

CORE LABORATORIES, INC.



Petroleum Reservoir Engineering

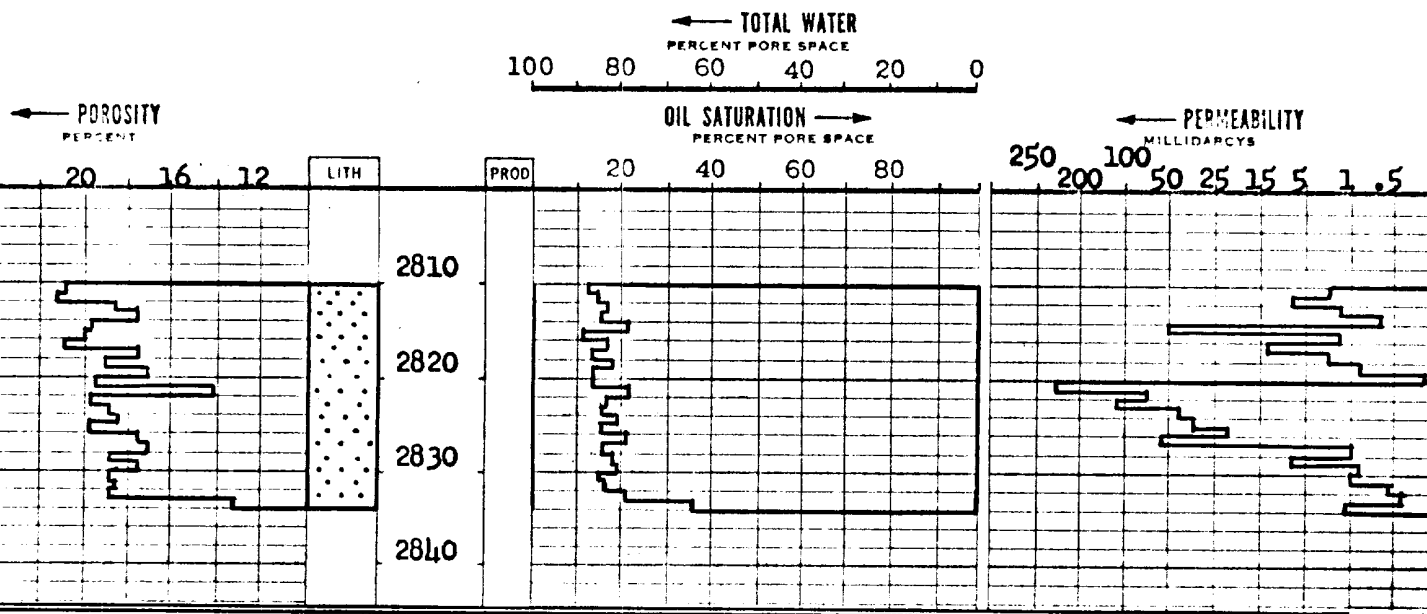
COMPANY T. G. Whigham DATE ON 7-13-71 FILE NO. RP-3-2468
 WELL Sand Springs # 1 DATE OFF 7-15-71 ENGRS. Mohl
 FIELD Wildcat FORMATION Dakota ELEV. 6902 KB
 COUNTY McKinley STATE N. Mex. DRLG. FLD. Fresh Water Gel CORES Bia, Conv. 4*
 LOCATION Sec 11 - T 17N - R 8W REMARKS Conventional Core Analysis

COMPLETION 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 and 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'



INTERPRETATION OF DATA

2810.0 - 2834.0 feet - Believed to be primarily water productive.

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.

CORE ANALYSIS RESULTS

Company T. G. Whigham Formation Dakota File RP-3-2468
 Well Sand Springs # 1 Core Type Dia. Conv. 4" Date Report 7-14-71
 Field Wildcat Drilling Fluid Fresh Water Gel Analysts Mohl
 County McKinley State N. Mex. Elev. 6902 KB Location Sec 11 - R 17N - R 8W

Lithological Abbreviations

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

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCYs	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
				OIL	TOTAL WATER	
1	2810-11	2.7	20.8	0.0	87.5	Ss, gry, vfn, slty, carb
2	2811-12	5.8	21.4	0.0	85.1	Ss, gry, vfn, slty, carb
3	2812-13	1.9	18.6	0.0	83.4	Ss, gry, vfn, slty, carb
4	2813-14	0.62	17.6	0.0	84.0	Ss, gry, vfn, slty, carb
5	2814-15	50.	19.6	0.0	78.1	Ss, gry, vfn, slty, carb
6	2815-16	2.3	20.0	0.0	89.0	Ss, gry, vfn, slty, carb
7	2816-17	12.	21.1	0.0	84.4	Ss, gry, vfn, slty, carb
8	2817-18	2.5	17.7	0.0	87.5	Ss, gry, vfn, slty, carb
9	2818-19	0.85	18.8	0.0	82.4	Ss, gry, vfn, slty, carb
10	2819-20	0.22	17.4	0.0	86.8	Ss, gry, vfn, slty, carb
11	2820-21	222. *	19.4	0.0	86.1	Ss, gry, vfn, slty, carb
12	2821-22	66.	14.1	0.0	78.6	Ss, gry, vfn, slty, carb
13	2822-23	103.	19.6	0.0	83.7	Ss, gry, vfn, slty, carb
14	2823-24	43.	18.8	0.0	84.1	Ss, gry, vfn, slty, carb
15	2824-25	37.	18.4	0.0	80.4	Ss, gry, vfn, slty, carb
16	2825-26	23.	19.8	0.0	85.8	Ss, gry, vfn, slty, carb
17	2826-27	51.	17.3	0.0	79.7	Ss, gry, vfn, slty, carb
18	2827-28	1.0	17.0	0.0	85.9	Ss, gry, vfn, slty, carb
19	2828-29	6.6	18.7	0.0	82.9	Ss, gry, vfn, slty, carb
20	2829-30	0.91	17.6	0.0	80.1	Ss, gry, vfn, slty, carb
21	2830-31	1.0	18.7	0.0	85.0	Ss, gry, vfn, slty, carb
22	2831-32	0.52	18.5	0.0	83.7	Ss, gry, vfn, slty, carb
23	2832-33	0.48	18.7	0.0	79.7	Ss, gry, vfn, slty, carb
24	2833-34	1.2	13.1	0.0	64.9	Ss, gry, vfn, slty, carb

* Denotes fracture permeability

CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

COMPANY T. G. Whigham FIELD Wildcat FILE RP-3-2468
 WELL Sand Springs #1 COUNTY McKinley DATE 7-14-71
 LOCATION Sec 11 - T 17N - R 8W STATE New Mexico ELEV. 6902 KB

CORE-GAMMA CORRELATION

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 herein are 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.

VERTICAL SCALE: 5" = 100'

CORE-GAMMA SURFACE LOG (PATENT APPLIED FOR)

GAMMA RAY
RADIATION INCREASE
→

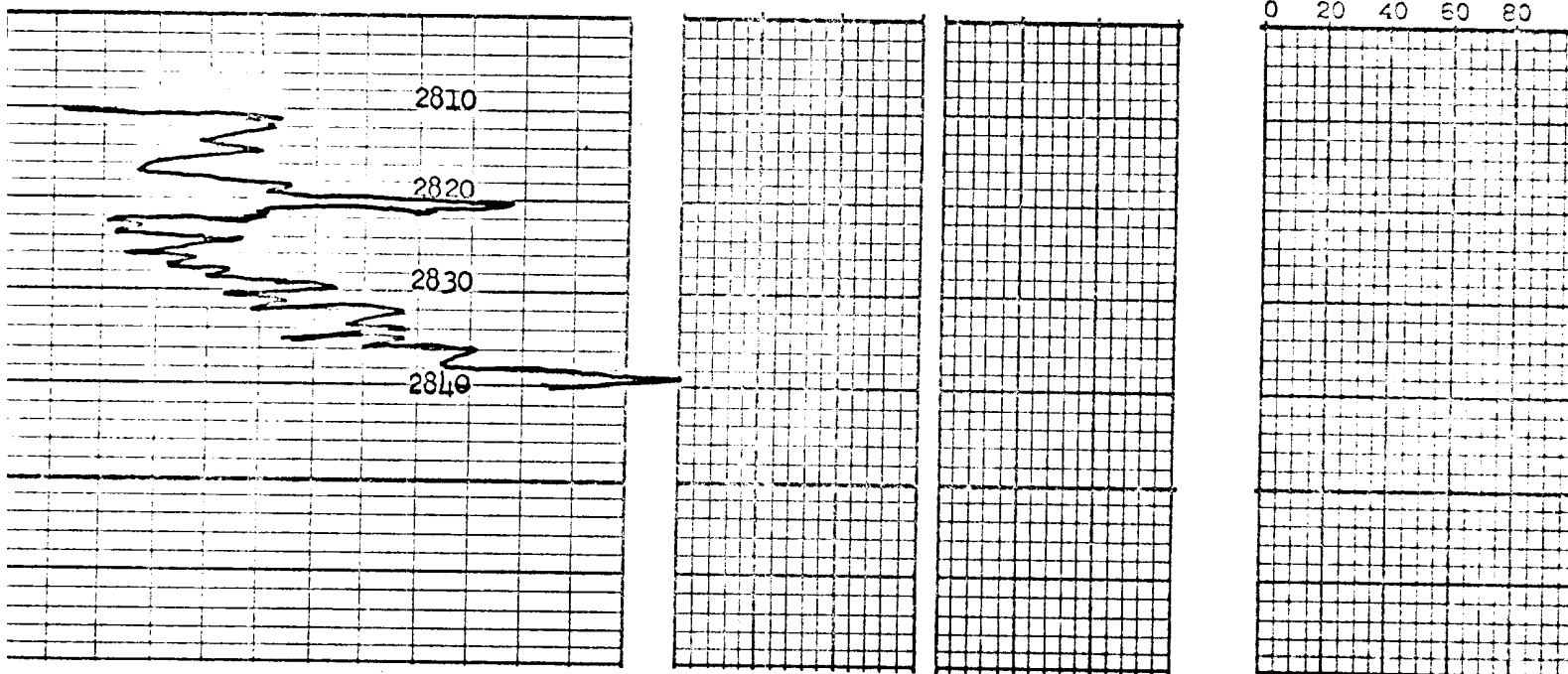
COREGRAPH

TOTAL WATER ———
PERCENT TOTAL WATER
80 60 40 20

PERMEABILITY ———
MILLIDARCYs

POROSITY ———
PERCENT

OIL SATURATION -----
PERCENT PORE SPACE
0 20 40 60 80



CORE ANALYSIS RESULTS FOR

MR. T. G. WHIGHAM

NO. 1 SAND SPRINGS WELL

WILDCAT

McKINLEY COUNTY, NEW MEXICO

CORE

Contractor Young Drilling Co. Top Choke 1"
 Rig No. 1 Bottom Choke 9/16"
 Spot SW-SW Size Hole 7 7/8"
 Sec. 11 Size Rat Hole None
 Twp. 17 N Size & Wt. D. P. 4" 14.00
 Rng. 8 W Size Wt. Pipe None
 Field Wildcat I. D. of D. C. 2 1/4"
 County McKinley Length of D. C. 308'
 State New Mexico Total Depth 3002'
 Elevation 6902' K.B. Interval Tested 2818-2850
 Formation "Dakota D" Sand Type of Test Straddle
 Tool Open @ 7:45 A. M.
 Flow #1 15 Min. SIP #1 45 Min. Flow #2 60 Min. SIP #2 90 Min.
 Flow #3 Min. SIP #3 Min. Flow #4 Min. SIP #4 Min.
 B. H. T. 108° Gravity
 Mud Wt. 9.4 Viscosity 100

TOOL SEQUENCE

2812-----○

2818-----○

2850-----○

TD 3002-----○

PRD Make Kuster AK-1
 No. 3697 Cap. 3700 @ 2840
 Press Field Corrected

IH	A	1412	1406
FH	K	1375	1384
Flow #1-IF	B	46	61
FF	C	325	317
SIP #1	D	1000	996
Flow #2-IF	E	343	343
FF	F	764	768
SIP #2	G	1000	997
Flow #3-IF	H	None	Taken
FF	I	"	"
SIP #3	J	"	"

Pressure Below
Bottom Packer
Bled To

1106

Our Tester: B. J. BobbittWitnessed By: T. G. Whigham

RECOVERY IN PIPE

DID WELL FLOW - Gas No Oil No Water No

1860' Muddy water = 18.27 Bbl. - RW 5.20 @ 90° = 800 PPM

1st Flow - Tool opened with a weak blow, increasing to a strong blow in 1 minute.

2nd Flow - Tool opened with a weak blow, increasing to a strong blow immediately. Strong blow throughout test.

REMARKS:

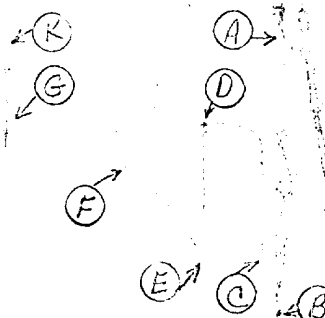
Corrected pressures in 1 1/2 & 9 minute increment readings on following page.

Operator T. G. Whigham
 Address See Distribution

Well Name and No. Sand Springs #1
 Ticket No. 2643

Date 7-11-71

DST No. 1
 No. Final Copies 5

T-2643R-3697

T. G. WHIGHAM
Sand Springs #1 DST #1 Ticket #2643

Initial Shut-in

4½ mins.	936 lbs.	
9 "	958 "	
13½ "	971 "	
18 "	979 "	
22½ "	984 "	
27 "	988 "	
31½ "	991 "	
36 "	993 "	
40½ "	995 "	
45 "	996 "	

Final Shut-in

9 mins.	962 lbs.	
18 "	973 "	
27 "	980 "	
36 "	985 "	
45 "	989 "	
54 "	991 "	
63 "	993 "	
72 "	995 "	
81 "	996 "	
90 "	997 "	

Fluid Sample Report

Date 7-14-71 Ticket No. 2643
Company T. G. Whigham
Well Name & No. Sand Springs #1 DST No. 1
County McKinley State New Mexico
Sampler No. 13 Test Interval 2818-2850

Pressure in Sampler 25 PSIG BHT 108 OF

Total Volume of Sampler: 2250 cc.
Sample: 2250 cc.
Oil: None cc.
Water: 2250 cc.
Mud: None cc.
Gas: None cu. ft.
Other: None

Resistivity

Water: 5.2 @ 90° of Chloride Content 800 ppm.

Mud Pit Sample 2.2 @ 85° of Chloride Content 2190 ppm.

Gas/Oil Ratio Gravity °API @ OF

Where was sample drained Location

Remarks:

DISTRIBUTION OF FINAL DST REPORTS

Company Operating Well T. G. Whigham Tkt. No. 2643
Lease Sand Springs Well No. 1 Field Wildcat
County McKinley State New Mexico Sec. 11 Twp. 17 N Rng. 8 W Spot SW-SW
DST. No. 1 Date of Test 7-14-71 Interval Tested 2818-2850

BE SURE AND SHOW CORRECT ADDRESS AND NUMBER OF COPIES. STATE ADDRESS TO WHICH ORIGINAL CHART WILL BE MAILED.

Original & 1 copy: T. G. Whigham, 624 Ridge Lea Court, Farmington, New Mexico 87401

3 copies: Tenneco Oil Co., 1200 Lincoln Tower Bldg., Denver, Colo. 80203

Our Tester _____ Approved by _____