CORE LABORATORIES, INC.
P.O. BOX 10169 · DALLAS 7, TEXAS · CABLE: CORELAB
Engineering & Consulting Department
REPLY TO
Suite 709, Petroleum Building
Wichita, Kansas

December 28, 1968

Clifton L. McCowen
614 Petro Bldg
Wichita, Ks
TLT
316-262-6489

Mr. Harvey Rosen
Rosen Oil Company
605 Sutton Place
Wichita, Kansas 67202

Dear Mr. Rosen:

In accordance with your request we have determined the recoverable gas reserves underlying your Strange and Miller leases located in Section 32, T8S, R20E, Jefferson County, Kansas.

The Rosen Oil Company's Strange No. 1 well, located in NW NE SW of Section 32, was completed in August 1968 for an open flow potential of 3675 MCF per day with a shut-in well-head pressure of 468 psig. The well encountered the McLouth Sand within the interval from 1466 feet to 1486 feet. Total depth of the well was 1487 feet. The well was cored from 1467 to 1487 feet recovering 10.5 feet of net gas sand and six feet of net oil sand. The gravity of the oil, retorted from core samples, ranged from 22 to 24 °API. The well was completed with 4 1/2 inch casing set at 1482 feet. The open hole interval, 1482 to 1487 feet, was fractured with 8,500 pounds of sand in 12,500 gallons of jelled salt water.

Electrical logs, drillers' logs, and scout card data were used to establish the subsea top of the McLouth Sand and the net sand thickness. A subsurface structure map contoured on the top of the McLouth Sand is attached as Figure 1. The attached Figure 2 shows the total sand thickness for each well and an isopach map of the net gas sand occurring above the gas-oil contact at 422 feet subsea. The volume of net gas sand underlying your Strange and Miller leases was determined, from Figure 2, to be 2345 acre-feet.

The recoverable gas reserves for your leases at an abandonment reservoir pressure of 50 psig were estimated at 454,461 MCF. These reserves were based upon an average porosity of 19.8 per cent, an estimated formation water saturation of 30.0 per cent, a reservoir pressure and temperature of 486 psig, and 75°F, respectively, and a compressibility factor of 0.921.

Possible oil reserves exist in the McLouth Sand under your Miller leases in Section 29 and the northern part of the E/2 of Section 32. A well was drilled in the NW NW SW of Section 28 and completed in the McLouth Sand. The well was reported to be capable of producing oil, however no production records were available to support the potential of the well.

We appreciate the opportunity to make this study for you and hope that it will fulfill your needs at this time.

Yours very truly,

CORE LABORATORIES, INC.

Carroll F. Mahoney
Resident Manager

CFM:mah

STATE OF KANSAS — CORPORATION COMMISSION

MULTIPOINT BACK PRESSURE TEST

TYPE TEST: X Initial ☐ Annual ☐ Special TEST DATE: 8-30-1969

COMPANY: Rosen Oil Co. LEASE: Strange WELL NO. 1

COUNTY: Jefferson LOCATION: NW NE SW SECTION: 32 TWP: 8S RNG: 20E ACRES:

FIELD: RESERVOIR: McClouth Sand PIPELINE CONNECTION: None

COMPLETION DATE: August 1968 PLUG BACK TOTAL DEPTH: 1487 PACKER SET AT:

CASING SIZE: 8" WT. SET AT: 1481 PERF. Open End TO

TUBING SIZE: 2 3/8" WT. SET AT: 1485 PERF. TO

TYPE COMPLETION (Describe): Single (Gas) TYPE FLUID PRODUCTION:

PRODUCING THRU: Tubing RESERVOIR TEMPERATURE °F BAR. PRESS. 14.4 Psia

GAS GRAVITY G_g: .600 % CARBON DIOXIDE % NITROGEN API GRAVITY OF LIQUID

VERTICAL DEPTH TYPE METER CONN. METER RUN PROVER

REMARKS: — (5-41

OBSERVED DATA / DURATION OF FLOW

RATE NO.	ORIFICE SIZE	METER PRESSURE	DIFF. h_w	FLOWING TEMP.		CASING Psig	CASING $(P_w)(P_c)$ psia	TUBING Psig		DURATION
SHUT IN						468	482.4	468		72 hr.
1	3/16	450		46		452	466.4	450		1 hr.
2	1/4	408		46		436	450.4	408		1 hr.
3	5/16	361		51		422	436.4	361		1 hr.
4	7/16	298		54		378	392.4	298		1 hr.

RATE OF FLOW CALCULATIONS

RATE NO.	COEFFICIENT	METER OR PROVER PRESSURE psia	EXTENSION $\sqrt{P_m h_w}$	GRAVITY FACTOR F_g	FLOWING TEMP. FACTOR F_t	DEVIATION FACTOR F_{pv}	RATE OF FLOW Q Mcfd	GOR	
1	0.6237	464.4		1.291	1.014	1.045	396		
2	1.115	422.4		1.291	1.014	1.041	642		
3	1.714	375.4		1.291	1.009	1.035	867		
4	3.495	312.4		1.291	1.006	1.028	1458		
5									

PRESSURE CALCULATIONS

RATE NO.	P_t psia	P_c psia	P_w psia	P_c^2 THOUSANDS	$(P_w)^2$ THOUSANDS	PLOTTING POINTS $(P_c)^2-(P_w)^2$ THOUSANDS	PLOTTING POINTS Q Mcfd	% SHUT-IN $100\left[\frac{P_w-P_a}{P_c-P_a}\right]$
1				232.7	217.5	15.2	396	
2				232.7	202.9	29.8	642	
3				232.7	190.4	42.3	867	
4				232.7	154.0	78.7	1458	
5								

INDICATED WELLHEAD OPEN FLOW 2,675 Mcfd @ 14.65 psia SLOPE .842

The undersigned authority, on behalf of the Company, states that he is duly authorized to make the above report and that he has knowledge of the facts stated therein, and that said report is true and correct.

Executed this the ______ day of ______, 19__.

Loyd Koll
Witness (If any)

For Commission

Guy Cann
For Company

Checked by

CORE LABORATORIES, Inc.
Petroleum Reservoir Engineering
DALLAS, TEXAS

Page No.

CORE ANALYSIS RESULTS

Company ROSEN OIL COMPANY — Formation MCLOUTH — File CP-1-669
Well STRANGE NO. 1 — Core Type DIAMOND — Date Report 7-19-68
Field WILDCAT — Drilling Fluid WATER BASE MUD — Analysts BOYLE
County JEFFERSON State KANSAS Elev. 1056'RB Location NW NE SW SEC 32-8S-20E

Lithological Abbreviations

DOLOMITE-DOL	ANHYDRITE-ANHY	SANDY-SDY	FINE-FN	CRYSTALLINE-XLN	BROWN-BRN	FRACTURED-FRAC	OOLITIC	
CHERT-CH	CONGLOMERATE-CONG	SHALY-SHY	MEDIUM-MED	GRAIN-GSN	GRAY-GY	LAMINATION-LAM	VERY	
GYPSUM-GYP	FOSSILIFEROUS-FOSS	LIME-LME	COARSE-CSE	GRANULAR-GRNL	VUGGY-VGY	STYLOLITIC-STY	WITH	

DEPTH FEET	PERMEABILITY MILLIDARCYS PERM. MAX.	PERM. 90°	POROSITY FCN CURV	RESIDUAL SATURATION FOR CORE ANAL OIL	TOTAL WATER	SAMPLE DESCRIPTION AND REMARKS
CONVENTIONAL ANALYSIS			Top Sd. 1466			
1467.0-68.0	98		22.5	2.4	56.6	Sd
68.0-69.0	256		21.6	2.6	40.9	Sd
69.0-70.0	94		16.4	4.2	53.8	Sd, sl/silty
70.0-71.0	16		15.7	5.3	56.0	Sd, silty
71.0-72.0	4.9		17.3	6.0	53.3	Sd, silty
72.0-73.0	52		16.7	4.8	26.0	Sd, silty
73.0-74.0	102		20.6	5.3	35.2	Sd
74.0-75.0	125		24.5	4.4	43.1	Sd, vert/frac
75.0-76.0	306		23.8	6.3	39.8	Sd
76.0-77.0	64		22.0	8.8	30.5	Sd, sl/silty
77.0-77.5	13		20.9	7.6	58.8	Sd, silty
77.5-78.0						Shale, silty
78.0-79.0	27		19.6	32.5	23.2	Sd
79.0-80.0	25		18.6	31.9	22.1	Sd
80.0-81.0	19		18.7	29.2	31.6	Sd, sl/shy
81.0-82.0	13		19.5	31.7	32.8	Sd, shy
82.0-83.0	13		18.0	31.9	25.5	Sd, shy
83.0-84.0	3.7		15.9	13.4	50.7	Sd, shy, silty
84.0-85.0	7.6		16.5	29.9	29.9	Sd, sl/silty, sl/shy
85.0-86.0	6.7		18.1	29.3	31.9	Sd, shy
1486.0-87.0						Sd & Sh Laminated

OIL GRAVITY 22 TO 24°API

THIS IS A PRELIMINARY REPORT.

FIELD ENDS

GAS PRODUCTION (in 1950)

TABLE 63.—*Gas production in Kansas during 1950, continued*

Pool or field name	Location of discovery well	Year of discovery	Area, acres	1950 production, M cu. ft.	Cumulative production to end of 1950, M cu. ft.	No. producing wells	Producing zone	Depth to producing zone, feet
Johnson County								
Miscellaneous				44,020		28		
Kearny County (See Hugoton field)								
Kingman County								
Cunningham	7-28-11W	1931	700	114,700 est.		4 est.	Arbuckle	4,094
							Viola	4,278
Kiowa County								
Alford	14-30-19W	1944		no report	none		Spergen	5,040
Brenham	29-28-17W	1947		no report	none		"Miss. chert"	4,841
Labette County								
Coffeyville-Cherryvale*	32-17E			included with Montgomery Co.		2		
Miscellaneous				27,280		12		
Total Labette County				27,280		14		
Leavenworth County								
"Linwood"				7,570		3		
Roberts-Maywood*				included with Wyandotte Co.				
Jefferson County								
McLouth				40,000		25		

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JEFFERSON COUNTY

The 1950 production of 3 pools: oil 50,532 barrels, gas 40,000 thousand cubic feet (estimated). Wells drilled in 1950: not estimated.

Developments during 1950.—No drilling in Jefferson County was reported during the year. The McLouth area produced the oil and gas. The three active oil fields are the **Bankers Life** (partly in Leavenworth County), the **McLouth**, and the **McLouth North**. Gas production came from the same area, but later in the year all gas wells were reported plugged and the reservior being planned for underground storage. Cumulative gas production, which started in 1941, at the end of 1950 when production in the field ceased was 9,809,866 thousand cubic feet.

Oil production statistics in the Jefferson County fields are listed in Table 62. Gas production data are listed in Table 63.

LEAVENWORTH COUNTY

The 1950 production from 3 fields: oil 10,722 barrels, gas 7,570 thousand cubic feet. Wells drilled in 1950: not estimated.

Developments during 1950.—During the year Leavenworth County produced oil from the **Bankers Life** field in sec. 3, T. 10 S., R. 20 E. which extends into Jefferson County and in the **Ackerland** field in secs. 6 and 7, T. 10 S., R. 21 E. Three commercial gas wells in the **Linwood** field are producing (Table 63). No important drilling was reported.

Oil production statistics in Leavenworth County are listed in Table 62.