

REC'D APR 24 1958



CORE LABORATORIES, INC.  
*Petroleum Reservoir Engineering*  
DALLAS, TEXAS  
April 23, 1958

REPLY TO  
706 PATTERSON BLDG.  
DENVER, COLORADO

Plains Exploration Company  
1135 Petroleum Club Building  
Denver, Colorado

Subject: Core Analysis  
State "K" No. 1 Well  
Morgan County, Colorado

Gentlemen:

Diamond coring equipment and water base mud were used to core the interval, 4927 to 4946 and 5004 to 5010 feet, in the State "K" No. 1. A representative of Plains Exploration Company selected and sealed in bags samples of recovered formation on which analysis was desired and submitted these samples to the Sterling laboratory. Complete analysis results are presented in this report. Since a complete description of the recovered formation was not submitted, the lithology shown on the accompanying Completion Coregraph has been taken from the analyzed samples only.

Favorable residual fluid saturations indicate the "D" sand interval, 4927 to 4936 feet, to be capable of oil production. This nine-foot interval has an average permeability of 227 millidarcys and a total observed natural productive capacity of 2043 millidarcy-feet, which should be adequate to support excellent rates of oil production. The average porosity is 20.7 per cent and the connate water saturation as estimated from generalized capillary pressure data is 15 per cent of pore space.

Estimates of recoverable oil have been calculated for the "D" sand interval, 4927 to 4936 feet, using observed and estimated core analysis data for the nine productive feet in conjunction with estimated reservoir fluid characteristics considered to be applicable to this horizon. These estimates are presented on page one of this report and are subject to the conditions set forth in the body of and in the footnotes to the summary page.



00104618

Plains Exploration Company  
State "K" No. 1 Well

Page Two

"D" sand analyzed from 4945 to 4946 feet exhibits an absence of measurable residual oil saturation and is interpreted to be predominantly water productive. It is reported that six feet of shale separate this zone from the previously discussed oil productive interval, hence, no vertical water encroachment is expected.

"J" sand from 5004.5 to 5010.0 feet is characterized by unfavorable residual fluid saturations and is interpreted to be predominantly water productive where permeable.

We sincerely appreciate this opportunity to be of service and trust that this report will assist the preliminary evaluation of the "D" and "J" sands analyzed from the State "K" No. 1.

Very truly yours,

Core Laboratories, Inc.



J. D. Harris, (JHC)  
District Manager

JDH:JDJ:ds  
16 cc. - Addressee



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

Page 1 of 1 File RP-2-1859 PC  
 Well State "K" No. 1

**CORE SUMMARY AND CALCULATED RECOVERABLE OIL**

**FORMATION NAME AND DEPTH INTERVAL:** "D" Sand 4927.0-4936.0

FEET OF CORE RECOVERED FROM ABOVE INTERVAL	9.0	AVERAGE TOTAL WATER SATURATION: PER CENT OF PORE SPACE	44.4
FEET OF CORE INCLUDED IN AVERAGES	9.0	AVERAGE CONNATE WATER SATURATION: PER CENT OF PORE SPACE (e)	15
AVERAGE PERMEABILITY: MILLIDARCYS	227	OIL GRAVITY: °API (e)	42
PRODUCTIVE CAPACITY: MILLIDARCY-FEET	2043	ORIGINAL SOLUTION GAS-OIL RATIO: CUBIC FEET PER BARREL (e)	600
AVERAGE POROSITY: PER CENT	20.7	ORIGINAL FORMATION VOLUME FACTOR: BARRELS SATURATED OIL PER BARREL STOCK-TANK OIL (e)	1.35
AVERAGE RESIDUAL OIL SATURATION: PER CENT OF PORE SPACE	12.5	CALCULATED ORIGINAL STOCK-TANK OIL IN PLACE: BARRELS PER ACRE-FOOT	1011

Calculated maximum solution gas drive recovery is 275 barrels per acre-foot, assuming production could be continued until reservoir pressure declined to zero psig. Calculated maximum water drive recovery is 809 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 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.