

15-047-10008

19-265-18w

Flow Time	1st 10	Min.	2nd 100	Min.	Date	8-29-63	Ticket Number	404830		
Closed In Press. Time	1st 30	Min.	2nd 63	Min.	Kind of Job	Open hole test	Halliburton District	Pratt		
Pressure Readings	Field			Office Corrected			Tester	Mr. Cline	Witness	Mr. Hopkins
Depth Top Gauge	3314	Ft.	NO	Blanked Off	Drilling Contractor	Company tools				
BT. P.R.D. No.	1830		12	Hour Clock	Elevation	2197'	Top Packer	3307'		
Initial Hydro Mud Pressure	1848		1797		Total Depth	3346'	Bottom Packer	3312'		
Initial Closed in Pres.	1155		1163		Interval Tested	34'	Formation Tested	Tarkio Sand		
Initial Flow Pres.	-	1	160		Casing or Hole Size	7 7/8"	Casing Perfs.	Top	-	
	261	2	316					Bot.	-	
Final Flow Pres.	-	1	266		Surface Choke	1"	Bottom Choke	5/8"		
	391	2	405							
Final Closed in Pres.	1117		1123		Size & Kind Drill Pipe	4 1/2" FH	Drill Collars Above Tester	I.D. - LENGTH		
Final Hydro Mud Pressure	1773		1780		Mud Weight	10.2	Mud Viscosity	44		
Depth Cen. Gauge	3342	Ft.	YES	Blanked Off	Temperature	107	*F Est. Anchor Size & Length	ID	3.87"	
BT. P.R.D. No.	1831		12	Hour Clock	Depths Mea. From	Kelly Bushings	Depth of Tester Valve	3298'	Ft.	
Initial Hydro Mud Pres.	1845		1808		TYPE AMOUNT		Depth Back Pres. Valve	Ft.		
					Cushion	-		-	-	
Initial Closed in Pres.	1154		1164		Recovered	70	Feet of	Saltwater		
Initial Flow Pres.	-	1	196		Recovered	Feet of				
	279	2	315							
Final Flow Pres.	-	1	285		Recovered	Feet of				
	401	2	403							
Final Closed in Pres.	1117		1119		Recovered	Feet of				
Final Hydro Mud Pres.	1789		1785		Oil A.P.I. Gravity	-	Water Spec. Gravity	-		
Depth Bot. Gauge		Ft.		Blanked Off	Gas Gravity	-	Surface Pressure	62	psi	
BT. P.R.D. No.				Hour Clock	Tool Opened	3:19	A.M. P.M.	Tool Closed	6:42	A.M. P.M.
Initial Hydro Mud Pres.					Remarks					
Initial Closed in Pres.					Opened tool at 3:19 for 10 minute 1st flow with gas to surface in 2 minutes. Closed tool at 3:29 for 30 minute initial closed in pressure.					
Initial Flow Pres.		1			Reopened tool for 100 minute 2nd flow with gas gauged at 1020 MCF in 5 minutes, 2310 MCF in 20 minutes, 3000 MCF in 50 minutes and stabilized at 90 minutes with 3200 MCF. Closed tool at 5:39 for 63 minute final closed in pressure.					
		2								
Final Flow Pres.		1								
		2								
Final Closed in Pres.										
Final Hydro Mud Pres.										

BELCHER
 Lease Name
 SEC. 19 - 265 - 18W
 Well No.
 A-1
 1
 Test No.
 FIELD AREA
 WILD CAT
 County
 EDWARDS
 State
 KANSAS
 WICHITA
 Owner's District

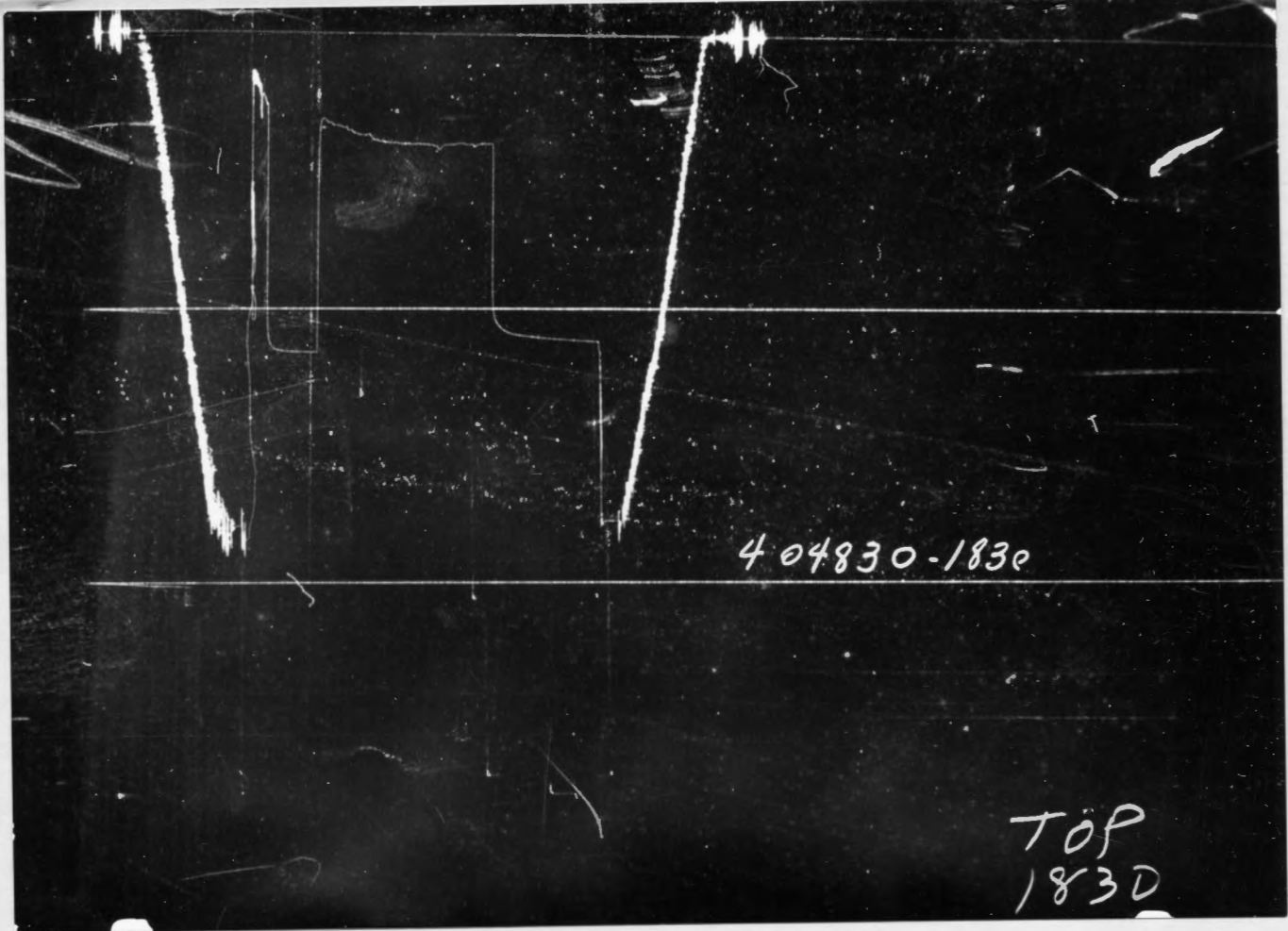
FORMATION TEST DATA

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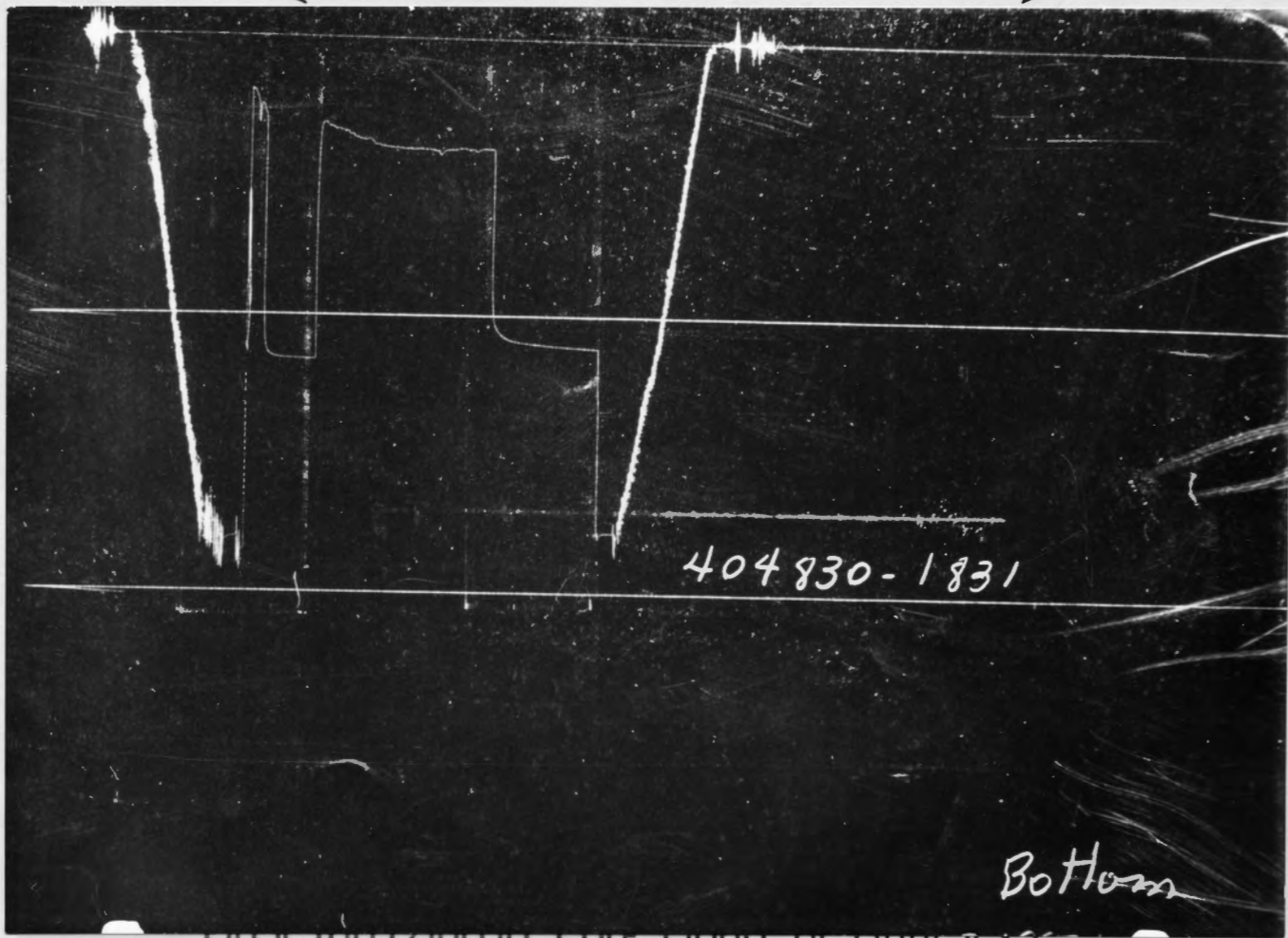
Gauge No. 1830		Depth 3314'			Clock 12 hour		Ticket No. 404830		
First Flow Period		Initial Closed In Pressure			Second Flow Period		Final Closed In Pressure		
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\phi}{\phi}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\phi}{\phi}$	PSIG Temp. Corr.
P ₀	.000 160	.000		266	.000	316	.000		405
P ₁	.057 266	.019		1149	.133	368	.042		1079
P ₂	PLUGGED	.038		1155	.266	402	.084		1096
P ₃		.057		1158	.399	407	.126		1103
P ₄		.076		1160	.532	403	.168		1107
P ₅		.095		1161	.665	405	.210		1111
P ₆		.114		1161			.252		1114
P ₇		.133		1162			.294		1117
P ₈		.152		1163			.336		1120
P ₉		.171		1163			.378		1121
P ₁₀		.190		1163			.420		1123
Gauge No. 1831		Depth 3342'			Clock 12 hour				
P ₀	.000 196	.000		285	.000	315	.000		403
P ₁	.056 285	.0201		1146	.133	368	.0419		1074
P ₂	PLUGGED	.0402		1155	.266	401	.0838		1093
P ₃		.0603		1159	.399	407	.1257		1099
P ₄		.0804		1161	.532	403	.1676		1103
P ₅		.1005		1162	.665	403	.2095		1107
P ₆		.1206		1162			.2514		1110
P ₇		.1407		1163			.2933		1113
P ₈		.1608		1164			.3352		1115
P ₉		.1809		1164			.3771		1116
P ₁₀		.2010		1164			.4190		1119
Reading Interval		3			20		6.3 Minutes		
REMARKS:									

SPECIAL PRESSURE DATA

PRESSURE



TIME



Each horizontal line equal to 1000 p.s.f.

Flow Time	1st 10	Min.	2nd 90	Min.	Date	9-7-63	Ticket Number	303553 S
Closed In Press. Time	1st 30	Min.	2nd 60	Min.	Kind of Job	Open Hole	Halliburton District	Pratt
Pressure Readings	Field		Office Corrected		Tester	J.E. Parks	Witness	
Depth Top Gauge	4668	Ft.	no	Blanked Off	Drilling Contractor	Company Tools		
BT. P.R.D. No.	1831		12	Hour Clock	Elevation	2197' DF	Top Packer	4678'
Initial Hydro Mud Pressure	2514		2507		Total Depth	4701'	Bottom Packer	4682'
Initial Closed in Pres.	1527		1524		Interval Tested	4682-4701'	Formation Tested	Mississippi
Initial Flow Pres.	46	1	78	Casing or Hole Size	7 7/8"	Casing Perfs. } Top	Bottom Choke	5/8"
		2	53					
Final Flow Pres.	28	1	52	Surface Choke	1"	Drill Collars Above Tester	I.D. - LENGTH	
		2	29					
Final Closed in Pres.	1452		1442		Size & Kind Drill Pipe	4 1/2" FH		
Final Hydro Mud Pressure	2495		2496		Mud Weight	10.2	Mud Viscosity	46
Depth Cen. Gauge		Ft.		Blanked Off	Temperature	116	*F Est. Anchor Size & Length	ID 3.72" x 19' OD 5"
BT. P.R.D. No.				Hour Clock	Depths Mea. From	KB	Depth of Tester Valve	Ft.
Initial Hydro Mud Pres.					TYPE AMOUNT		Depth Back Pres. Valve	4659 Ft.
Initial Closed in Pres.					Cushion			
Initial Flow Pres.					Recovered	30	Feet of	gas cut mud
Final Flow Pres.		1		Recovered			Feet of	
		2						
Final Closed in Pres.					Recovered		Feet of	
Final Hydro Mud Pres.					Oil A.P.I. Gravity		Water Spec. Gravity	
Depth Bot. Gauge	4697	Ft.	yes	Blanked Off	Gas Gravity		Surface Pressure	psi
BT. P.R.D. No.	1830		12	Hour Clock	Tool Opened	12:38-1:18 A.M. P.M.	Tool Closed	12:48-2:48 A.M. P.M.
Initial Hydro Mud Pres.	2523		2531		Remarks	On bottom at 12:35. Open at 12:38 with a		
Initial Closed in Pres.	1529		1534		good blow. Gas to surface at 12:43 - 244,000.			
Initial Flow Pres.	56	1	91	Closed at 12:48. Open 1:18 gas measured at	1:38 174,000. Closed 2:48. Start out at 3:48.			
		2	75					
Final Flow Pres.	37	1	64	Gas measured at 122,000.				
		2	38					
Final Closed in Pres.	1435		1449					
Final Hydro Mud Pres.	2514		2513					

Legal Location: Sec. - Twp. - Rng. C SW NE 19-26S-18W
 Lease Name: BELCHER
 Well No.: 1
 Test No.: 2
 Field Area:
 County: EDWARDS
 State: KANSAS
 Operator/Company Name: ATWARD DRILLING COMPANY
 Owner's District: KANSAS

FORMATION TEST DATA

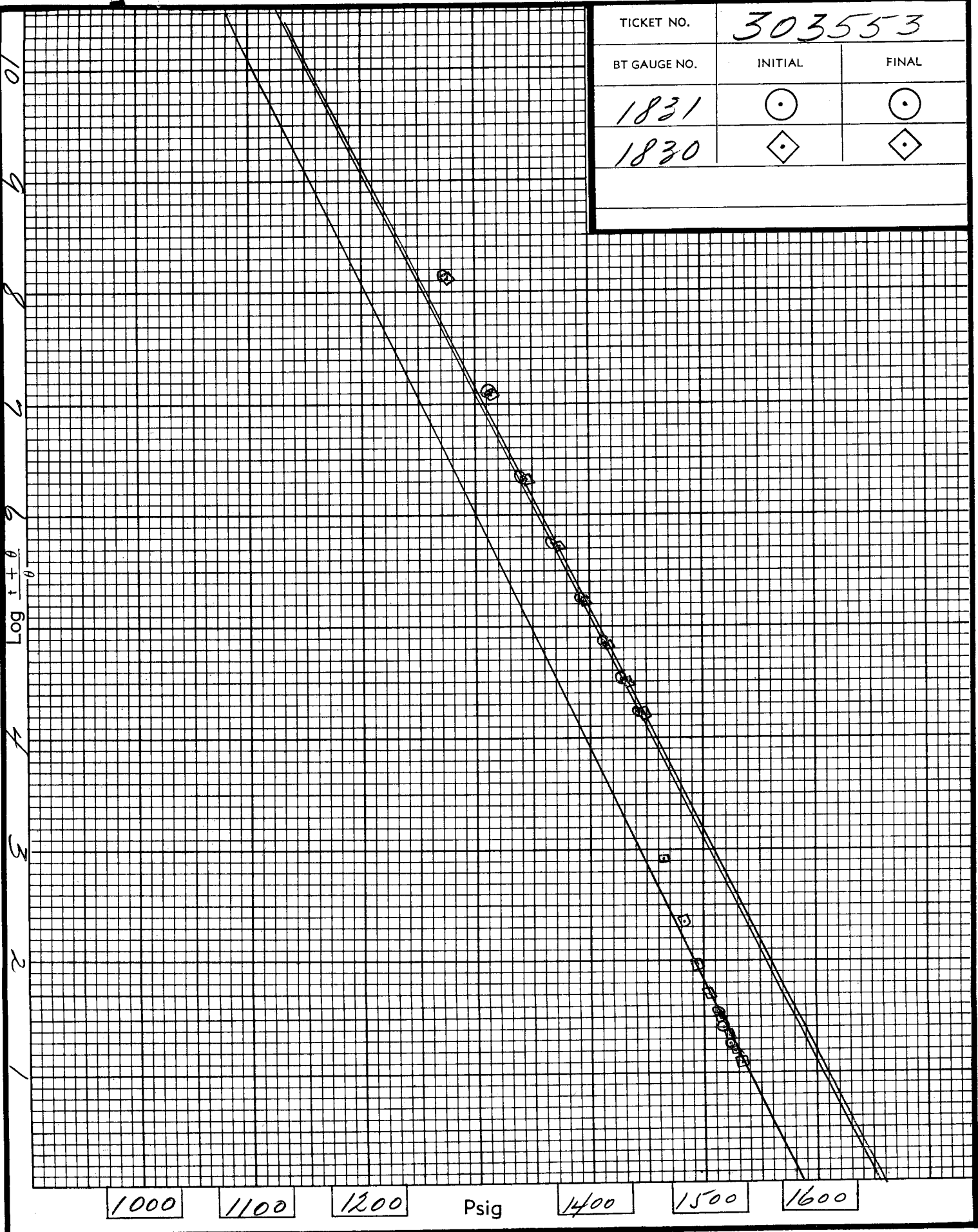
Gauge No. 1831		Depth 4668'		Clock 12 hour		Ticket No. 303553				
First Flow Period		Initial Closed In Pressure			Second Flow Period		Final Closed In Pressure			
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
P ₀	.000	78	.000	-	52	.000	53	.000	-	29
P ₁	.0114	62	.021	.6462	1422	.1008	38	.0409	12443	1174
P ₂	.0288	65	.042	.4336	1451	.2016	35	.0818	.9673	1230
P ₃	.0432	60	.063	.3309	1467	.3024	33	.1227	.8140	1274
P ₄	.0576	56	.084	.2688	1480	.4032	31	.1636	.7108	1311
P ₅	.0720	52	.105	.2267	1491	.5040	30	.2045	.6345	1342
P ₆			.126	.1962	1500	.605	29	.2454	.5750	1369
P ₇			.147	.1731	1507			.2863	.5269	1392
P ₈			.168	.1549	1513			.3272	.4870	1412
P ₉			.189	.1401	1519			.3681	.4531	1428
P ₁₀			.210	.1280	1524			.4090	.4241	1442

Gauge No. 1830		Depth 4697		Clock 12 hour						
P ₀	.000	91	.000	-	64	.000	75	.000	-	38
P ₁	.0122	75	.0212	.5885	1415	.0985	47	.0397	1.2411	1175
P ₂	.0244	76	.0424	.3871	1445	.1970	44	.0794	.9643	1232
P ₃	.0366	73	.0636	.2920	1465	.2955	42	.1191	.8112	1278
P ₄	.0488	68	.0848	.2353	1482	.3940	40	.1588	.7080	1314
P ₅	.0610	64	.1060	.1974	1495	.4925	39	.1985	.6319	1347
P ₆			.1272	.1701	1506	.5910	38	.2382	.5725	1374
P ₇			.1484	.1495	1515			.2779	.5245	1397
P ₈			.1696	.1334	1522			.3176	.4847	1417
P ₉			.1908	.1204	1528			.3573	.4509	1434
P ₁₀			.2120	.1098	1534			.3970	.4219	1449
Reading Interval 2		3			15		6 Minutes			

REMARKS:

SPECIAL PRESSURE DATA

TICKET NO.	303553	
BT GAUGE NO.	INITIAL	FINAL
1831	○	○
1830	◇	◇



EXTRAPOLATED PRESSURE GRAPH

Gas Production

B.T. Gauge Numbers		1831	1830	Ticket Number	9-7-63	303553	
Initial Hydrostatic		PRESSURE 2507	PRESSURE 2531	Elevation		2197 ft.	
Final Hydrostatic		2496	2513	Production	Initial	244 m cu. ft.	
1st Flow	Initial	Time -----	78	91	Rate	Final	122 m cu. ft.
	Final	10	52	64	Hole Size		7.87 in.
Initial Closed In Pressure		30	1524	1534	Footage Tested		19 ft.
2nd Flow	Initial	-----	53	75	Mud Weight		10.2 lbs. gal.
	Final	90	29	38	Gas Viscosity		.013 cp
Final Closed In Pressure		60	1442	1449	Gas Gravity		est. .65
Extrapolated Static Pressure	Initial		1585	1585	Gas Compressibility		.80
	Final		1655	1660	temp. est		110
Slope $P_{s2}/\text{cycle } P_{10}$	Initial		1105	1105			
	Final		1152	1155			

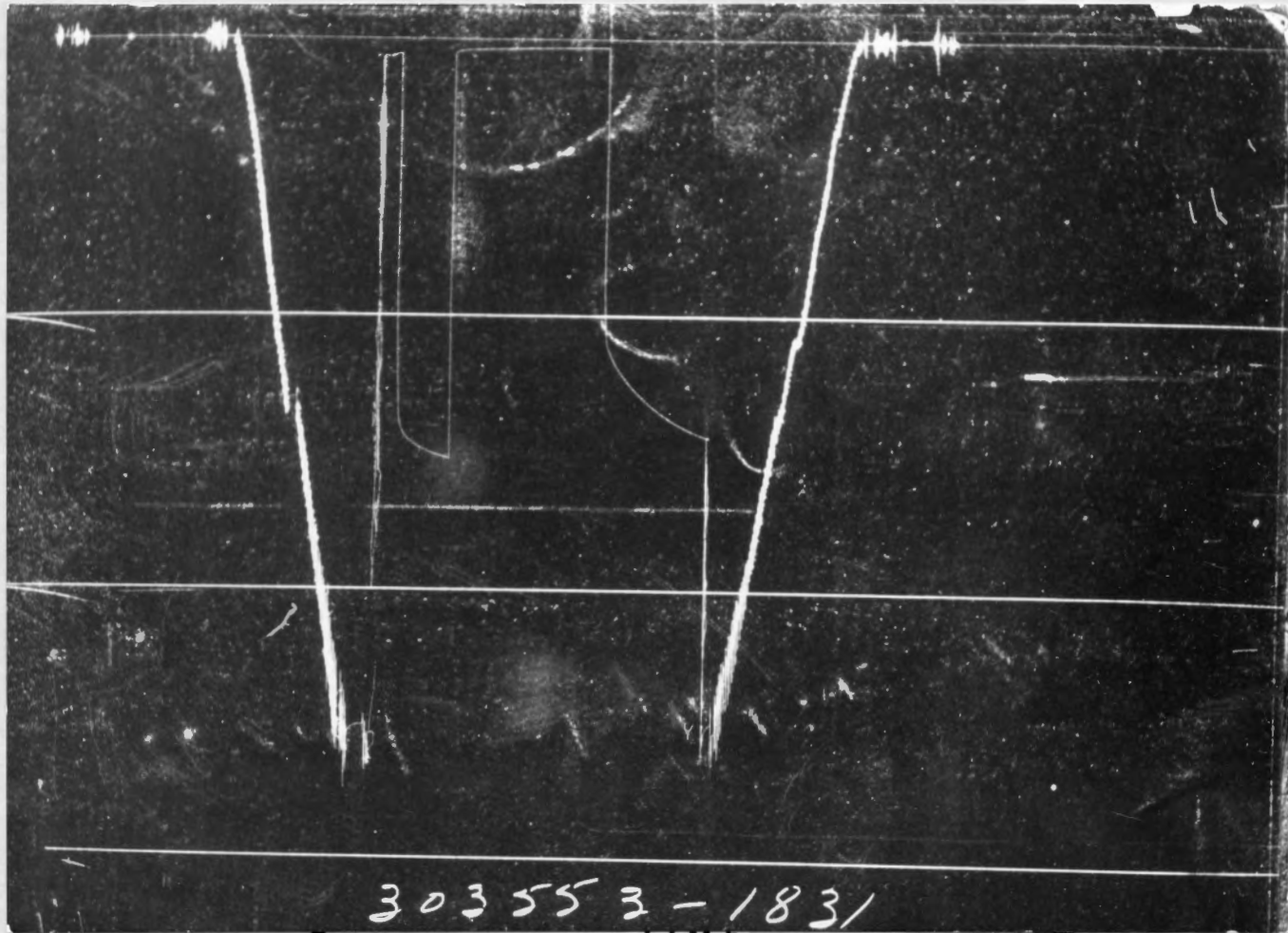
Remarks: _____

SUMMARY

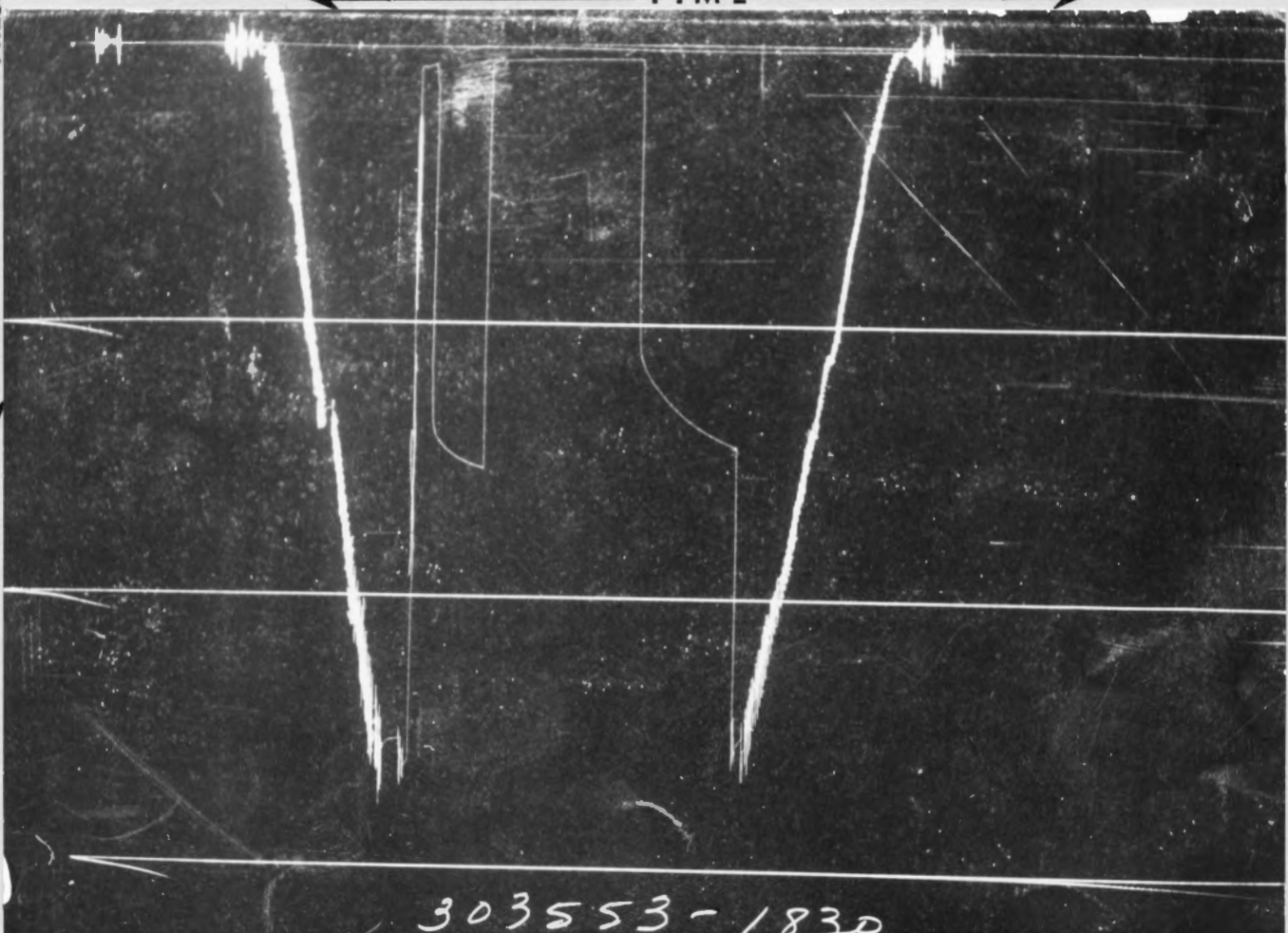
Product	Equation	BT Gauge Number Depth 1831 - 4668		BT Gauge Number Depth 1830 - 4697		Units
		Initial	Final	Initial	Final	
Transmissibility	$\frac{Kh}{\mu} = \frac{1637 Q_e ZT}{m}$	141	64.5	141	64	md. ft. cp
Theoretical Flow Capacity	$Kh = \frac{Kh}{\mu} \mu$	1.83	.838	1.83	.832	md. ft.
Average Effective Permeability	$K = \frac{Kh}{h}$ $K_1 = \frac{Kh}{h_1}$.096	.044	.096	.044	md.
Indicated Flow Capacity	$(Kh)_2 = \frac{3200 Q_e \mu ZT \text{ Log}(0.472 b/r_w)}{P_s^2 - P_r^2}$.518	.469	.519	.465	md. ft.
Damage Ratio	$DR = \frac{\text{Theo. Flow Cap}}{\text{Indicated Flow Cap}} \frac{Kh}{(Kh)_2}$	3.53	1.78	3.53	1.79	—
Indicated Flow Rate	$OF_1 = \frac{Q_e P_s^2}{P_s^2 - P_r^2}$ Max.	244	122	244	122	MCFD
	$OF_2 = \frac{Q_e P_s}{\sqrt{P_s^2 - P_r^2}}$ Min.	244	122	244	122	MCFD
Theoretical Potential Rate	$OF_3 = OF_1 DR$ Max. $OF_4 = OF_2 DR$ Min.	863	218	863	218	MCFD
Approx. Radius of Investigation	$b \approx \sqrt{Kt}$ or $\sqrt{Kt_0}$	1.31	2.42	1.31	2.42	ft.
	$b_1 \approx \sqrt{K_1 t}$ or $\sqrt{K_1 t_0}$	-	-	-	-	ft.
Potentiometric Surface *	$\text{Pot.} = (EI - GD) + (2.319 P_s)$	1204	1366	1175	1349	ft.

NOTICE: These calculations are based upon information furnished by you and taken from Drill Stem Test pressure charts, and are furnished you for your information. In furnishing such calculations and evaluations based thereon, Halliburton is merely expressing its opinion. You agree that Halliburton makes no warranty express or implied as to the accuracy of such calculations or opinions, and that Halliburton shall not be liable for any loss or damage, whether due to negligence or otherwise, in connection with such calculations and opinions.

INTERPRETATIONS AND CALCULATIONS



303553-1831



303553-1830

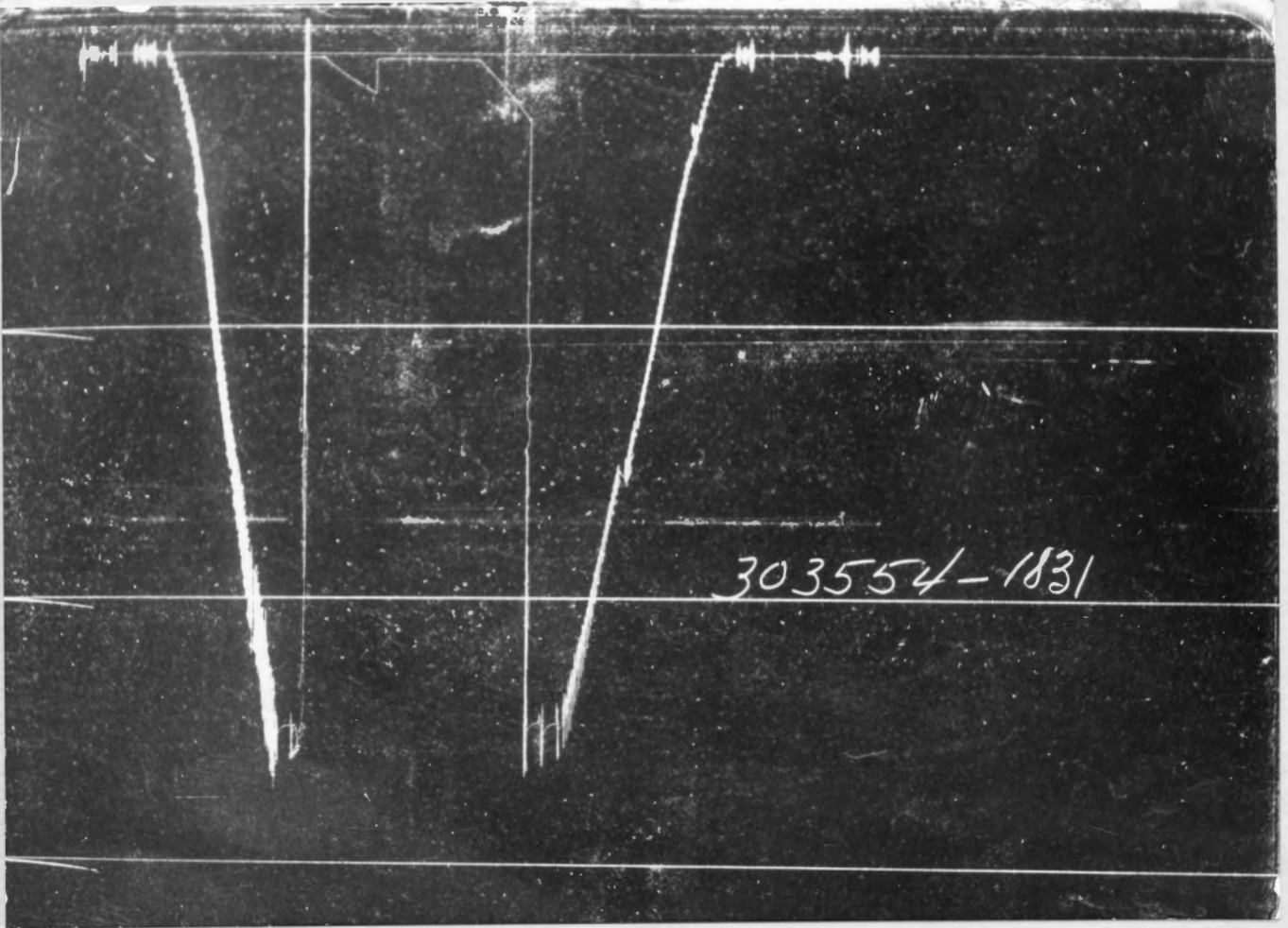
Each horizontal line equal to 1000 p.s.i.

Flow Time	1st 10 Min.	2nd 60 Min.	Date	9-8-63	Ticket Number	303554	Legal Location Sec. - Twp. - Rng.	C SW NE 19-26S-13W	Lease Name	1	Well No.	3	Test No.	Field Area	County	EDWARDS	State	KANSAS	Owner's District
Closed In Press. Time	1st 30 Min.	2nd 30 Min.	Kind of Job	Open Hole	Halliburton District	Pratt													
Pressure Readings	Field	Office Corrected	Tester	J.E. Parks	Witness														
Depth Top Gauge	4653 Ft.	no Blanked Off	Drilling Contractor	Company tool															
BT. P.R.D. No.	1831	12 Hour Clock	Elevation	2197' DF	Top Packer	4665'													
Initial Hydro Mud Pressure	2476	2475	Total Depth	4726'	Bottom Packer	4701'													
Initial Closed in Pres.	139	146	Interval Tested	4701-4726'	Formation Tested	Mississippi													
Initial Flow Pres.	19	1 15 2 19	Casing or Hole Size	7 7/8"	Casing Perfs. } Top Bot.														
Final Flow Pres.	19	1 15 2 23	Surface Choke	1"	Bottom Choke	5/8"													
Final Closed in Pres.	233	241	Size & Kind Drill Pipe	4 1/2" FH	Drill Collars Above Tester														
Final Hydro Mud Pressure	2467	2462	Mud Weight	10.2	Mud Viscosity	47													
Depth Cen. Gauge		Blanked Off	Temperature	116 °F Est. °F Actual	Anchor Size & Length	ID 3.72" OD 5" X 25'													
BT. P.R.D. No.		Hour Clock	Depths Meas. From	Kelly Bushing	Depth of Tester Valve														
Initial Hydro Mud Pres.			Cushion	TYPE AMOUNT	Depth Back Pres. Valve	4644													
Initial Closed in Pres.			Recovered	30 Feet of mud															
Initial Flow Pres.		1 2	Recovered	Feet of															
Final Flow Pres.		1 2	Recovered	Feet of															
Final Closed in Pres.			Recovered	Feet of															
Final Hydro Mud Pres.			Oil A.P.I. Gravity		Water Spec. Gravity														
Depth Bot. Gauge	4722 Ft.	yes Blanked Off	Gas Gravity		Surface Pressure	psi													
BT. P.R.D. No.	1830	12 Hour Clock	Tool Opened	6:45-7:25	A.M. Tool Closed	6:55-8:25	A.M. P.M.												
Initial Hydro Mud Pres.	2515	2518	Remarks	Open tool at 6:45 with a very weak blow.															
Initial Closed in Pres.	316	177		Closed at 6:55 for 30 mins. Reopen tool at															
Initial Flow Pres.	56	1 49 2 56		7:25. Closed at 8:25. Off bottom 8:55.															
Final Flow Pres.	56	1 49 2 60		No special reading adaptable.															
Final Closed in Pres.	402	275																	
Final Hydro Mud Pres.	2495	2505																	

FORMATION TEST DATA

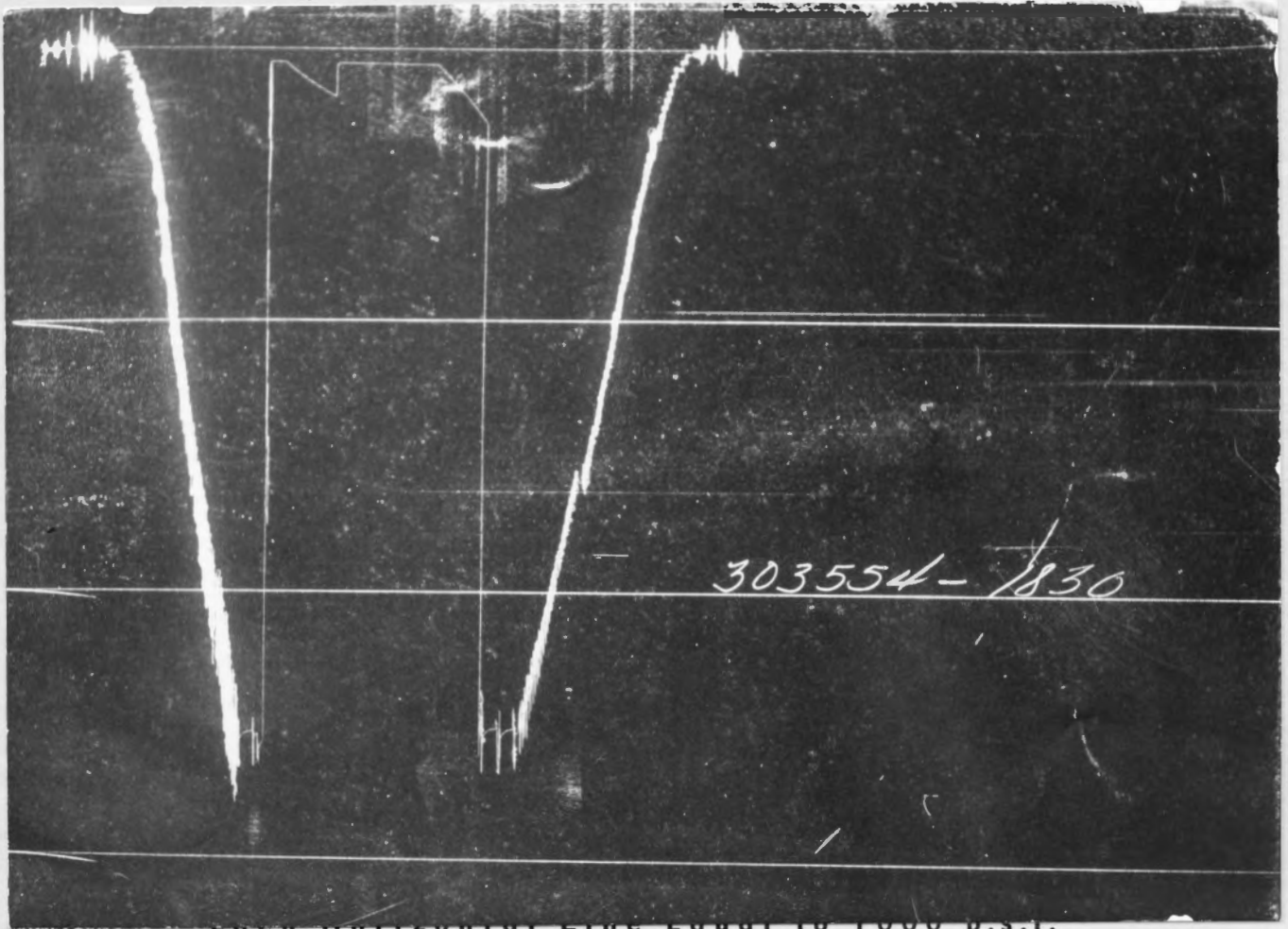
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PRESSURE



303554-1831

TIME



303554-1830

Each horizontal line equal to 1000 p.s.i.