

CORE ANALYSIS REPORT

FOR

KANSAS LAND INVESTMENT, INC.  
WOODHEAD NO. 41 WELL  
DOUGLAS COUNTY, KANSAS

CORE LABORATORIES, INC.  
*Petroleum Reservoir Engineering*  
TULSA, OKLAHOMA

July 8, 1985

REPLY TO  
7304 EAST 38TH STREET  
TULSA, OKLAHOMA  
74145

Kansas Land Investment, Inc.  
222 East Third  
Ottawa, Kansas 66067

Attn: Mr. Jim Mietchen

Subject: Core Analysis Data  
Woodhead No. 41 Well  
Douglas County, Kansas  
CLI File 3408-850135

Gentlemen:

Cores taken in the subject well in the Squirrel Sand formation were received at the Tulsa laboratory for special analytical testing described on the Procedure Page.

The accompanying Coregraph presents binomially averaged core analysis data in graphical form to aid correlation with downhole electrical surveys.

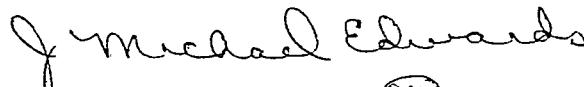

Tabular presentation of the measured physical properties may be found on page one of this report.

Empirical estimates of stock tank oil in place may be found on page two.

It is a pleasure to have this opportunity of serving you.

Very truly yours,

CORE LABORATORIES, INC.

  
J. Michael Edwards   
District Manager

JME:jk

5 cc - Addressee

Kansas Land Investment, Inc.  
Woodhead No. 41 Well  
CLI File 3408-850135

Procedure Page

#### Handling and Analytical Procedures

Diamond coring equipment and air were used to obtain 2-1/8 inch diameter cores between 709.0 and 717.5 feet.

The cores were preserved at the well site in plastic bags by client representative.

The cores were transported to Tulsa by bus.

Plug analysis was made in intervals requested.

Fluid removal was accomplished using high temperature retorts.

Porosity was determined by summation-of-fluids technique.

Horizontal air permeability on plugs measured without Klinkenberg correction.

Temporary storage of cores in Tulsa laboratory for a period of thirty days without additional charge.

KANSAS LAND INVESTMENT, INC.  
 WOODHEAD NO. 41 WELL  
 DOUGLAS COUNTY, KANSAS

DATE : 7-8-85  
 FORMATION : SQUIRREL SAND  
 DRLG. FLUID: AIR  
 LOCATION :

FILE NO. : 3408-850135  
 API NO. :  
 LABORATORY: TULSA, OKLAHOMA

CONVENTIONAL PLUG ANALYSIS

SAMPLE NUMBER	DEPTH FEET	PERM PLUG	FLD POR	OIL% POR	WTR% POR	DESCRIPTION
1	709.0-10.0	1.5	22.1	30.4	40.6	SD FN GRN CALC PYR MICA
2	710.0-11.0	18.5	19.9	32.9	36.3	SD FN GRN SL/CALC MICA
3	711.0-12.0	3.1	16.1	14.1	69.7	SD FN GRN SL/CALC SH LAMS MICA
4	712.0-13.0	4.4	17.0	23.7	52.9	SD FN GRN SL/CALC SH LAMS MICA
5	713.0-14.0	30.5	22.7	36.4	34.4	SD FN GRN SL/CALC PYR MICA
6	714.0-15.0	14.5	21.4	40.8	32.4	SD FN GRN SL/CALC PYR MICA
7	715.0-16.0	19.5	21.0	34.3	37.5	SD FN GRN SL/CALC PYR MICA
8	716.0-16.5	13.5	20.9	39.2	33.8	SD FN GRN SL/CALC PYR MICA
	716.5-17.0					LM
9	717.0-17.5	0.91	15.9	29.1	53.5	SD FN GRN LMY MICA

4.5 21.2 ~~36.4~~ 35.0  
 32.0

$\bar{V} = .39$

CORE LABORATORIES, INC.  
 Petroleum Reservoir Engineering  
 DALLAS, TEXAS

KANSAS LAND INVESTMENT, INC.  
 WOODHEAD NO. 41 WELL

DATE : 7-8-85  
 FORMATION : SQUIRREL SAND

FILE NO. : 3408-850135-  
 ANALYSTS : HUDSON

\*\*\* CORE SUMMARY AND CALCULATED RECOVERABLE OIL \*\*\*

DEPTH INTERVAL: 709.0 TO 717.0

FEET OF CORE ANALYZED : 7.5 FEET OF CORE INCLUDED IN AVERAGES: 7.5

-- SAMPLES FALLING WITHIN THE FOLLOWING RANGES WERE AVERAGED --

PERMEABILITY HORIZONTAL RANGE (MD.)	:	0.00 TO 40.	(UNCORRECTED FOR SLIPPAGE)
FLUID POROSITY RANGE (%)	:	10.0 TO 100.0	
OIL SATURATION RANGE (%)	:	10.0 TO 50.0	
WATER SATURATION RANGE (%)	:	20.0 TO 80.0	

SHALE SAMPLES EXCLUDED FROM AVERAGES.

AVERAGE PERMEABILITY (MILLIDARCIES)		AVERAGE TOTAL WATER SATURATION	:	41.5
ARITHMETIC PERMEABILITY	:	(PERCENT OF PORE SPACE)		
GEOMETRIC PERMEABILITY	:			
HARMONIC PERMEABILITY	:	AVERAGE CONNATE WATER SATURATION	:	(C) 39.2
		(PERCENT OF PORE SPACE)		
PRODUCTIVE CAPACITY (MILLIDARCY-FEET)		OIL GRAVITY (API)	:	(E) 34.0
ARITHMETIC CAPACITY	:			
GEOMETRIC CAPACITY	:	ORIGINAL SOLUTION GAS-OIL RATIO	:	(E) 1.
HARMONIC CAPACITY	:	(CUBIC FEET PER BARREL)		
AVERAGE POROSITY (PERCENT)	:	ORIGINAL FORMATION VOLUME FACTOR	:	(C) 1.05
		(BBLS SATURATED OIL/STOCK-TANK BBL)		
AVERAGE RESIDUAL OIL SATURATION	:	ORIGINAL STOCK-TANK OIL IN PLACE	:	(C) 903.
(PERCENT OF PORE SPACE)		(BARRELS PER ACRE-FOOT)		

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CALCULATED MAXIMUM SOLUTION GAS DRIVE RECOVERY IS \_\_\_\_\_ BARRELS PER ACRE-FOOT, ASSUMING PRODUCTION  
 COULD BE CONTINUED UNTIL RESERVOIR PRESSURE DECLINED TO ZERO PSIG. CALCULATED MAXIMUM WATER DRIVE  
 RECOVERY IS \_\_\_\_\_ BARRELS PER ACRE-FOOT, ASSUMING FULL MAINTENANCE OF ORIGINAL RESERVOIR PRESSURE  
 100% AREAL AND VERTICAL COVERAGE, AND CONTINUATION OF PRODUCTION TO 100% WATER CUT.

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(C) CALCULATED      (E) ESTIMATED      (M) MEASURED      (\*) REFER TO ATTACHED LETTER.

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COMPANY KANSAS LAND INVESTMENT, INC. FILE NO. 3406-850135  
 WELL WOODHEAD NO. 41 WELL DATE 7-8-85  
 FIELD \_\_\_\_\_ FORMATION SQUIRREL SAND ELEV. \_\_\_\_\_  
 COUNTY DOUGLAS COUNTY STATE KANSAS DRLG. FLD. AIR CORES \_\_\_\_\_  
 LOCATION \_\_\_\_\_

# CORRELATION COREGRAPH

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VERTICAL SCALE: 5" = 100'

Total Water \_\_\_\_\_  
 PERCENT PORE SPACE  
 100 80 60 40 20 0

Oil Saturation \_\_\_\_\_  
 PERCENT PORE SPACE  
 0 20 40 60 80 100

**Gamma Ray**  
 RADIATION INCREASE →

**Permeability** \_\_\_\_\_  
 MILLIDARCIES  
 1000 100 10 1

**Porosity** \_\_\_\_\_  
 PERCENT  
 30 20 10 0

Depth  
Feet

