

CORE LABORATORIES, INC.

Petroleum Reservoir Engineering
DALLAS, TEXAS

November 14, 1963

REPLY TO
1810 N. W. 4TH ST.
P. O. BOX 7128
OKLAHOMA CITY, OKLA.

S & C Drilling, et al
Box 271
Hays, Kansas

Subject: Core Analysis
Lundgren No. 2 Well
Lundgren Field
Gove County, Kansas
CLI File No. CP-10-1062

Gentlemen:

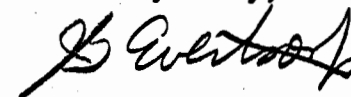
Samples taken from diamond cores of the Lundgren No. 2 well were sent to the Wichita laboratory for analysis. The measured data is reported in tabular form on page one of this report.

Scattered samples from the lower Pawnee and Fort Scott formations are representative of oil bearing formation and have ample permeability for completion after acid treatment.

Average core analysis data and unit estimates of recoverable oil are presented on page two of this report.

We are pleased to have been of service.

Yours very truly,



J. G. Evertson, Jr.
District Manager

JGE:db

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
 DALLAS, TEXAS

Page 1 of 1 File CP-10-1062
 Well Lundgren No. 2

CORE SUMMARY AND CALCULATED RECOVERABLE OIL

FORMATION NAME AND DEPTH INTERVAL: Lower Pawnee 4113.6 - 4115.7 feet

FEET OF CORE RECOVERED FROM ABOVE INTERVAL	2.1	AVERAGE TOTAL WATER SATURATION: PER CENT OF PORE SPACE	30.0
FEET OF CORE INCLUDED IN AVERAGES	2.1	AVERAGE CONNATE WATER SATURATION: PER CENT OF PORE SPACE	(e) 30
AVERAGE PERMEABILITY: MILLIDARCYB	35	OIL GRAVITY: °API	(e) 36
PRODUCTIVE CAPACITY: MILLIDARCY-FeET	74	ORIGINAL SOLUTION GAS-OIL RATIO: CUBIC FEET PER BARREL	(e) 400
AVERAGE POROSITY: PER CENT	11.3	ORIGINAL FORMATION VOLUME FACTOR: BARRELS SATURATED OIL PER BARREL STOCK-TANK OIL	(e) 1.25
AVERAGE RESIDUAL OIL SATURATION: PER CENT OF PORE SPACE	15.5	CALCULATED ORIGINAL STOCK-TANK OIL IN PLACE: BARRELS PER ACRE-FOOT	489

Calculated maximum solution gas drive recovery is 124 barrels per acre-foot, assuming production could be continued until reservoir pressure declined to zero psig. Calculated maximum water drive recovery is 354 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: Fort Scott 4134.3 - 4134.8 feet

FEET OF CORE RECOVERED FROM ABOVE INTERVAL	.5	AVERAGE TOTAL WATER SATURATION: PER CENT OF PORE SPACE	22.6
FEET OF CORE INCLUDED IN AVERAGES	.5	AVERAGE CONNATE WATER SATURATION: PER CENT OF PORE SPACE	(e) 22
AVERAGE PERMEABILITY: MILLIDARCYB	139	OIL GRAVITY: °API	(e) 36
PRODUCTIVE CAPACITY: MILLIDARCY-FeET	70	ORIGINAL SOLUTION GAS-OIL RATIO: CUBIC FEET PER BARREL	(e) 400
AVERAGE POROSITY: PER CENT	8.0	ORIGINAL FORMATION VOLUME FACTOR: BARRELS SATURATED OIL PER BARREL STOCK-TANK OIL	(e) 1.25
AVERAGE RESIDUAL OIL SATURATION: PER CENT OF PORE SPACE	13.8	CALCULATED ORIGINAL STOCK-TANK OIL IN PLACE: BARRELS PER ACRE-FOOT	388

Calculated maximum solution gas drive recovery is 97 barrels per acre-foot, assuming production could be continued until reservoir pressure declined to zero psig. Calculated maximum water drive recovery is 302 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 of any kind for the results of the analyses, opinions or interpretations.

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 DALLAS, TEXAS

CORE ANALYSIS RESULTS

Company S & C DRILLING, ET AL Formation AS NOTED File CP-10-1062
 Well LUNDGREN NO. 2 Core Type DIAMOND Date Report 11-13-63
 Field LUNDGREN Drilling Fluid WATER BASE MUD Analysts BOYLE
 County GOVE State KANSAS Elev. 2586'KB Location C S/2 NW SEC. 32-14S-29W

Lithological Abbreviations

SAND - SD DOLOMITE - DOL ANHYDRITE - ANHY SANDY - SBY FINE - FN CRYSTALLINE - XLM BROWN - BRN FRACTURED - FRAC SLIGHTLY - SL/
 SHALE - SH CHERT - CH CONGLOMERATE - CONG SHALY - SHY MEDIUM - MED GRAIN - GRN GRAY - GR LAMINATION - LAM VERY - V/
 LIME - LM GYPSUM - GYP FOSSILIFEROUS - FOSS LIMY - LMY COARSE - CSE GRANULAR - GRNL VUGGY - VUG STYLOLITIC - STY WITH - W/

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCY	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
				OIL	TOTAL WATER	

LOWER PAWNEE

1	4113.6-14.0	1.0	16.8	21.5	29.2	Lm, pp vugs
2	4114.2-14.7	19	13.4	17.2	30.6	Lm, pp vugs
3	4114.7-15.0	211	13.8	10.9	31.8	Lm, pp vugs
4	4115.0-15.7	0.7	8.7	17.3	38.0	Lm, pp vugs

FORT SCOTT

5	4134.3-34.8	139	8.0	13.8	22.6	Lm, oolitic
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THIS IS THE FINAL REPORT.

DISTRIBUTION: 2 CC: S & C DRILLING, ET AL
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 ATT: MR. TERHUNE

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