

CORE ANALYSIS REPORT

FOR

KANSAS LAND INVESTMENT, INC.  
WOODHEAD NO. 42 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. 42 Well  
Douglas County, Kansas  
CLI File 3408-850137

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*  
J. Michael Edwards  
District Manager

JME:jk

5 cc - Addressee

Kansas Land Investment, Inc.  
Woodhead No. 42 Well  
CLI File 3408-850137

Procedure Page

Handling and Analytical Procedures

Diamond coring equipment and air were used to obtain 2-1/8 inch diameter cores between 702.0 and 710.2 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.

**CORE LABORATORIES, INC.**  
*Petroleum Reservoir Engineering*  
 DALLAS, TEXAS

PAGE 1

KANSAS LAND INVESTMENT, INC.      DATE : 7-8-85      FILE NO. : 3408-850137  
 WOODHEAD NO. 42 WELL      FORMATION : SQUIRREL SAND      API NO. :  
 DOUGLAS COUNTY, KANSAS      DRLG. FLUID: AIR      LABORATORY: TULSA, OKLAHOMA  
 LOCATION :

CONVENTIONAL PLUG ANALYSIS

SAMPLE NUMBER	DEPTH FEET	PERM PLUG	FLD POR	OIL% POR	WTR% POR	DESCRIPTION
1	702.0- 3.0	19.	21.8	35.0	35.0	SD FN GRN SL/CALC MICA
2	703.0- 4.0	26.	21.7	30.7	42.3	SD FN GRN SL/CALC SH LAM PYR MICA
3	704.0- 5.0	7.7	18.9	29.7	45.7	SD FN GRN SL/CALC SH LAM MICA
4	705.0- 6.0	14.	19.8	26.4	44.8	SD FN GRN SL/CALC SH LAM MICA
5	706.0- 7.0	39.	19.6	35.7	36.9	SD FN GRN SL/CALC PYR MICA
6	707.0- 8.0	17.	21.9	34.9	34.9	SD FN GRN SL/CALC SH LAMS PYR MICA
7	708.0- 9.0	13.	20.6	32.0	39.7	SD FN GRN SL/CALC MICA
8	709.0-10.0	20.	21.0	33.4	36.6	SD FN GRN SL/CALC SL/SHY MICA
9	710.0-10.2	22.	21.3	35.9	35.9	SD FN GRN SL/CALC MICA

7.2 20.9 32.7 38.5

35.0

CORE LABORATORIES, INC.  
 Petroleum Reservoir Engineering  
 DALLAS, TEXAS

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KANSAS LAND INVESTMENT, INC. DATE : 7-8-85 FILE NO. : 3408-850137  
 WOODHEAD NO. 42 WELL FORMATION : SQUIRREL SAND ANALYSTS : HUDSON

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

DEPTH INTERVAL: 702.0 TO 710.0

FEET OF CORE ANALYZED : 8.0 FEET OF CORE INCLUDED IN AVERAGES: 8.0

-- SAMPLES FALLING WITHIN THE FOLLOWING RANGES WERE AVERAGED --  
 PERMEABILITY HORIZONTAL RANGE (MD.) : 0.00 TO 50. (UNCORRECTED FOR SLIPPAGE)  
 FLUID POROSITY RANGE (%) : 10.0 TO 100.0  
 OIL SATURATION RANGE (%) : 20.0 TO 40.0  
 WATER SATURATION RANGE (%) : 30.0 TO 50.0  
 SHALE SAMPLES EXCLUDED FROM AVERAGES.

AVERAGE PERMEABILITY (MILLIDARCIES)		AVERAGE TOTAL WATER SATURATION : 39.4
ARITHMETIC PERMEABILITY : 19.		(PERCENT OF PORE SPACE)
GEOMETRIC PERMEABILITY : 18.		AVERAGE CONNATE WATER SATURATION : (C) 36.0
HARMONIC PERMEABILITY : 16.		(PERCENT OF PORE SPACE)
PRODUCTIVE CAPACITY (MILLIDARCY-FEET)		OIL GRAVITY (API) : (E) 34.0
ARITHMETIC CAPACITY : 156.		ORIGINAL SOLUTION GAS-OIL RATIO : (E) 1.
GEOMETRIC CAPACITY : 141.		(CUBIC FEET PER BARREL)
HARMONIC CAPACITY : 127.		
AVERAGE POROSITY (PERCENT) : 20.7		ORIGINAL FORMATION VOLUME FACTOR : (C) 1.05
AVERAGE RESIDUAL OIL SATURATION (PERCENT OF PORE SPACE) : 32.3		(BBLS SATURATED OIL/STOCK-TANK BBL)
		ORIGINAL STOCK-TANK OIL IN PLACE : (C) 976.
		(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.

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

COMPANY KANSAS LAND INVESTMENT, INC. FILE NO. 3408-850137  
WELL WOODHEAD NO. 42 WELL DATE 7-8-85  
FIELD  FORMATION SQUIRREL SAND ELEV.   
COUNTY DOUGLAS COUNTY STATE KANSAS DRLG. FLD. AIR CORES   
LOCATION

## **CORRELATION COREGRAPH**

These analyses, opinions or interpretations are based on observations and material supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc., (all errors or omissions excepted); but Core Laboratories, Inc., and its officers and employees, assume no responsibility and make no warranty or representations as to the productivity, proper operation, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

VERTICAL SCALE: 5" = 100'

**Total Water**PERCENT PORE SPACE  
100 80 60 40 20 0Oil Saturation  
PERCENT PORE SPACE**Gamma Ray**  
RADIATION INCREASE **Permeability**

MILLIDARCIES

1000 100 10 1

**Porosity**

PERCENT

Depth  
Feet  
650

700

750

Oil Saturation  
PERCENT PORE SPACE

0 0 20 40 60 80 100

