

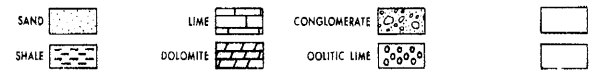
087-00673

JAMES A. LEWIS ENGINEERING, INC.

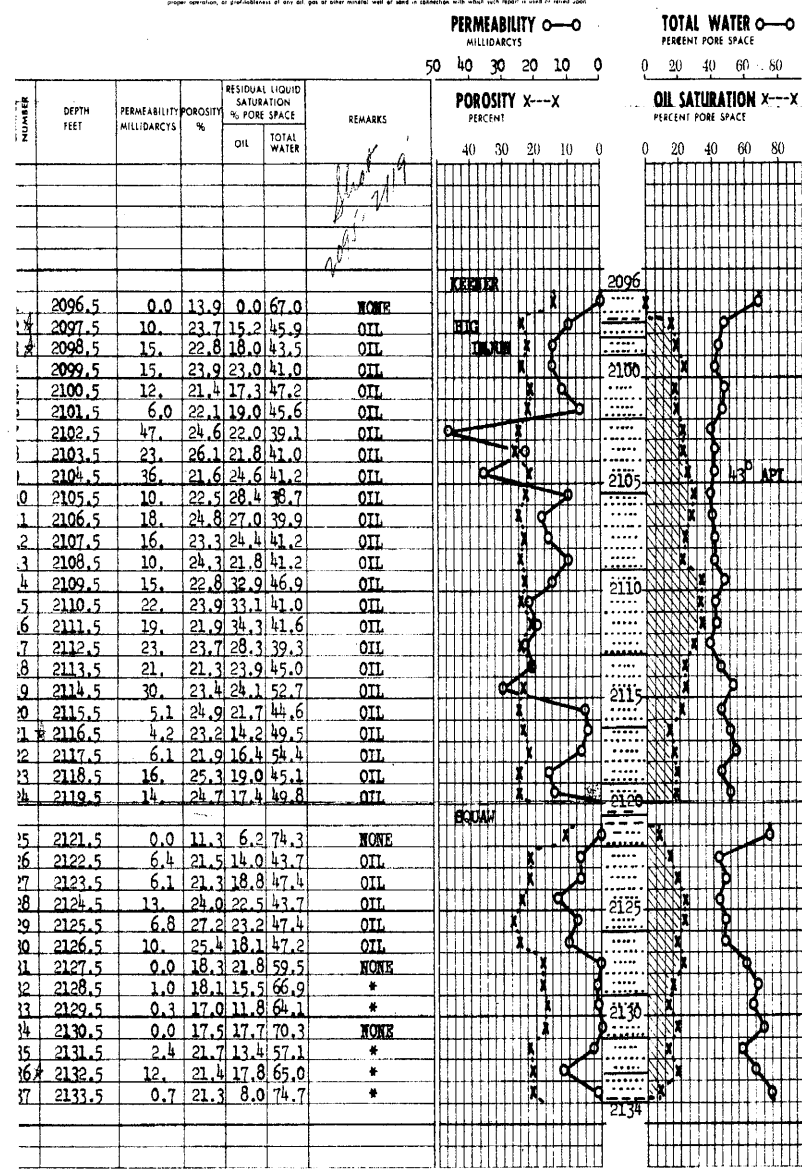
DALLAS, TEXAS
EVANSVILLE, INDIANA — ROBINSON, ILLINOIS
OWENSBORO, KENTUCKY — HUNTINGTON, WEST VIRGINIA

COMPANY RYAN OIL COMPANY DATE CORED AUGUST 24, 1955 FILE NO. H-167
 HOLE WHITNEY NO. 8 DATE REPORT AUGUST 29, 1955 ENGRS. T-G
 ID WALTON FORMATION AS NOTED ELEV. _____
 COUNTY ROANE STATE V. VA. DRIG. FLUID CORED IN OIL CORES B.C.T.
 LOCATION _____ REMARKS _____

CORE ANALYSIS REPORT



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 interpretation or opinions expressed represent the best judgment of James A. Lewis Engineering, Inc., and its officers and employees, assume no responsibility or representation as to the productivity, proper operation, or performance of any well or other mineral well or well or otherwise which may be used in connection with this report.



CORE SUMMARY

FORMATION	DEPTH, FEET	FEET CORE RECOVERED (PRODUCTIVE)	AVERAGE PERMEABILITY MD		AVERAGE POROSITY %		AVERAGE LIQUID SATURATION, %	
			MIN	MAX	OIL	WATER		
KEENER	2096 - 2097	NONE						
BIG INJUN	2097 - 2120	23.	17.		23.4	22.9	44.1	
SQUAW	2121 - 2122	NONE						
SQUAW	2122 - 2127	5.	8.5		23.9	19.3	45.9	
SQUAW	2127 - 2128	NONE						
SQUAW	2128 - 2134	5.	3.3		19.9	13.3	65.5	

Based on core for permeability testing 11/15/57

COPY

JAMES A. LEWIS ENGINEERING, INC.

Petroleum Reservoir Analysts

1518 KIRBY BLDG.
DALLAS 1, TEXASREPLY TO BOX 237
EVANSVILLE, IND.

September 2, 1955

Ryan Oil Company
213 Court Building
Evansville, Indiana

Subject: Core Analysis

Whitney No. 8
Walton Field
Roane County, West Virginia

Gentlemen:

The attached coregraph shows the interval cored from 2096 to 2134 feet which represents the Houser, Big Injun, and Squaw Sand sections.

One core sample representing the Houser Sand section from 2096 to 2097 feet is impermeable and nonproductive.

Twenty-three permeable sand samples representing the Big Injun Sand section from 2097 to 2120 feet are interpreted to be oil productive and have the following average core analysis results:

Average permeability, 17 millidarcys.
Average porosity, 23.4 per cent.
Average residual oil saturation, 22.9 per cent of pore space.
Average total water saturation, 44.1 per cent of pore space.

It is noted that this complete interval was cored using oil as drilling fluid, and therefore, the average total water saturation resulting in the analysis is considered to be the average connate water saturation of the formation. The calculated water injection rate for this oil column is 110 barrels per day under a sustained differential pressure of 1900 psi, which represents a surface pressure of 600 psi and a hydrostatic pressure of 900 psi. The calculated recovery by water flooding this oil column is 300 barrels per acre foot to a high produced water cut.

The Squaw Sand section occurs from 2121 to 2134 feet. One core sample representing the interval from 2121 to 2122 feet is impermeable and nonproductive.

The interval cored from 2122 to 2127 feet is interpreted to be oil productive. Core analysis results for five feet of permeable sand show the following average characteristics:

Average permeability, 8.5 millidarcys.
Average porosity, 23.9 per cent.
Average residual oil saturation, 19.3 per cent of pore space.
Average total water saturation, 45.9 per cent of pore space.

Ryan Oil Company

-2-

September 2, 1955

One core sample representing the interval from 2127 to 2128 feet is impermeable and nonproductive.

The interval cored from 2128 to 2134 feet is interpreted to be predominately water productive upon completion. Five permeable sand samples representing this zone have the following average core analysis results:

Average permeability, 3.3 millidarcys.
Average porosity, 19.9 per cent.
Average residual oil saturation, 13.3 per cent of pore space.
Average total water saturation, 65.6 per cent of pore space.

Due to the very low productive capacity, no reserves are assigned to the Squaw Sand section.

Chloride determinations for several core samples representing the complete interval are given in the report.

A bailer sample of the produced oil from the Big Injun Sand section has the following gravity and viscosity measurements:

Gravity, 43.2° API at 60° F.
Viscosity, 3.1 centipoises at approximate bottom hole temperature
of 86° F.

Analysis data are given in the report for each foot of recovered core.

Very truly yours,

JAMES A. LEWIS ENGINEERING, INC.

H. J. Langley

HJL:va

Encl.

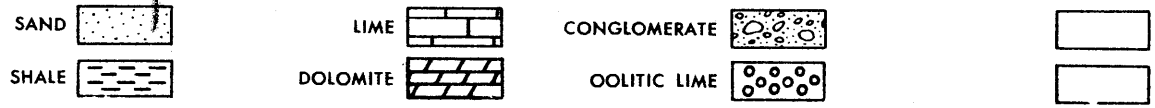
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JAMES A. LEWIS ENGINEERING, INC.

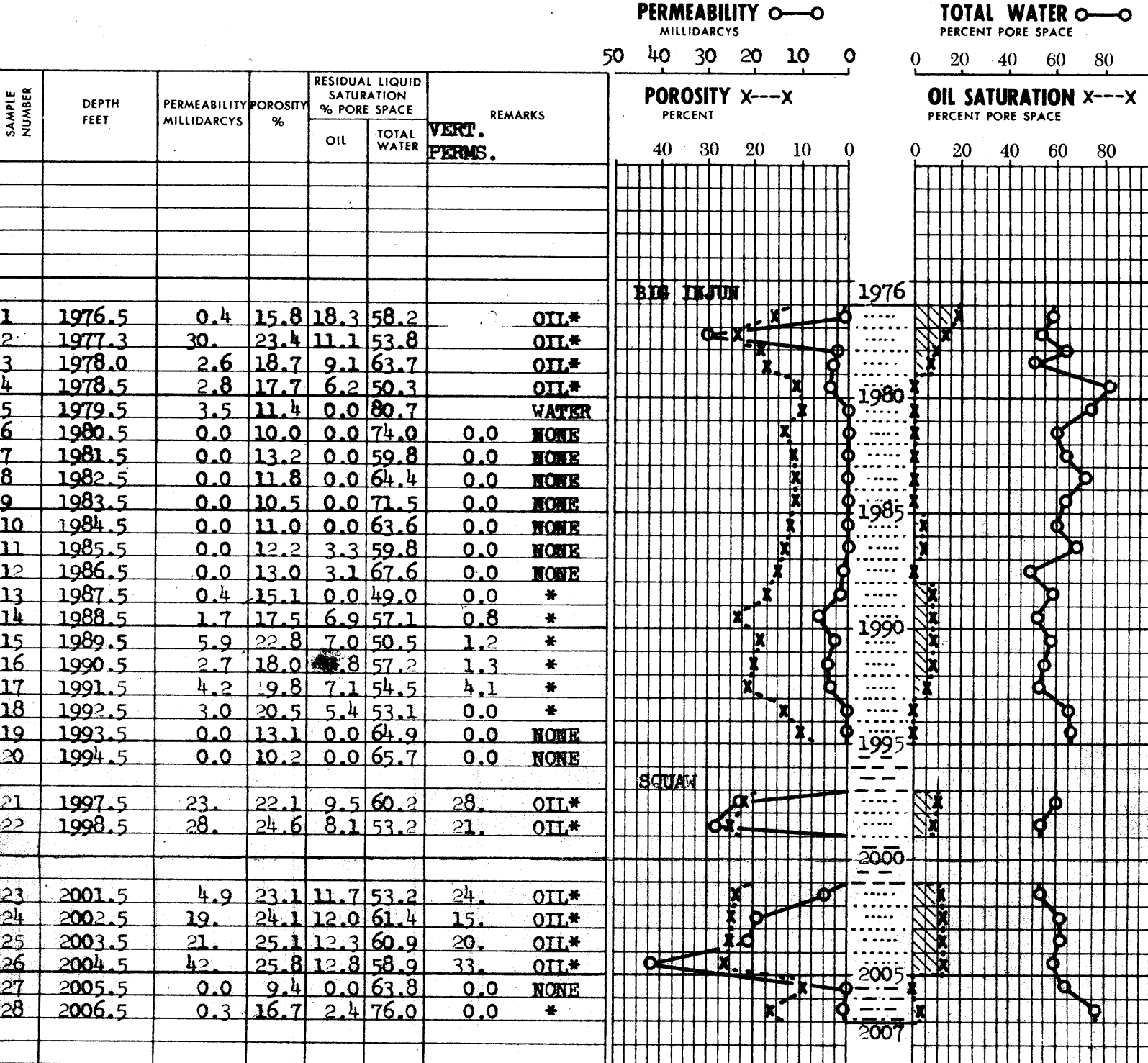
DALLAS, TEXAS
 EVANSVILLE, INDIANA — ROBINSON, ILLINOIS
 OWENSBORO, KENTUCKY — HUNTINGTON, WEST VIRGINIA

COMPANY RYAN OIL COMPANY DATE CORED NOVEMBER 17, 1955 FILE NO. H-204
 WELL E. J. TAYLOR NO. 3 DATE REPORT NOVEMBER 28, 1955 ENGRS. T-G
 FIELD WALTON FORMATION AS NOTED ELEV. _____
 COUNTY ROANE STATE W. VA. DRIG. FLUID WATER BASE MUD CORES B.C.T.
 LOCATION _____ REMARKS _____

CORE ANALYSIS REPORT



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 James A. Lewis Engineering, Inc. (all errors and omissions excepted); but James A. Lewis Engineering, 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.



CORE SUMMARY

087-00673

FORMATION	DEPTH, FEET	FEET CORE RECOVERED (PRODUCTIVE)	AVERAGE PERMEABILITY MD	AVERAGE POROSITY, %	AVERAGE LIQUID SATURATION, %	
					OIL	WATER
BIG INJUN	1976 - 1979	3.	9.0	18.9	11.2	56.5
BIG INJUN	1979 - 1980	1.	3.5	11.4	0.0	80.7
BIG INJUN	1980 - 1987	NONE				
BIG INJUN	1987 - 1993	6.	3.0	19.0	5.7	53.6
BIG INJUN	1993 - 1995	NONE				
SQUAW	1997 - 1999	2.	26.	23.4	8.8	56.7
SQUAW	2001 - 2005	4.	22.	24.5	12.2	58.6
SQUAW	2005 - 2006	NONE				
SQUAW	2006 - 2007	1.	0.3	16.7	2.4	76.0

COPY

087-00673

JAMES A. LEWIS ENGINEERING, INC.

Petroleum Reservoir Analysts
REPUBLIC NATIONAL BANK BUILDING
DALLAS 1, TEXAS

PLEASE REPLY TO:
906 MAIN STREET
P.O. BOX 237
EVANSVILLE, INDIANA

November 29, 1953

Byan Oil Company
218 Court Building
Evansville, Indiana

Subject: Core Analysis

R. J. Taylor No. 3
Walton Field
Rouse County, West Virginia

Gentlemen:

The attached coregraph shows the interval cored in subject well from 1976 to 2007 feet which represents the Big Injun Sand section and the Squaw Sand section.

The Big Injun Sand occurs from 1976 to 1995 feet. The interval cored from 1976 to 1979 feet is interpreted to be oil productive. Core analysis results for four permeable sand samples representing this zone show the following average characteristics:

Average permeability, 9.0 millidarcys.
Average porosity, 18.9 per cent.
Average residual oil saturation, 11.2 per cent of pore space.
Average total water saturation, 76.5 per cent of pore space.

One core sample representing the interval from 1979 to 1980 feet is interpreted to be water productive. This core sample has a measured permeability of 3.5 millidarcys and a measured porosity of 11.4 per cent.

The formation representing the interval from 1980 to 1985 feet contains only hard tight, unsaturated sand throughout. Five core samples representing this zone are impermeable and nonproductive. The formation representing the interval from 1985 to 1987 feet contains lightly saturated sand throughout. Two core samples representing this zone are impermeable and nonproductive.

The formation representing the interval from 1987 to 1993 feet contains hard tight, lightly saturated sand throughout. Six permeable sand samples representing this zone have the following average core analysis results:

Average permeability, 3.0 millidarcys.
Average porosity, 19.0 per cent.
Average residual oil saturation, 5.7 per cent of pore space.
Average total water saturation, 53.6 per cent of pore space.

The formation representing the interval from 1993 to 1995 feet contains hard tight, unsaturated sand throughout. Two core samples representing this zone are impermeable and nonproductive.

Information received from the field is that the interval from 1976 to 1980.5 feet was cored on October 17, 1955. When the depth of 1980.5 was reached, the coring tools were dropped in the hole and broken, thus causing a fishing job. Coring operations did not continue until November 15, 1955. When coring operations did resume, it was found by steel line measurement that the total depth at that time was 1979.5 feet. This depth correction has been taken into consideration as is shown on the attached paragraph. It is noted that a 16 hour fluid level test taken at a depth of 1990.5 feet recovered approximately 10 gallons of oil.

Due to the small net thickness of oil productive formation present in the Big Lajun Sand section, no reserves are calculated for this zone.

The Squaw Sand section occurs from 1997 to 2007 feet. It is noted that the Upper Squaw Sand lens occurs from 1997 to 1999 feet. Two permeable sand samples representing this zone are interpreted to be oil productive and have the following average core analysis results:

- Average permeability, 25 millidarcys.
- Average porosity, 23.4 per cent.
- Average residual oil saturation, 8.8 per cent of pore space.
- Average total water saturation, 56.7 per cent of pore space.

The Lower Squaw Sand lens occurs from 2001 to 2007 feet. The interval cored from 2001 to 2005 feet is interpreted to be oil productive. Core analysis results for four feet of permeable sand show the following average characteristics:

- Average permeability, 22 millidarcys.
- Average porosity, 24.5 per cent.
- Average residual oil saturation, 12.2 per cent of pore space.
- Average total water saturation, 58.6 per cent of pore space.

The formation representing the interval from 2005 to 2007 feet contains a very high percentage of shale throughout and is characterized by being either impermeable or having extremely low permeability. One core sample representing the interval from 2005 to 2006 feet is impermeable and nonproductive. One core sample representing the interval from 2006 to 2007 feet has a measured permeability of 0.3 millidarcys and a measured porosity of 16.7 per cent.

Due to the small thickness of oil productive formation, no reserves are assigned to the Squaw Sand section.

Analysis data are given in the report for each foot of recovered core.

Very truly yours,

JAMES A. LEWIS ENGINEERING, INC.

H. J. Langley

HJL:vm

Encl.