

29-22-21E

GEOLOGIC STANDARDS COMPANY

RESULTS OF SATURATION TESTS

COMPANY M. W. Shriver

WELL Miller "B", Well W-12

Sat. No.	Depth Feet	Porosity Per Cent	PER CENT SAT.			Avg. Oil Content Bbls./A. Ft.	FT. OF SAND		Total Oil Content Bbls./Acre
			Oil	Water	Total		Ft.	Cum.	
1	748.5	17.3	23.	43.	66.	300.	0.8	0.8	240.
2	750.1	17.7	14.	52.	66.	200.	0.7	1.5	140.
3	751.9	14.7	23.	51.	74.	260.	0.5	2.0	130.
F-3	753.1	17.7	36.	-	-	490.	0.6	2.6	290.
4	754.6	19.1	19.	31.	50.	290.	0.6	3.2	170.
F-4	755.3	19.1	22.	-	-	320.	0.3	3.5	100.
5	757.2	16.2	24.	44.	68.	300.	0.8	4.3	240.
F-5	758.3	17.3	34.	-	-	460.	0.8	5.1	370.
6	760.7	22.6	37.	27.	64.	650.	1.3	6.4	840.
7	762.4	19.1	44.	31.	75.	650.	1.8	8.2	1170.
8	764.4	19.1	31.	38.	69.	460.	1.0	9.2	460.
F-8	765.1	21.2	44.	-	-	730.	0.9	10.1	660.
9	766.1	18.5	53.	33.	86.	760.	0.8	10.9	610.
F-9	766.8	18.5	31.	-	-	440.	0.5	11.4	220.
10	767.7	16.5	54.	43.	97.	700.	1.2	12.6	840.
F-10	768.7	19.0	41.	-	-	610.	0.8	13.4	490.
11	770.0	18.5	52.	32.	84.	750.	2.4	15.8	1800.

SUMMARY

DEPTH FEET		FEET OF SAND	AVG. POROSITY	AVG. OIL SAT.	AVG. WATER SAT.	AVG. OIL CONTENT BBL./A. FT.	TOTAL OIL CONTENT BBL./ACRE
FROM	TO						
748.4	759.0	5.1	17.3	24.	44.	329.	1680.
760.3	768.2	7.5	19.4	42.	34.	640.	4800.
768.2	771.4	3.2	18.6	50.	32.	715.	2290.

# GEOLOGIC STANDARDS COMPANY

## RESULTS OF PERMEABILITY TESTS

COMPANY M. W. Shriver

WELL Miller "B", Well W-12

Sample No.	Depth Feet	Permeability Millidarcys	FEET OF SAND		Capacity Ft. X Md.	Sample No.	Depth Feet	Permeability Millidarcys	FEET OF SAND		Capacity Ft. X Md.
			Ft.	Cum. Ft.					Ft.	Cum. Ft.	
1	745.3	1.3	0.3*		0.4						
2	746.3	2.1	0.2*		0.4						
3	747.6	7.7	0.2*		1.5						
4	748.9	7.9	0.8	0.8	0.3						
5	750.0	30.	0.7	1.5	21.						
6	751.6	cracked									
7	752.2	1.8	0.5	2.0	0.9						
8	753.0	34.	0.6	2.6	20.						
9	754.8	61.	0.6	3.2	37.						
10	755.3	8.4	0.3	3.5	2.5						
11	756.3	0.7	0.5*		0.4						
12	757.0	9.7	0.8	4.3	7.8						
13	758.2	3.2	0.5	4.8	1.6						
14	758.9	4.7	0.3	5.1	1.4						
15	759.4	1.5	0.1*		0.2						
16	760.4	14.	0.1	5.2	1.4						
17	761.1	260.	0.6	5.8	156.						
18	761.6	63.	0.6	6.4	38.						
19	762.2	31.	0.7	7.1	22.						
20	762.9	40.	0.5	7.6	20.						
21	763.4	15.	0.6	8.2	9.0						
22	763.9	98.	0.4	8.6	39.						
23	764.6	50.	0.6	9.2	30.						
24	765.1	75.	0.5	9.7	38.						
25	765.6	62.	0.4	10.1	25.						
26	766.4	20.	0.8	10.9	16.						
27	766.9	83.	0.5	11.4	42.						
28	767.3	Cracked									
29	767.7	8.0	1.2	12.6	9.6						
30	768.3	50.	0.4	13.0	20.						
31	768.8	47.	0.4	13.4	19.						
32	769.3	26.	0.5	13.9	13.						
33	769.7	31.	0.5	14.4	15.						
34	770.3	21.	0.5	14.9	10.						
35	770.7	0.7	0.5	15.4	0.4						
36	771.1	1.1	0.4	15.8	0.4						

\*Not included in cumulative feet of sand.

### SUMMARY

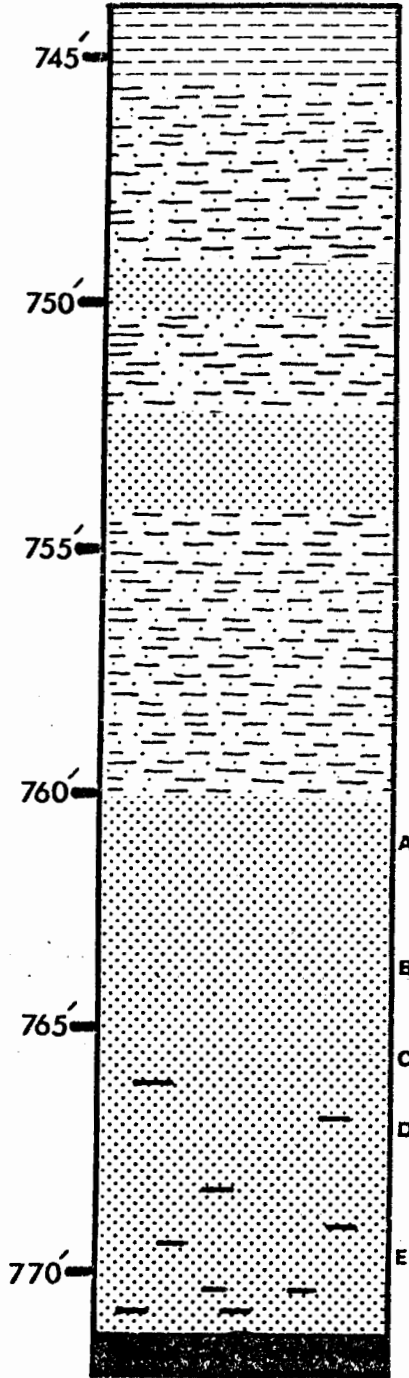
FROM	DEPTH FEET TO	FEET OF SAND	AVERAGE PERMEABILITY	CAPACITY FT. X MD.
748.4	759.0	5.1	19.	98.5
760.3	768.2	7.5	59.	446.0
768.2	771.4	3.2	24.	77.8

Richard Eng. W-12-Miller "B"

SW SE SW 29-22-21 E

elev. 1032'

Depths:



Gy. sh. w/sid. nod's.

Par.-lam. brn. sltst. & gy. sh.

Brn. oily fn.-gr. ss.

Par.-lam. brn. sltst., ss. & gy. sh.

Mas. brn. oily ss.

Par.-lam. lt.-gy. sltst. & gy. sh.

Mas. brn. oily ss.; some lo-ang. (10-15°) x-bed. near top of sd.; dkr. & more carb. & mica. near base; thin section samples labeled (A-E)

Coal w/abdt. fibrous plant mat.

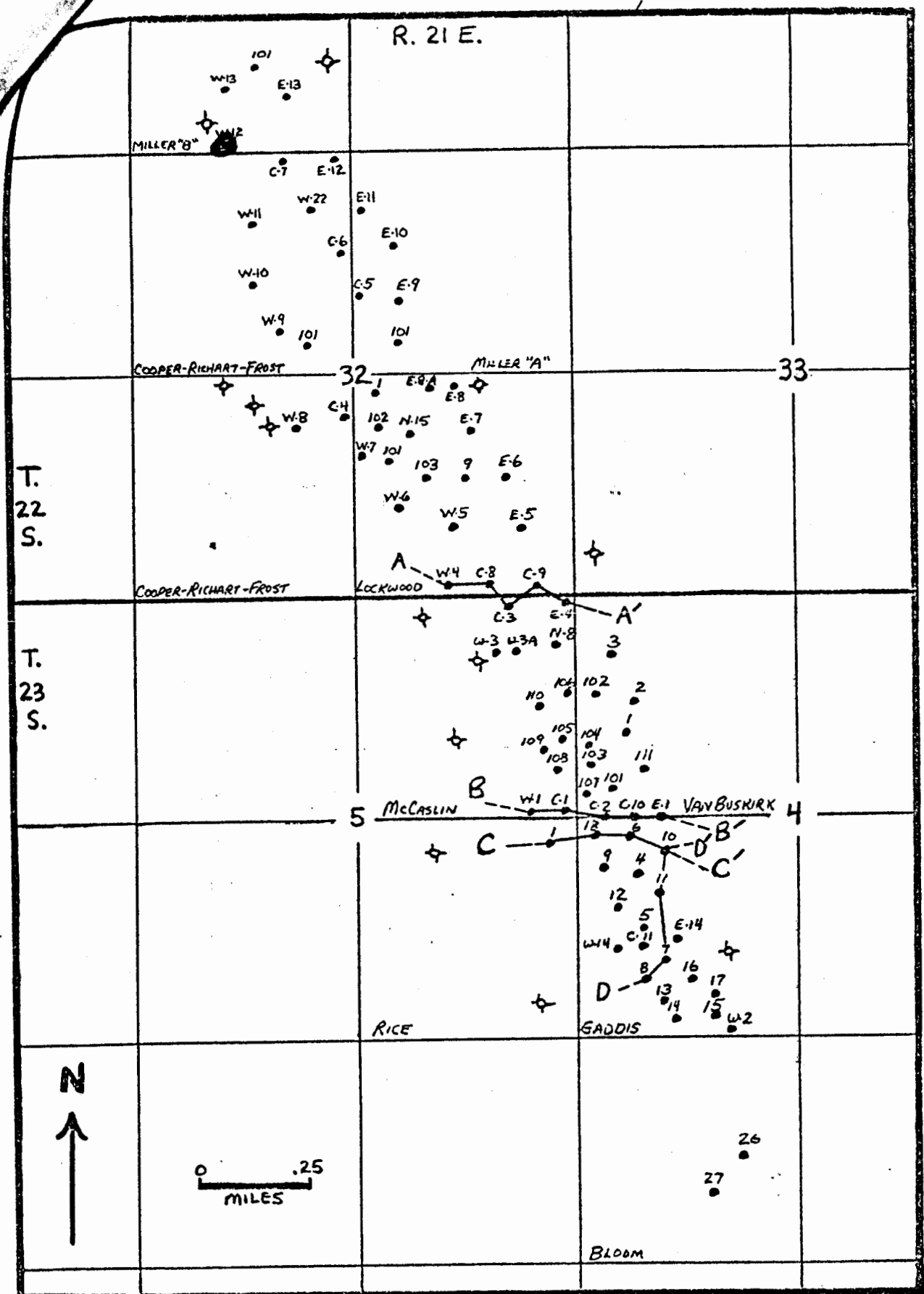


Figure 6. - Map of the Kincaid Oil Field showing leases, locations of wells, and lines of cross sections.

EARLOUGHER ENGINEERING  
CORE SUMMARY

Company M. W. Shriver Lease Miller "B" Well No. W-12  
 Location 20 feet N., 1220 feet W. of center of south line.  
 Section 29 Twp. 22-S., Rge. 21-E., County Anderson State Kansas  
 Formation Cored Bartlesville Sand Type Core Rotary, two-inch.  
 Date Cored 4-29-46 Date Shot \_\_\_\_\_ Date Completed \_\_\_\_\_

Depths:

Elevation	1031.9 ft.
Started coring, sandy shale	743.9 "
Top of probable gas sand	748.4 "
Bottom of probable gas sand	759.0 "
Net feet of probable gas sand	5.1 "
Top of oil pay	760.3 "
Bottom of oil pay	768.2 "
Net feet of oil pay	7.5 "
Non-floodable sand (768.2 - 771.4 feet)	3.2 "
Coal	771.4 - 772.2 "
Bottom of core, shale	773.9 "
Total cored	30.0 "
Feet analyzed	17.1 "

Shot Record:

			Set Packer <u>758.0</u> Feet		
			Bottom of cement - <u>777.0 ft.</u>		
			Shell	Quarts	Total
<u>From</u>	<u>To</u>	<u>Feet</u>	<u>Diameter</u>	<u>Per Foot</u>	<u>Quarts</u>
<u>762.</u>	<u>767.</u>	<u>5.</u>	<u>3 "</u>	<u>3.9</u>	<u>19.5</u>
<u>Bottom of hole - 770.0 ft.</u>					

Completion Data:

Hrs. well stood after coring --; Feet Fluid in Hole -- (Oil -- Water --)  
 Clean-out time, hrs. 36; Initial production, bbls. day 2.9 (Oil 2.3 Water 0.6)

Remarks: Coring was commenced in sandy shale at 743.9 feet and the core showed a few thin sand streaks which bled a black, sticky oil down to 748.4 feet. Between 748.4 and 759.0 feet there are 5.1 feet of probable gas sand in thin streaks throughout a shale and sand section. The oil pay section lies between 760.3 and 768.2 feet and grades into a non-floodable, micaceous and black sand section at the base of the sand body.

(Continued following page.)

PERMEABILITY The average permeability of the 7.5 feet of oil pay is 59 millidarcys. Individual values vary from 8.0 to 62 millidarcys with the exception of one high value of 260 millidarcys at the top of the oil pay section. Average permeability of the gas sand is 19 millidarcys, and of the non-floodable, micaceous sand, 24 millidarcys.

POROSITY Average porosity of the oil pay section is 19.4 percent and individual values range from 16.5 to 21.2 percent. The gas sand has an average porosity of 17.3 percent, and the non-floodable, micaceous sand, 18.6 percent.

PERCENT SATURATION The oil pay section has an average oil saturation of 42 percent and average water saturation of 34 percent. Total saturation is 76 percent which is somewhat higher than found in previous cores from edge locations. The gas sand has a relatively low average oil saturation of 24 percent and an average water saturation of 44 percent. Average oil saturation of the non-floodable, micaceous sand is 50 percent, and average water saturation 32 percent.

OIL CONTENT The average oil content of the oil pay section is 640 barrels per acre foot and values range from 440 to 760 barrels per acre foot. Average oil content of the gas sand is 329 barrels per acre foot, and of the non-floodable, micaceous sand, 715 barrels per acre foot.

LABORATORY FLOOD POT TESTS Results of flood tests in the gas sand section indicated small amounts of recoverable oil still in place. However, the permeability to water was fairly high and it is believed that this sand might act as a thief sand if left open in the hole.

Oil recoveries from the oil pay section varied from 60 to 250 barrels per acre foot, but considerable volumes of water were required to effect this

recovery. Total oil recovery indicated by these flood pot tests is 1,275 barrels per acre. Residual oil saturation varied from 26 to 40 percent and averaged 31 percent.

The non-floodable, micaceous sand at the base of the section yielded practically no oil in these flood tests, and relative permeability to water was low.

CONCLUSIONS

1. This core shows 7.5 net feet of oil pay.
2. Although the total liquid saturation of the pay sand of 76 percent is somewhat higher than found in cores from other edge wells, it is probably still indicative of loss of oil from the core by gas expansion.
3. Estimated oil recovery by water flooding from the area of which this core is representative is approximately 2,900 barrels per acre.

Respectfully submitted

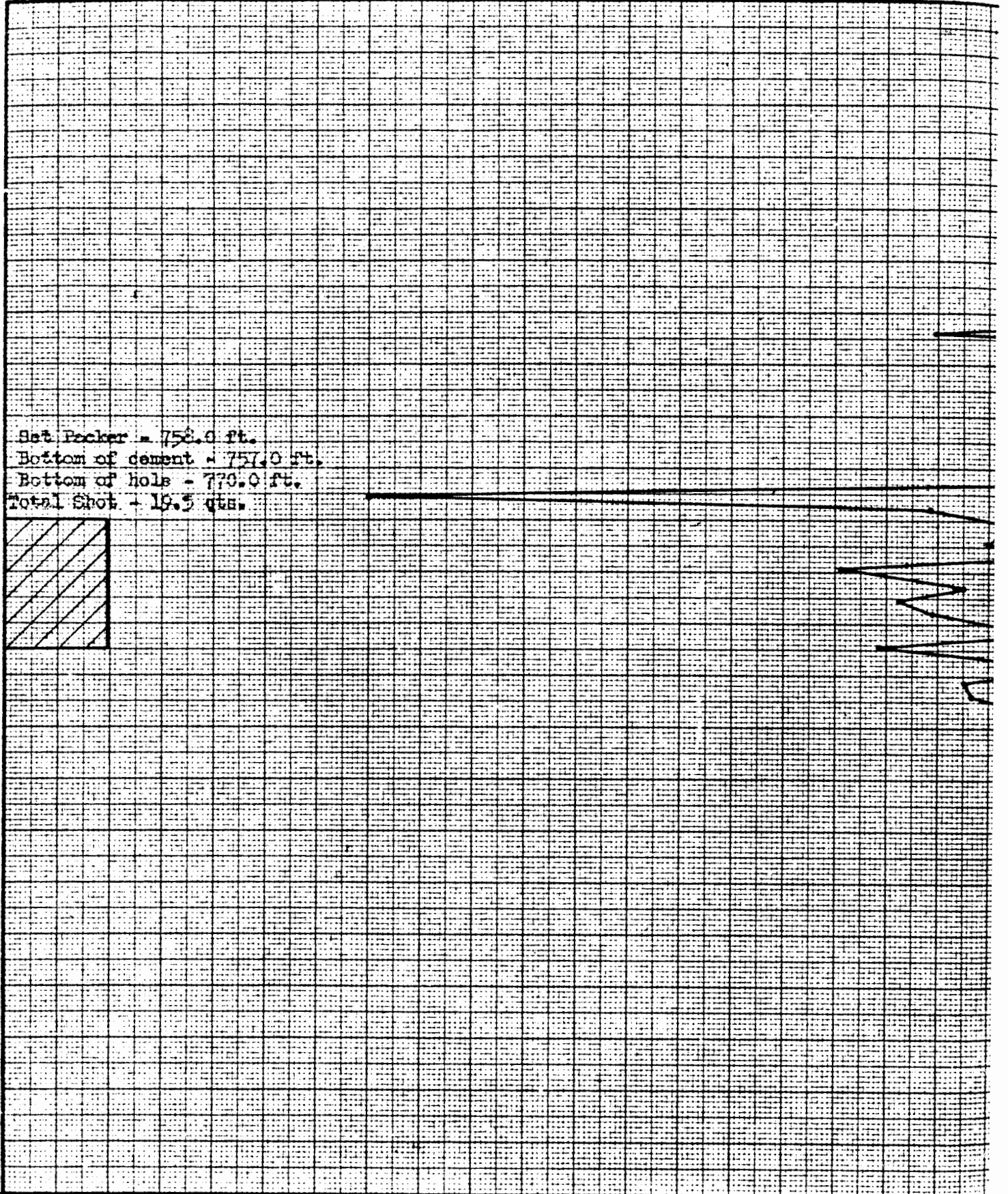
EARLOUGHER ENGINEERING



R. C. Earlougher, Engineer

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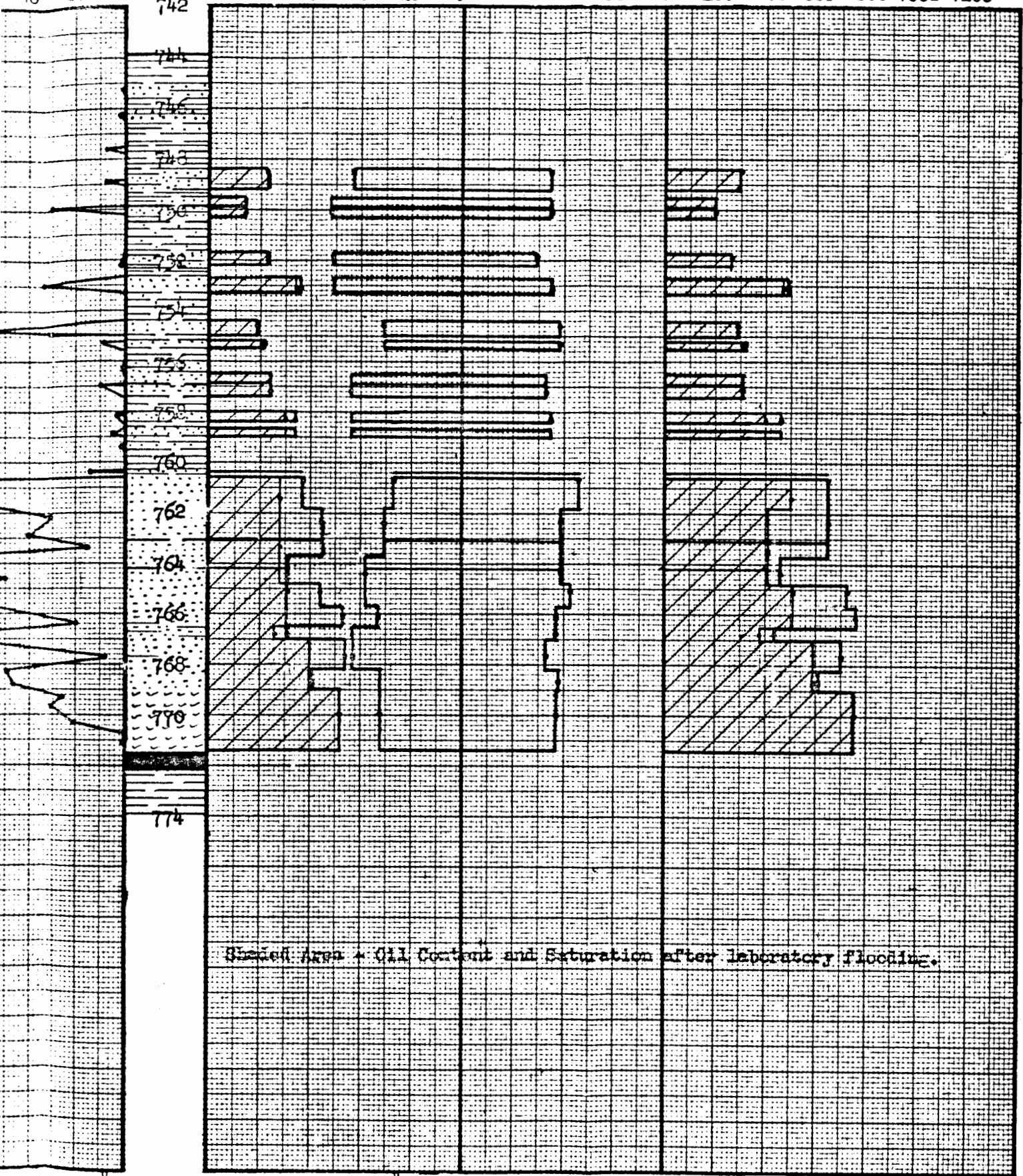


Set Packer = 758.0 ft.  
 Bottom of cement = 757.0 ft.  
 Bottom of hole = 770.0 ft.  
 Total Shot = 19.5 qts.

Sec.	Sand	Depth, Feet		Net Ft. of Sand	Avg. Por.	Average Core Sat.		Core Oil Content		Perme. Avg. Mds.
		From	To			Oil	Water	Avg. B./A.Ft.	Total Bbl./Ac.	
1	Bartlesville	748.4	759.0	5.1	17.3	24.	44.	329.	1680.	19.
2	Bartlesville	760.3	768.2	7.5	19.4	42.	34.	640.	4800.	59.
3	Bartlesville	768.2	771.4	3.2	18.6	50.	32.	715.	2290.	24.

Fm. Log 742

80 60 40 20 0 ← Percent Water Sat.  
 0 20 40 60 80 0 Percent Oil Sat. →  
 10 20 30 0 200 400 600 800 1000 1200  
 Percent Porosity Oil Content, Bbls./A.Ft.



Shaded Area - Oil Content and Saturation after laboratory flooding.

Permeability Capacity Ft. x Md.	Flood Pot Residuals			
	Saturation		Oil Content	
	Oil	Water	B./A.Ft.	Bbl./Ac.
98.5	26.	65.	353.	1800.
446.0	30.6	68.	460.	3570.
77.8	51.	48.	730.	2340.

COMPANY M. W. SHRIVER  
 LEASE MILLER 'B' WELL NO. W-12  
 LOCATION 20 ft. N, 1220 ft. W. of cen of S line  
SEC. 29 T. 28S. R. 21E COUNTY Anderson  
 STATE Kansas DATE 5-7-46

FARLOUGHER ENGINEERING TULSA OKLAHOMA