CORE ANALYSIS REPORT

FOR

J. A. ALLISON

HETHERINGTON NO. 8 WELL

BERNDSEN FIELD

BUTLER COUNTY, KANSAS

CORE LAB

PETROLEUM RESERVOIR ENGINEERING

CORE LABORATORIES, INC. *Petroleum Reservoir Engineering*

COMPANY J. A. ALLISON — DATE ON 1-14-60 — FILE NO. CP-10-473 FC

WELL HETHERINGTON NO. 8 — DATE OFF 1-14-60 — ENGRS. KUHIMAN

FIELD BERNDSEN — FORMATION SIMPSON — ELEV. 1321' DF

COUNTY BUTLER — STATE KANSAS — DRLG. FLD. WATER BASE MUD — CORES DIAMOND

LOCATION 560' SL 330' EL OF SE¼ SEC 15-26S-4E — REMARKS SAMPLED BY CLI AS DIRECTED BY CLIENT

SAND LIMESTONE CONGLOMERATE CHERT

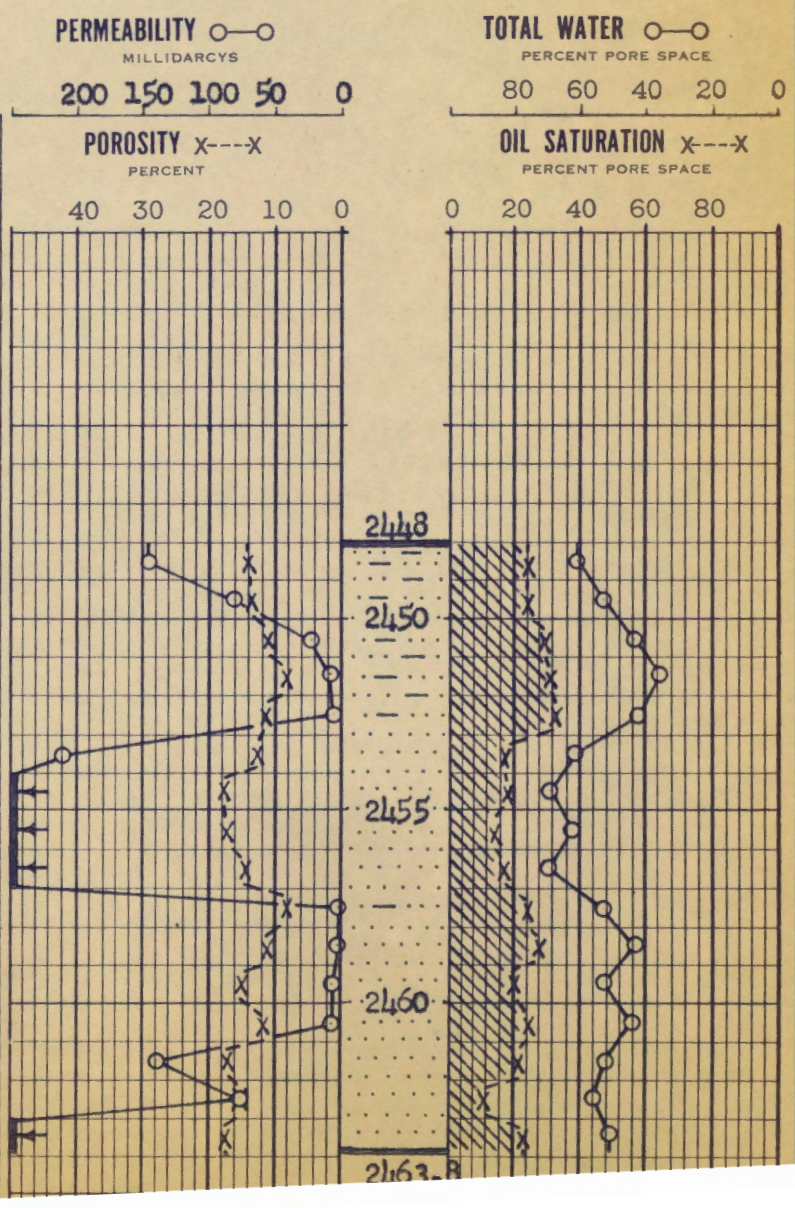
SHALE DOLOMITE

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TABULAR DATA and INTERPRETATION

DEPTH FEET	PERM. MD.	POROSITY %	RESIDUAL SATURATION % PORE SPACE			PROD
			OIL	TOTAL WATER		
2448-49	144	14.5	25.5	60.7		
49-50	80	13.6	25.0	53.0		
50-51	22	11.2	30.4	43.8		
51-52	8.9	8.4	30.9	35.7		
52-53	5.4	11.7	33.3	41.8		
53-54	210	13.1	17.6	61.8		
54-55	406	17.8	18.5	68.5		
55-56	275	17.1	14.6	62.6		
56-57	264	14.5	17.2	69.0		
57-58	0.8	8.5	23.5	53.0		
58-59	1.3	10.9	28.4	43.2		
59-60	6.9	15.1	19.8	53.0		
60-61	7.2	12.0	25.0	44.1		
61-62	139	17.4	21.2	52.2		
62-63	75	15.5	11.0	56.1		
63-63.8	297	17.6	22.7	51.2		

COMPLETION COREGRAPH



CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

January 18, 1960

REPLY TO
707 MID-CONTINENT BLDG.
TULSA, OKLAHOMA

Mr. J. A. Allison
3212 East Kellogg
Wichita, Kansas

Subject: Core Analysis
Hetherington No. 8 Well
Berndsen Field
Butler County, Kansas

Dear Sir:

Simpson formation analyzed from 2448.0 to 2463.8 feet is interpreted to be oil productive. The high total water saturations measured in the more permeable samples are a result of imbibing from the filtrate water.

The theoretical maximum solution gas drive recovery is calculated to be 169 barrels per acre-foot, assuming that production could be started at original reservoir pressure and continued until such pressure declines to zero psig. The theoretical maximum water drive recovery is calculated to be 454 barrels per acre-foot, assuming full maintenance of original reservoir pressure, 100 per cent areal and vertical coverage and continuation of production to 100 per cent water cut. Actual recovery will be less than these theoretical maximum values due to the various economic limiting factors affecting ultimate recovery.

We sincerely appreciate this opportunity to be of service to you.

Very truly yours,

Core Laboratories, Inc.

J G Evertson Jr (RE)

J. G. Evertson, Jr.,
District Manager

JGE:MH:sp
6 cc. - Addressee
1 cc. - Mr. R. A. Whortan
Wichita, Kansas

Form F-11B

CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

DALLAS, TEXAS

Page 1 of 1 File CP-10-473 FC

Well Hetherington No. 8

CORE SUMMARY AND CALCULATED RECOVERABLE OIL

FORMATION NAME AND DEPTH INTERVAL: Simpson 2448.0-2463.8

FEET OF CORE RECOVERED FROM ABOVE INTERVAL	15.8	AVERAGE TOTAL WATER SATURATION: PER CENT OF PORE SPACE		53.1
FEET OF CORE INCLUDED IN AVERAGES	15.8	AVERAGE CONNATE WATER SATURATION: PER CENT OF PORE SPACE	(e)	25
AVERAGE PERMEABILITY: MILLIDARCYS	119	OIL GRAVITY: °API	(e)	39
PRODUCTIVE CAPACITY: MILLIDARCY-FEET	1883	ORIGINAL SOLUTION GAS-OIL RATIO: CUBIC FEET PER BARREL	(e)	160
AVERAGE POROSITY: PER CENT	13.6	ORIGINAL FORMATION VOLUME FACTOR: BARRELS SATURATED OIL PER BARREL STOCK-TANK OIL	(e)	1.14
AVERAGE RESIDUAL OIL SATURATION: PER CENT OF PORE SPACE	22.8	CALCULATED ORIGINAL STOCK-TANK OIL IN PLACE: BARRELS PER ACRE-FOOT		694

Calculated maximum solution gas drive recovery is 169 barrels per acre-foot, assuming production could be continued until reservoir pressure declined to zero psig. Calculated maximum water drive recovery is 454 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: MILLIDARCYS		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