

MILLER TESTING COMPANY

Box 547

GREAT BEND, KANSAS

Company CITIES SERVICE OIL COMPANY

Lease and Well No. MOORE #B-5

County NESS State KANSAS Date 6-28-65

Formation Test No. 1 Total Depth 4395

Interval Tested 4385 To 4395 Anchor Length 10'

Size Hole 7 7/8 Size Drill Pipe 4 1/2 ACME Size Packer 6 3/4

Mud Weight 10.2 Viscosity 52 Bottom Hole Temp. 118 ° F

Chokes: Top 1/2 Bottom 1/2 Ticket No. 7371

RECOVERY

FAIR BLOW THROUGHOUT TEST

300' GAS IN PIPE
180' FREE OIL
165' MUDDY OIL

Lease and Well No. MOORE #B-5 30 198 21W

Formation Test No. 1

COMPANY CITIES SERVICE OIL COMPANY DATE 6-28-65

LEASE MOORE WELL NO. B-5 TEST NO. 1 TICKET NO. 7371

	TIME	PSI
INITIAL HYDRO MUD PRESSURE	----	2394
INITIAL CLOSED IN PRESSURE	30 MINS	1342
INITIAL FLOW	----	29
FINAL FLOW	90 MINS	140
FINAL CLOSED IN PRESSURE	30 MINS	1306
FINAL HYDRO MUD PRESSURE	----	2356

TOTAL DEPTH 4395

PACKER DEPTH 4385

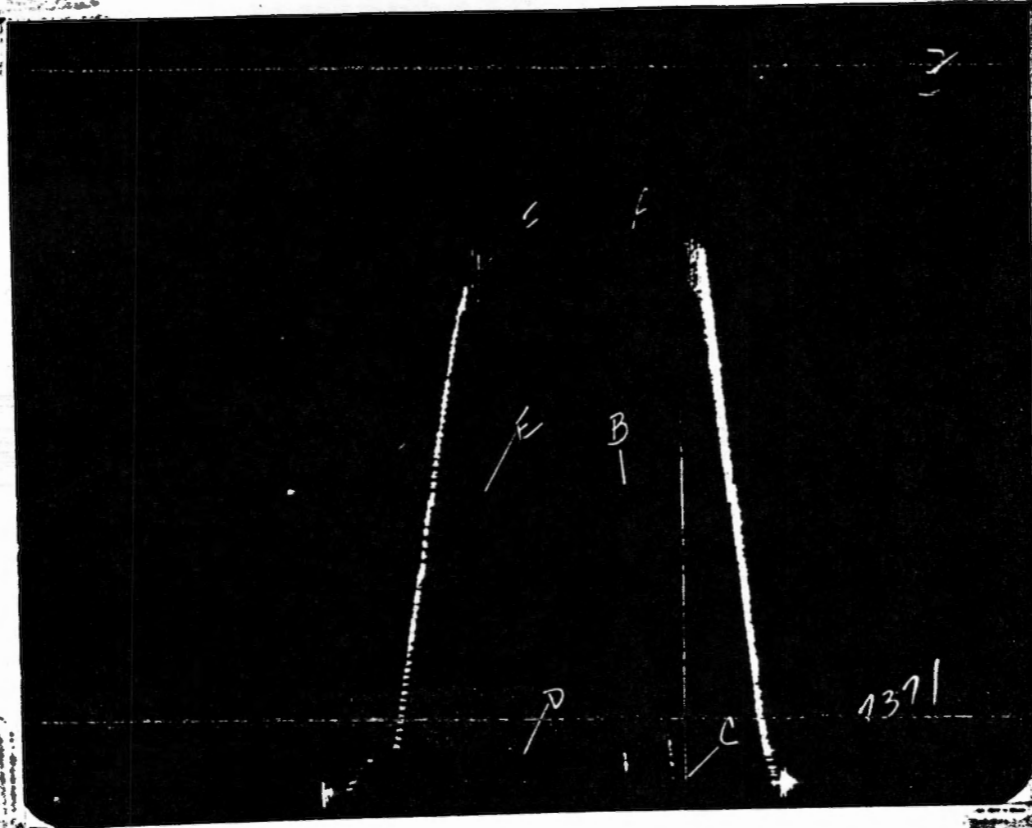
BT. NO. 2162 DEPTH 4390

	1ST FLOW PRESSURE		INITIAL CIP		2ND FLOW PRESSURE		FINAL CIP	
	TIME DEFL. .000"	PSI TEMP. CORR.	TIME DEFL. .000"	PSI TEMP. CORR.	TIME DEFL. .000"	PSI TEMP. CORR.	TIME DEFL. .000"	PSI TEMP. CORR.
P0	.000	.29	.000	40	.000	60	.000	140
P1	.042	31	^{.167} .042	^{3.98} 1150	.083	60	^{.792} .042	^{18.8} 1081
P2	.083	35	^{.204} .083	^{2.49} 1287	.167	69	^{.734} .083	^{9.92} 1223
P3	.125	40	^{.251} .125	^{1.99} 1320	.250	78	^{.876} .125	^{6.95} 1266
P4			^{.293} .168	^{1.74} 1330	.333	92	^{.917} .168	^{5.46} 1284
P5			^{.335} .200	^{1.59} 1341	.417	104	^{.960} .200	^{4.57} 1297
P6			^{.377} .250	^{1.50} 1342	.500	116	^{1.002} .250	^{3.97} 1306
P7					.583	130		
P8					.625	140		
P9								
P10								
	5	MINUTE INTERVAL	5	MINUTE INTERVAL	10	MINUTE INTERVAL	5	MINUTE INTERVAL

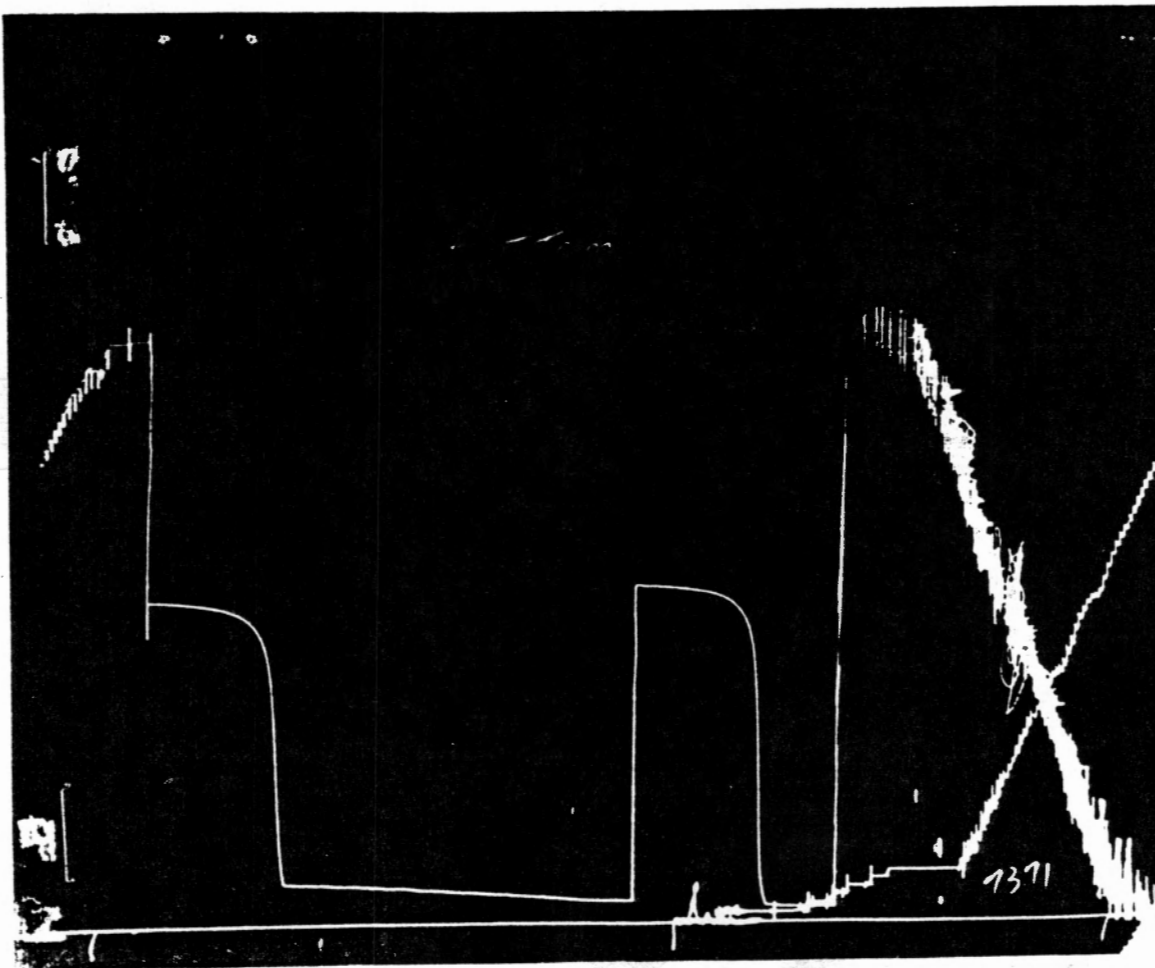
REMARKS P1 on second flow pressure is a five minute reading

SPECIAL PRESSURE DATA

Pressure: Each Square _____ psi



Tool Open: 1st Flow _____ hr. 15 mins: 2nd Flow 1 hr. 15 mins: Shut-in: Initial _____ hr. 30 mins: Final _____ hr. 30 mins



ed Reading

- 2394
- 342
- 29
- 40
- 306
- 2356

WELLER TESTING COMPANY

Box 547

GREAT BEND, KANSAS

Company CITIES SERVICE OIL COMPANY

Lease and Well No. MOORE #B-5

County NESS State KANSAS Date 6-29-65

Formation Test No.	<u>2</u>	Total Depth	<u>4405</u>		
Interval Tested	<u>4395</u>	To	<u>4405</u>	Anchor Length	<u>10'</u>
Size Hole	<u>7 7/8</u>	Size Drill Pipe	<u>4 1/2 ACME</u>	Size Packer	<u>6 3/4</u>
Mud Weight	<u>10.2</u>	Viscosity	<u>52</u>	Bottom Hole Temp.	<u>8.4 118</u> ° F
Chokes: Top	<u>1/2</u>	Bottom	<u>1/2</u>	Ticket No.	<u>7372</u>

RECOVERY

GOOD BLOW THROUGHOUT TEST

360' GAS IN PIPE
266' FREE OIL
240' MUDDY OIL

Lease and Well No. MOORE #B-5 30 19S 21W

Formation Test No. 2

COMPANY CITIES SERVICE OIL COMPANY DATE 6-29-65

LEASE MOORE WELL NO. B-5 TEST NO. 2 TICKET NO. 7372

	TIME	PSI
INITIAL HYDRO MUD PRESSURE	----	2435
INITIAL CLOSED IN PRESSURE	30 MINS	1351
INITIAL FLOW	- - - -	35
FINAL FLOW	60 MINS	199
FINAL CLOSED IN PRESSURE	30 MINS	1325
FINAL HYDRO MUD PRESSURE	----	2391

TOTAL DEPTH 4405

PACKER DEPTH 4395

BT. NO. 2162 DEPTH 4400

	1ST FLOW PRESSURE		INITIAL CIP		2ND FLOW PRESSURE		FINAL CIP	
	TIME DEFL. .000"	PSI TEMP. CORR.	TIME DEFL. .000"	PSI TEMP. CORR.	TIME DEFL. .000"	PSI TEMP. CORR.	TIME DEFL. .000"	PSI TEMP. CORR.
P0	.000	35	.000	69	.000	88	.000	199
P1	.042	36	^{16.7} .042	^{3.99} 1297	.042	92	^{6.42} .042	^{12.9} 1259
P2	.083	52	^{20.7} .083	^{5.14} 1323	.083	105	^{5.84} .083	^{6.93} 1284
P3	.125	69	^{25.1} .125	^{1.99} 1337	.125	121	^{2.26} .125	^{4.77} 1299
P4			^{19.3} .167	^{1.74} 1344	.167	133	^{1.67} .167	^{3.98} 1311
P5			^{23.4} .209	^{1.59} 1349	.209	149	^{1.10} .209	^{3.38} 1320
P6			^{27.7} .250	^{1.50} 1351	.250	163	^{1.57} .250	^{2.12} 1325
P7					.292	173		
P8					.333	185		
P9					.375	199		
P10								
	5	MINUTE INTERVAL	5	MINUTE INTERVAL	5	MINUTE INTERVAL	5	MINUTE INTERVAL

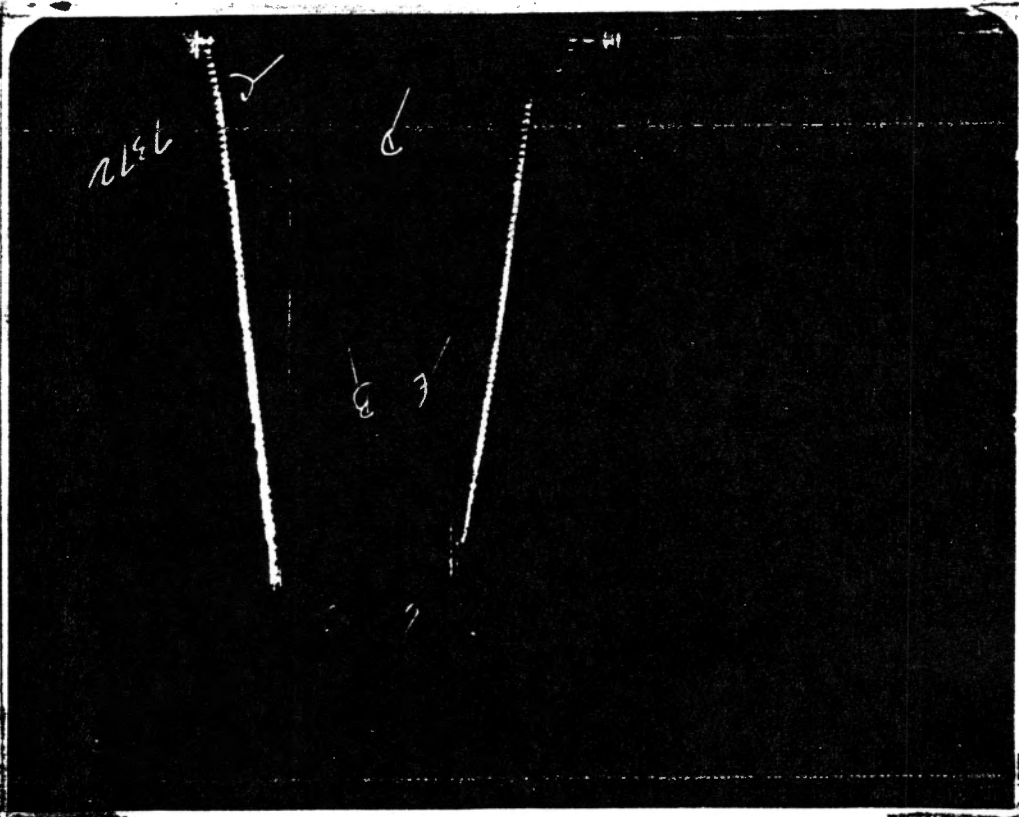
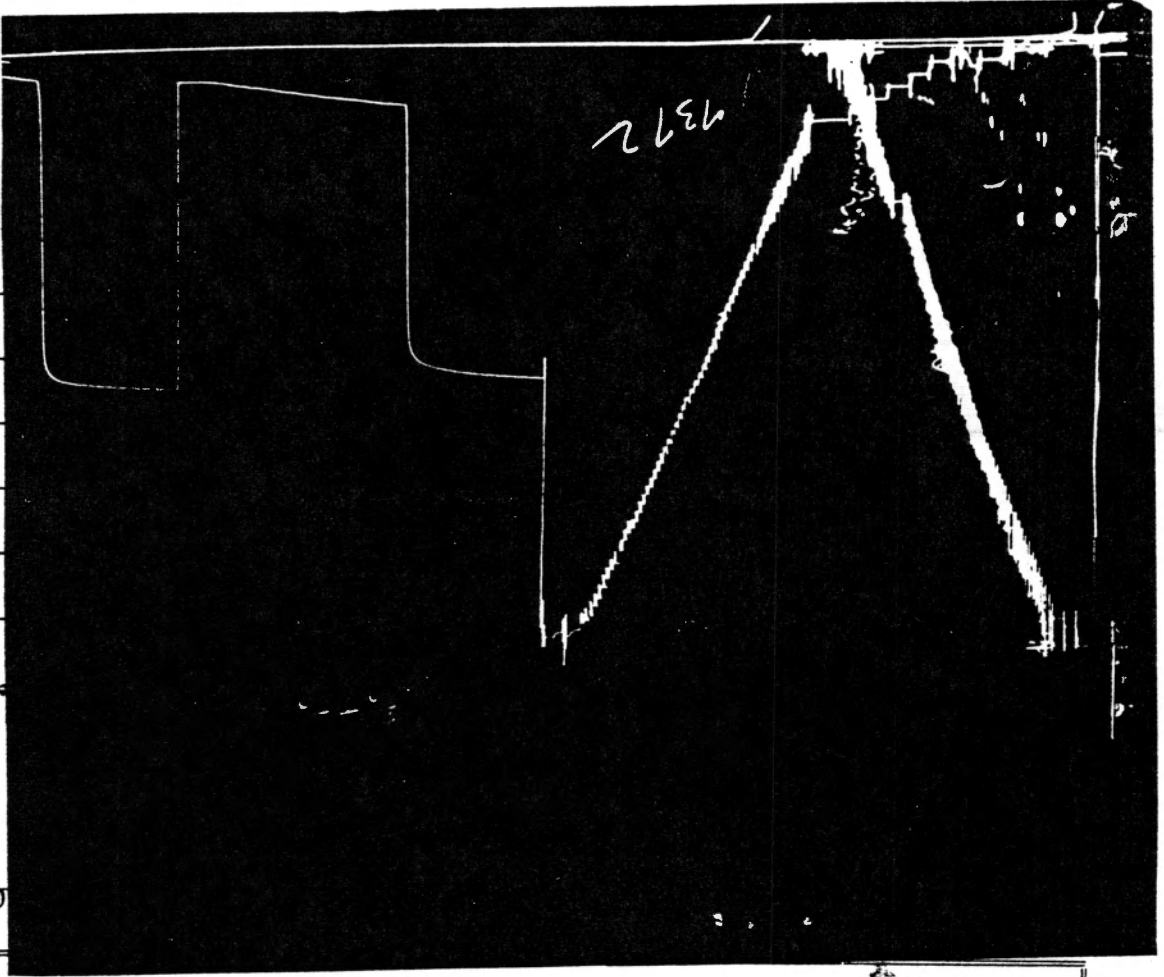
REMARKS _____

SPECIAL PRESSURE DATA

2391
 1325
 199
 35
 1351
 2435

Record Reading

0 mins: Final hr. 30 m:



Pressure: Each Square psi

DATE: 6-29-65
 FLEV. 2278
 G.D. - 4400

- (1) Q - PRODUCING RATE, BPD, 172
- (2) U - VISCOSITY, CENT, 3.0
- (3) B - FVF 1.2
- (4) M - SLOPE OF B-U CURVE, PSI/CYCLE 108
- (5) H - THICKNESS OF PRODUCING ZONE, FEET, 10
- (6) K - PERM., MD. = 162.5 Q U B / M H 79
- (7) P₁ - PRESSURE ON SLOPE @ 1 HOUR, PSI, 1343
- (8) P₂ - PRESSURE @ 1 SEC. = (P₁ - 3.56 M) 959
- (9) P_F - FLOWING PRESSURE, PSI, 163
- (10) 2.302(P₂ - P_F) / M 17.0
- (11) R_w - RADIUS OF DRILLED HOLE, INCHES, 3.94 $r_w^2 = 15.52$
- (12) F - POROSITY, FRACTION, (ESTIMATE)15
- (13) C - COMPRESS., VOL/VOL/PSI X 10⁶ 10
- (14) 2.30 LOG₁₀ { $\frac{10.5 K}{F C U R_w R_w}$ } + 0.8 +3.72
- (15) S - SKIN, DIMENSIONLESS, = [(10) - (14)] / 2 +6.87
- (16) ΔP_s - PRESS. DROP DUE TO SKIN = (.868 M S) +644
- (17) P_F^{*} - FLOWING PRESS. W/NO SKIN = (P_F + ΔP_s) +807
- (18) P_E - FINAL PRESSURE, PSI, 1375
- (19) (P_E - P₁) 32
- (20) ΔP̄ = 1.151(P_E - P₁) / M341
- (21) T̄ - DIMENSIONLESS TIME @ 1 HOUR (FIG.1)233
- (22) FR_E² = 264 K / U C T̄ 2990
- (23) (P_E - P_F^{*}) 568
- (24) LOG₁₀ R̄ = (23) / 2 M 2.63
- (25) R̄ - DRAINAGE RADIUS/RADIUS DRILLED HOLE 430
- (26) R_E - DRAINAGE RADIUS, FT. = (25) x r_w / 12 141 $R_e^2 = 19930$
- (27) F - POROSITY, FRACTION, = (22) / (25) (26)180
- (28) PI - PRODUCTIVITY INDEX = Q / (P_E - P_F)12 $Q_{max} = 166 \text{ B/D}$
- (29) PI* - PI W/NO SKIN = Q / (P_E - P_F^{*})257 $Q_{max} = 354 \text{ B/D}$
- (30) E - COMPLETION EFFICIENCY = 100 X (28) / (29) _____

FIELD SCHIBBEL WELL WARRICK "B" #5
 FORMATION MISS. (OSWEE) PRODUCING INTERVAL 4395-4405'
 PRESSURE BUILDUP CALCULATIONS

DATE: 6-28-65
 ELEV. _____
 G.D. 4390

- (1) Q - PRODUCING RATE, BPD, 67
- (2) U - VISCOSITY, CENT, 3.0
- (3) B - FVF 1.20
- (4) M - SLOPE OF B-U CURVE, PSI/CYCLE 121
- (5) H - THICKNESS OF PRODUCING ZONE, FEET, 10
- (6) K - PERM., MD. = $162.5 Q U B / M H$ 30.0
- (7) P_1 - PRESSURE ON SLOPE @ 1 HOUR, PSI, 1330
- (8) P_2 - PRESSURE @ 1 SEC. = $(P_1 - 3.56 M)$ 864
- (9) P_F - FLOWING PRESSURE, PSI, 116
- (10) $2.302(P_2 - P_F) / M$ 13.12
- (11) R_w - RADIUS OF DRILLED HOLE, INCHES, 3.94 $R_w^2 = 15.52$
- (12) F - POROSITY, FRACTION, (ESTIMATE)15
- (13) C - COMPRESS., VOL/VOL/PSI X 10^6 10
- (14) $2.30 \log_{10} \left\{ \frac{10.5 K}{F C U R_w R_w} \right\} + 0.8$ 12.304
- (15) S - SKIN, DIMENSIONLESS, = $\frac{[(10) - (14)]}{2}$ +5.41
- (16) ΔP_s - PRESS. DROP DUE TO SKIN = $(.868 M S)$ +615
- (17) P_F^* - FLOWING PRESS. W/NO SKIN = $(P_F + \Delta P_s)$ 731
- (18) P_E - FINAL PRESSURE, PSI, 1382
- (19) $(P_E - P_1)$ 52
- (20) $\Delta \bar{P} = 1.151(P_E - P_1) / M$ 456
- (21) \bar{T} - DIMENSIONLESS TIME @ 1 HOUR (FIG.1)183
- (22) $FR_E^2 = 264 K / U C \bar{T}$ 1443
- (23) $(P_E - P_F^*)$ 651
- (24) $\log_{10} \bar{R} = (23) / 2 M$ 2.49
- (25) \bar{R} - DRAINAGE RADIUS/RADIUS DRILLED HOLE 310
- (26) R_E - DRAINAGE RADIUS, FT. = $(25) \times R_w / 12$ 102 $R_E^2 = 10320$
- (27) F - POROSITY, FRACTION, = $(22) / (26)(26)$ 139
- (28) PI - PRODUCTIVITY INDEX = $Q / (P_E - P_F)$ 053 $C_{DPI} = 73.8/0$
- (29) $PI^* = PI$ W/NO SKIN = $Q / (P_E - P_F^*)$ 103 $C_{DPI} = 142.8/0$
- (30) E - COMPLETION EFFICIENCY = $100 \times (28) / (29)$ _____

FIELD SCARBOROUGH WELL MOORE "B" #5
 FORMATION MISS (OSAGE) PRODUCING INTERVAL 4385-4395'
 PRESSURE BUILDUP CALCULATIONS