0.31	4.0	36.1	42.1	2.83	Dol, tr ixp, 35% yel flu gd cut
2	3582.9	45.1	15.9	28.2	46.9	2.82	Dol, sl ixp, 80% d yel flu gd cut
3	3584.4	1.48	11.7	13.5	72.1	2.76	Dol, broken sh lam, sl ixp, 15% d yel flu gd cut
4	3589.7	344.	9.5	22.3	35.0	2.83	Dol, sl ixp, 70% d yel flu gd cut
5	3591.9	59.6	20.3	42.1	37.5	2.78	Dol, cht lam, sl ixp, 90% d yel flu gd cut
6	3595.4	2060.	9.9	37.4	32.9	2.84	Dol, broken frac, tr ixp, 65% d yel flu gd cut
7	3596.7	2.34	14.0	32.9	25.1	2.83	Dol, sl frac, sl ixp, 80% d yel flu gd cut
8	3597.9	990.	23.2	18.7	45.7	2.83	Dol, lam, ixp, 50% d yel flu gd cut
9	3598.9	9.66	12.8	23.5	33.8	2.83	Dol, sl ixp, 90% d yel flu fr cut
10	3599.5	0.77	7.1	14.9	57.3	2.81	Dol, terra rosa, sl ixp, 50% d yel flu gd cut
11	3602.2	0.44	8.5	25.3	48.2	2.80	Dol, sl cht, sl terra rosa, sl ixp, 40% d yel flu gd cut
12	3604.5	8.10	5.1	25.2	33.6	2.80	Dol, calc fill frac, tr ixp, 60% d yel flu gd cut
13	3605.5	1198.	10.9	28.6	32.7	2.82	Dol, pyrt, sl ixp, 50% d yel flu gd cut
14	3607.8	0.12	2.9	13.8	59.6	2.81	Dol, calc fill frac, sl terra rosa, 50% d yel flu fr cut
15	3609.4	0.03	2.6	13.2	21.1	2.82	Dol, tr ixp, 15% d yel flu fr cut
16	3610.2	0.07	2.6	13.9	51.7	2.81	Dol, sl calc, 70% d yel flu gd cut
17	3612.4	0.08	5.2	25.4	44.5	2.83	Dol, 50% d yel flu gd cut
18	3614.3	0.05	12.3	0.0	90.0	2.83	Dol, slt cly lam, chalk, 0% flu no cut
19	3616.7	4610.	25.9	12.2	50.4	2.83	Dol, pp ixp, 80% d yel flu gd cut
20	3617.5	0.09	1.9	20.1	67.1	2.82	Dol, sl calc fill frac, 25% d yel flu fr cut
21	3620.1	272.	13.5	12.9	51.6	2.79	Dol, sl cly, sl ixp, 80% d yel flu gd cut
22	3621.1	22.2	5.9	17.3	37.3	2.85	Dol, frac, 80% d yel flu gd cut
23	3622.5	8.24	8.8	15.9	48.4	2.83	Dol, frac, sl ixp, 55% d yel flu gd cut
24	3623.6	83.1	15.7	32.6	30.3	2.84	Dol, frac, tr ixp, 90% d yel flu gd cut
25	3624.8	12.4	18.0	31.1	54.0	2.83	Dol, sl ixp, 80% d yel flu gd cut

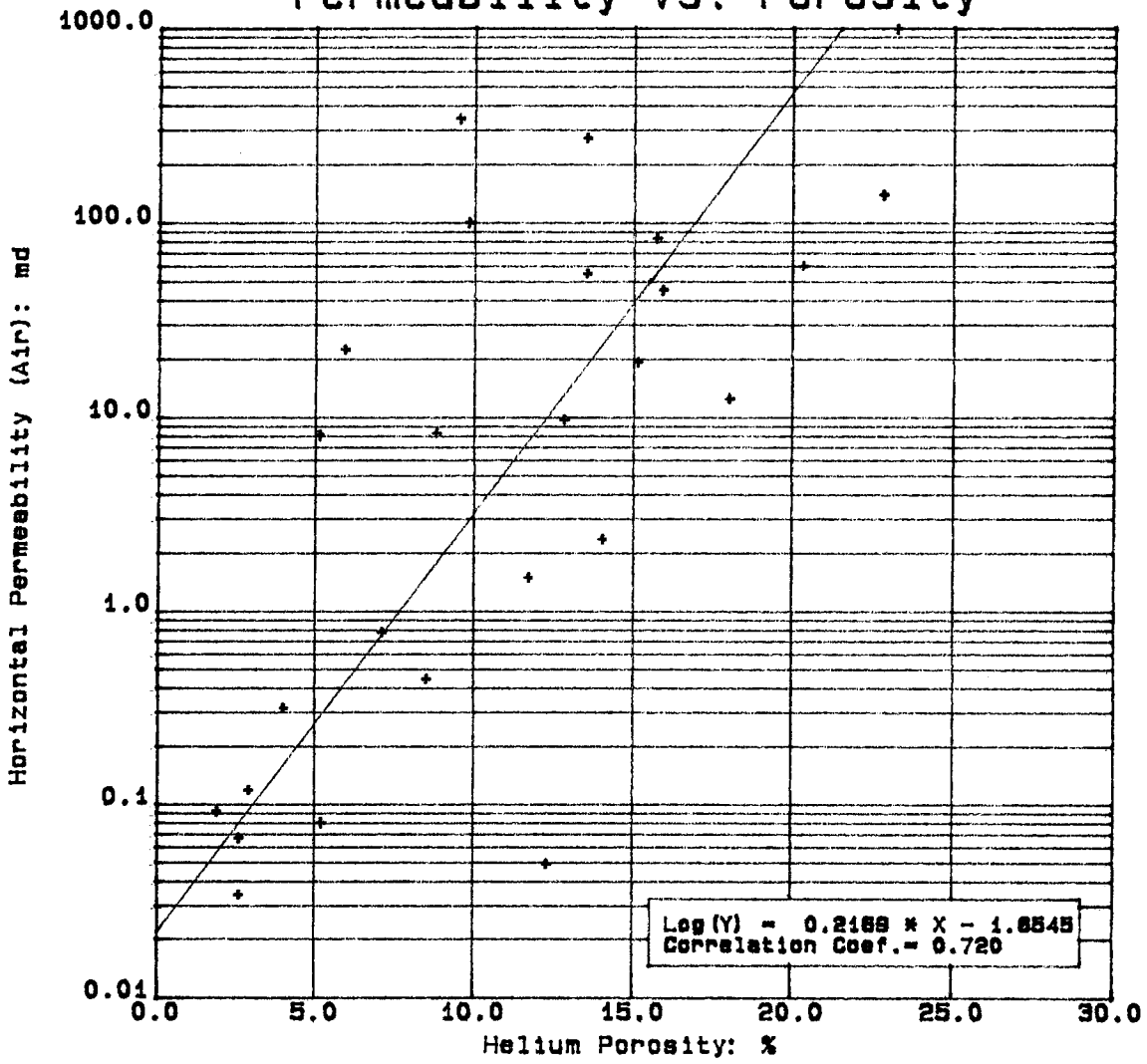
CORE LABORATORIES

Company : MURFIN DRILLING COMPANY, INC.
Well : HADLEY L NO. 4
Field : BEMIS FIELD
Formation : ARBUCKLE
File No.: 57181-18487
Date : 6-04-02

CORE ANALYSIS RESULTS

SAMPLE NUMBER	DEPTH ft	PERMEABILITY (HORIZONTAL) Kair md	POROSITY (HELIUM) %	SATURATION (PORE VOLUME) OIL %	SATURATION (PORE VOLUME) WATER %	GRAIN DENSITY gm/cc	DESCRIPTION
26	3625.9	19.1	15.1	39.6	38.5	2.84	Dol, sl ixp, 85% d yel flu gd cut
27	3626.9	140.	22.8	37.4	44.8	2.83	Dol, ixp, 85% d yel flu gd cut
28	3629.2	54.5	13.5	37.1	38.9	2.84	Dol, sl ixp, 80% d yel flu gd cut
29	3630.6	1040.	23.1	18.2	54.5	2.82	Dol, sl ixp, 80% d yel flu fr cut
30	3631.4	100.	9.8	26.3	46.0	2.84	Dol, sl frac, sl ixp, 90% d yel flu gd cut
31	3632.9	74.7	18.9	37.9	47.4	2.76	Dol, sl cht, sl ixp, 80% d yel flu gd cut

Permeability vs. Porosity



MURFIN DRILLING COMPANY, INC.
HADLEY L NO. 4
BEMIS FIELD

ARBUCKLE (3581.3-3632.9 feet)

Core Laboratories 6-04-02

- LEGEND -
ARBUCKLE

CORE LABORATORIES

Company : MURFIN DRILLING COMPANY, INC.
Well : HADLEY L NO. 4

Field : BEMIS FIELD
Formation : ARBUCKLE

File No.: 57181-18487
Date : 6-04-02

TABLE I

SUMMARY OF CORE DATA

ZONE AND CUTOFF DATA

ZONE:

Identification	ARBUCKLE
Top Depth	3581.3 ft
Bottom Depth	3632.9 ft
Number of Samples	30

DATA TYPE:

Porosity	(HELIUM)
Permeability	(HORIZONTAL) Kair

CUTOFFS:

Porosity (Minimum)	0.0 %
Porosity (Maximum)	100.0 %
Permeability (Minimum)	0.0100 md
Permeability (Maximum)	1000. 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	26
Thickness Represented	26.0 ft

POROSITY:

Storage Capacity	282.7 ϕ-ft
Arithmetic Average	10.9 %
Minimum	1.9 %
Maximum	23.2 %
Median	10.8 %
Standard Deviation	±6.2 %

GRAIN DENSITY:

Arithmetic Average	2.82 gm/cc
Minimum	2.76 gm/cc
Maximum	2.85 gm/cc
Median	2.83 gm/cc
Standard Deviation	±0.02 gm/cc

PERMEABILITY:

Flow Capacity	2174.0 md-ft
Arithmetic Average	83.6 md
Geometric Average	5.05 md
Harmonic Average	0.25 md
Minimum	0.03 md
Maximum	990. md
Median	8.95 md
Standard Dev. (Geom)	$K \cdot 10^{\pm 1.355}$ md

HETEROGENEITY (Permeability):

Dykstra-Parsons Var.	0.975
Lorenz Coefficient	0.731

AVERAGE SATURATIONS (Pore Volume):

Oil	26.3 %
Water	45.6 %

LITHOLOGICAL ABBREVIATIONS

Anhy, anhy	Anhydrite (-ic)
Ark, ark	arkos (-ic)
bnd	band (-ed)
brec	breccia
Calc, calc	calcite (-ic)
carb	carbonaceous
crs gr	course grained
Chk, chky	chalk (-y)
Cht, cht	chert (-y)
Cgl, cgl	conglomerate (-ic)
crs xln	coursely crystalline
dns	dense
Dol, dol	dolomite (-ic)
Frac	randomly oriented fractures
frac	slightly fractured
f gr	fine grained
foss	fossil (-iferous)
f xln	finely crystalline
Gil, gil	gilsonite
Glauc, clauc	glauconite (-itic)
Grt	granite
Gyp, gyp	gypsum (-iferous)
hor frac	perdominantly horizontally fractured
incl	inclusion (-ded)
intbd	interbedded
lam	lamina (-tions,-ated)
Lim, lim	limestone
med gr	medium grain
Mtrx	matrix
NA	interval not analyzed
Nod, nod	nodules (-ar)
Ool, ool	oolite (-itic)
Piso, piso	pisolite (-itic)
pp	pin-point (porosity)
Pyr, pyr	pyrite (-itized, itic)
Sd, sdy	sand (-y)
Shr	solid hydrocarbon residue
sli/	slightly
Sltstn, slty	siltstone, silty
styl	stylolite (-itic)
suc	sucrosic
Su, su	sulphur, sulphurous
TBFA	TOO BROKEN FOR ANALYSIS
Trip, trip	tripolitic
v/	very
vert frac	perdominantly vertically fractured
vug	vuggy
xbd	crossbedded
xln	medium crystalline
xtl	crystal

THE FIRST WORD IN THE DESCIPTION COLUMN OF THE CORE ANALYSIS REPORT DESCIBES THE ROCK TYPE. FOLLOWING ARE ROCK MODIFIERS IN DECREASING ABUNDANCE AND MISCELLANEOUS DESCRIPTIVE TERMS.

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ATTN: ALAN P. BYRNES
UNIVERSITY OF KANSAS
CAMPUS WEST
1930 CONSTANT AVENUE
LAWRENCE KS 66047

COMPLETION COREGRAPH

MURFIN DRILLING COMPANY, INC.

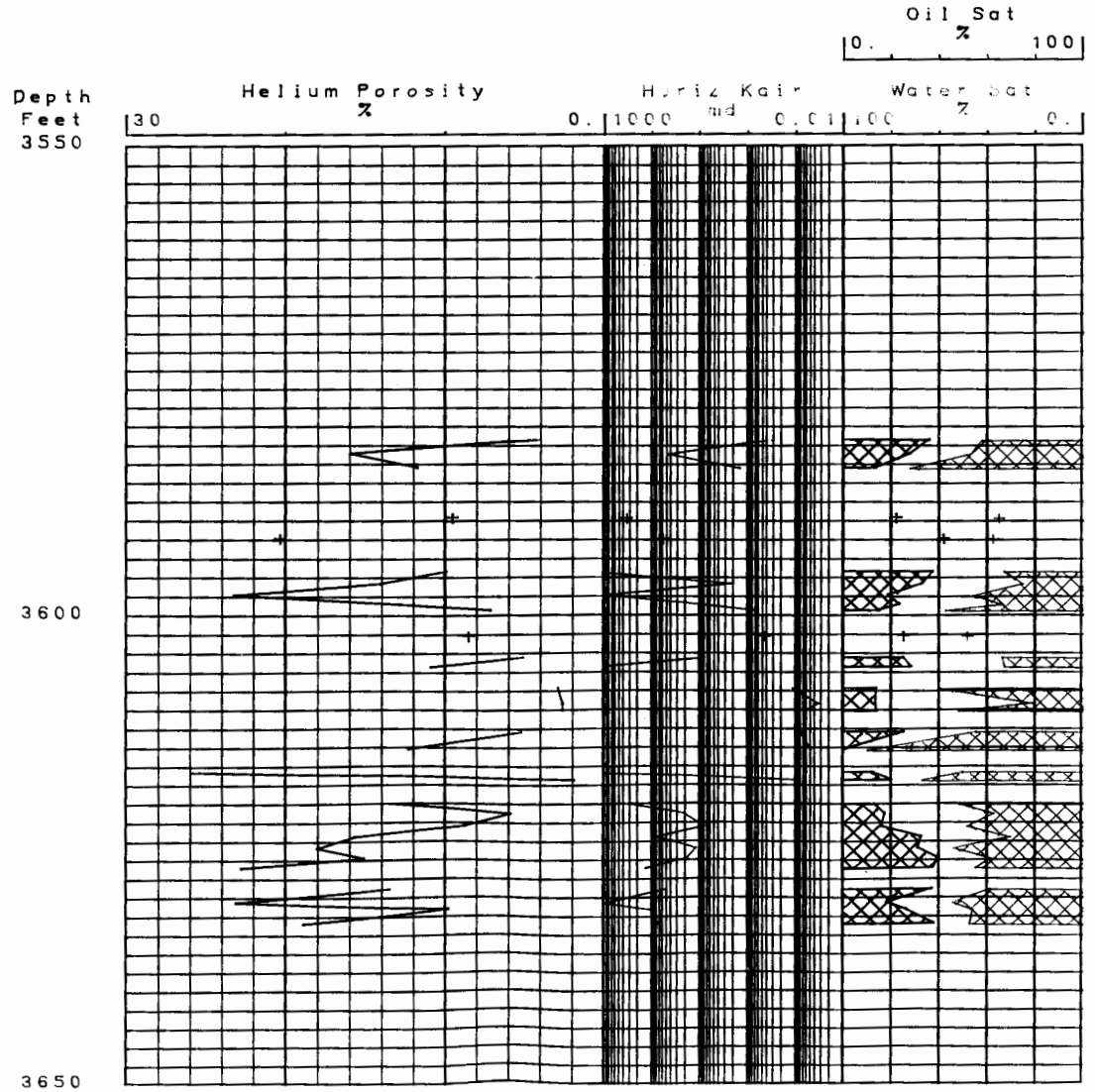
HADLEY L#4

BEMIS

ARBUCKLE (3581-3633 feet)

Core Laboratories 051602

Vertical Scale
5.00 in = 100.0 ft



MURFIN DRILLING COMPANY, INC.

HADLEY L NO. 4

BEMIS FIELD

ARBUCKLE (3581-3633 feet)

Core Laboratories 7-15-02

Vertical Scale
5.00 in = 100.0 ft