

CORE ANALYSIS REPORT

FOR

KANSAS LAND INVESTMENT, INC.
WOODHEAD NO. 29 WELL
DOUGLAS COUNTY, KANSAS

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
TULSA, OKLAHOMA

REPLY TO
7304 EAST 38TH STREET
TULSA, OKLAHOMA
74145

November 8, 1984

Kansas Land Investment, Inc.
222 E. 3rd. St.
Ottawa, Kansas 66067

Attn: Mr. Jim Mietchen

Subject: Core Analysis Data
Woodhead No. 29 Well
Douglas County, Kansas
CLI File 3408-840292

Gentlemen:

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

The accompanying Coregraph presents the 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.

Core analysis data from the cored interval 677.0 and 687.0 feet exhibits excellent porosity and fair matrix permeability development. This zone should be oil productive.

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

Very truly yours,

CORE LABORATORIES, INC.


J. Michael Edwards
District Manager

JME:MCH:jeh
5 cc: Addressee

Kansas Land Investment, Inc.
Woodhead No. 29 Well
CLI File 3408-840292

Procedure Page

Handling and Analytical Procedures

Diamond coring equipment was used to obtain 2 1/8-inch diameter cores between 677.0 and 687.0 feet.

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

The core was transported to Tulsa by motor freight.

Plug analysis was made in intervals requested.

Fluid removal was accomplished by 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 awaiting additional instructions.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering

DALLAS, TEXAS

PAGE 1

KANSAS LAND INVESTMENT, INC.
 WOODHEAD NO. 29 WELL

DATE: 11-8-84
 FORMATION: SQUIRREL SAND
 DRUG. FLUID:
 LOCATION:

FILE NO: 3408-840292
 ENGINEER: HUDSON
 ELEVATION:

DOUGLAS COUNTY, KANSAS

SMP. NO.	DEPTH	PERM. TO AIR MD. PLUG	POROSITY PERCENT	FLUID SATS. OIL WTR.	STB/ AF	DESCRIPTION
ROUTINE PLUG SUMMATION OF FLUIDS						
1	677.0-78.0	2.4	19.1	18.3 56.2	624	SD, SLTY, CALC, MICA
2	678.0-79.0	3.3	17.8	26.2 47.0	704	SD, SLTY, CALC, MICA
3	679.0-80.0	7.1	19.2	27.6 43.2	812	SD, SLTY, CALC, MICA
	680.0-80.5					SHALE
	680.5-81.0					SD, V/SHY
4	681.0-82.0	20.0	20.4	34.3 33.2	1015	SD, SL/CALC, MICA
5	682.0-83.0	26.0	21.3	30.4 36.6	1005	SD, SL/CALC, MICA
6	683.0-84.0	28.0	20.5	35.5 35.5	984	SD, SL/CALC, MICA
7	684.0-85.0	42.0	20.8	34.4 34.4	1020	SD, SL/CALC, MICA
8	685.0-86.0	85.0	17.2	37.6 50.6	633	SD, SL/CALC, MICA
9	686.0-87.0	<0.1	18.3	19.4 60.9	534	SD, CALC, MICA, SH/LAWS

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Petroleum Reservoir Engineering

DALLAS, TEXAS

Page 2 of 2 File 3408-840292

Well WOODHEAD NO. 29

CORE SUMMARY AND CALCULATED RECOVERABLE OIL

FORMATION NAME AND DEPTH INTERVAL: SQUIRREL SAND 677.0-687.0			
FEET OF CORE RECOVERED FROM ABOVE INTERVAL	10	AVERAGE TOTAL WATER SATURATION: PER CENT OF PORE SPACE	44.2
FEET OF CORE INCLUDED IN AVERAGES	9	AVERAGE CONNATE WATER SATURATION: PER CENT OF PORE SPACE	39.0 (e)
AVERAGE PERMEABILITY: MILLIDARCY	23.8	OIL GRAVITY: °API	
PRODUCTIVE CAPACITY: MILLIDARCY-FEET	214	ORIGINAL SOLUTION GAS-OIL RATIO: CUBIC FEET PER BARREL	
AVERAGE POROSITY: PER CENT	19.4	ORIGINAL FORMATION VOLUME FACTOR: BARRELS SATURATED OIL PER BARREL STOCK-TANK OIL	1.05 (c)
AVERAGE RESIDUAL OIL SATURATION: PER CENT OF PORE SPACE	29.3	CALCULATED ORIGINAL STOCK-TANK OIL IN PLACE: BARRELS PER ACRE-FOOT	815

Calculated maximum solution gas drive recovery is 114(e)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. (Please refer to footnotes for further discussion of recovery estimates.)

FORMATION NAME AND DEPTH INTERVAL:

FEET OF CORE RECOVERED FROM ABOVE INTERVAL		AVERAGE TOTAL WATER SATURATION: PER CENT OF PORE SPACE	
FEET OF CORE INCLUDED IN AVERAGES		AVERAGE CONNATE WATER SATURATION: PER CENT OF PORE SPACE	
AVERAGE PERMEABILITY: MILLIDARCY		OIL GRAVITY: °API	
PRODUCTIVE CAPACITY: MILLIDARCY-FEET		ORIGINAL SOLUTION GAS-OIL RATIO: CUBIC FEET PER BARREL	
AVERAGE POROSITY: PER CENT		ORIGINAL FORMATION VOLUME FACTOR: BARRELS SATURATED OIL PER BARREL STOCK-TANK OIL	
AVERAGE RESIDUAL OIL SATURATION: PER CENT OF PORE SPACE		CALCULATED ORIGINAL STOCK-TANK OIL IN PLACE: BARRELS PER ACRE-FOOT	

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. (Please refer to footnotes for further discussion of recovery estimates.)

(c) Calculated (e) Estimated (m) Measured (*) Refer to attached letter.

These recovery estimates represent theoretical maximum values for solution gas and water drive. They assume that production is started at original reservoir pressure; i.e., no account is taken of production to date or of prior drainage to other areas. The effects of factors tending to reduce actual ultimate recovery, such as economic limits on oil production rates, gas-oil ratios, or water-oil ratios, have not been taken into account. Neither have factors been considered which may result in actual recovery intermediate between solution gas and complete water drive recoveries, such as gas cap expansion, gravity drainage, or partial water drive. Detailed predictions of ultimate oil recovery to specific abandonment conditions may be made in an engineering study in which consideration is given to overall reservoir characteristics and economic factors.

These analyses, opinions or interpretations are based on observations and materials 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 and omissions excepted); but Core Laboratories, Inc., and its officers and employees assume no responsibility and make no warranty or representation 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.

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Petroleum Reservoir Engineering

COMPANY KANSAS LAND INVESTMENT, INC. FILE NO. 3408-840292
 WELL WOODHEAD NO. 29 DATE 11-8-84
 FIELD _____ FORMATION SOUTHERL SAND ELEV. _____
 COUNTY DOUGLAS STATE KANSAS DRLG. FLD. _____ 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 0

Oil Saturation _____

PERCENT PORE SPACE

Gamma Ray

RADIATION INCREASE →

Permeability _____

MILLIDARCIES

Porosity _____

PERCENT

Depth
Feet

1000 100 10 1

30 20 10 0 0 20 40 60 80 100

