

NOMENCLATURE

b	= Approximate Radius of Investigation	Feet
b¹	= Approximate Radius of Investigation (Net Pay Zone h¹)	Feet
D.R.	= Damage Ratio	—
EI	= Elevation	Feet
GD	= B.T. Gauge Depth (From Surface Reference)	Feet
h	= Interval Tested	Feet
h¹	= Net Pay Thickness	Feet
K	= Permeability	md
K¹	= Permeability (From Net Pay Zone h¹)	md
m	= Slope Extrapolated Pressure Plot (Psi²/cycle Gas)	psi/cycle
OF¹	= Maximum Indicated Flow Rate	MCF/D
OF²	= Minimum Indicated Flow Rate	MCF/D
OF³	= Theoretical Open Flow Potential with/Damage Removed Max.	MCF/D
OF⁴	= Theoretical Open Flow Potential with/Damage Removed Min.	MCF/D
P^S	= Extrapolated Static Pressure	Psig.
P^F	= Final Flow Pressure	Psig.
P^{OT}	= Potentiometric Surface (Fresh Water*)	Feet
Q	= Average Adjusted Production Rate During Test	bbls/day
Q¹	= Theoretical Production w/Damage Removed	bbls/day
Q^g	= Measured Gas Production Rate	MCF/D
R	= Corrected Recovery	bbls
r^w	= Radius of Well Bore	Feet
t	= Flow Time	Minutes
t^o	= Total Flow Time	Minutes
T	= Temperature Rankine	°R
Z	= Compressibility Factor	—
u	= Viscosity Gas or Liquid	CP
Log	= Common Log	

* Potentiometric Surface Reference to Rotary Table When Elevation Not Given, Fresh Water Corrected to 100° F.

Flow Time	1st 30 Min.	2nd 30 Min.	Date	3-24-67	Ticket Number	479213 S
Closed In Press. Time	1st 30 Min.	2nd 30 Min.	Kind of Job	OPEN HOLE	Halliburton District	HAYS
Pressure Readings	Field	Office Corrected	Tester	MR BERENS	Witness	MR McCLUSKY
Depth Top Gauge	3284 Ft.	no Blanked Off	Drilling Contractor	GARVEY DRILLING COMPANY	SS	
BT. P.R.D. No.	1890	12 Hour Clock	Elevation	2205' DF	Top Packer	-
Initial Hydro Mud Pressure	-	1707	Total Depth	3316'	Bottom Packer	3277'
Initial Closed in Pres.	-	1045	Interval Tested	3277' - 3316'	Formation Tested	TOP
Initial Flow Pres.	-	1 10	Casing or Hole Size	7 7/8"	Casing Perfs. } Top	
Final Flow Pres.	-	1 13	Surface Choke	1/4"	Bottom Choke	3/4"
Final Closed in Pres.	-	1000	Size & Kind Drill Pipe	4 1/2" API	Drill Collars Above Tester	I.D. - LENGTH
Final Hydro Mud Pressure	-	1694	Mud Weight	9.5	Mud Viscosity	40
Depth Cen. Gauge	Ft.	Blanked Off	Temperature	102 °F Est. °F Actual	Anchor Size & Length	ID 3.76" OD 5" X 39'
BT. P.R.D. No.		Hour Clock	Depths Mea. From	KELLY BUSHING	Depth of Tester Valve	Ft.
Initial Hydro Mud Pres.			Cushion	TYPE AMOUNT	Depth Back Pres. Valve	Ft.
Initial Closed in Pres.			Recovered	15 Feet of	watery mud	
Initial Flow Pres.	1		Recovered	Feet of		
Final Flow Pres.	1		Recovered	Feet of		
Final Closed in Pres.	2		Recovered	Feet of		
Final Hydro Mud Pres.			Oil A.P.I. Gravity		Water Spec. Gravity	
Depth Bot. Gauge	3312 Ft.	yes Blanked Off	Gas Gravity		Surface Pressure	psi
BT. P.R.D. No.	1891	12 Hour Clock	Tool Opened	5:00 pm A.M. P.M.	Tool Closed	7:00 pm A.M. P.M.
Initial Hydro Mud Pres.	-	1737	Remarks	Tool opened for 30 minute first flow. Closed for 30 minute initial closed in pressure. Reopened for 30 minute second flow with a weak blow for 15 minutes. Closed for 30 minute final closed in pressure.		
Initial Closed in Pres.	1051	1062				
Initial Flow Pres.	25	1 39				
Final Flow Pres.	28	1 41				
Final Closed in Pres.	999	1016				
Final Hydro Mud Pres.	-	1713				

FORMATION TEST DATA

BARTOS

Lease Name

A-5

Test No.

CITIES SERVICE OIL COMPANY

PLAINVILLE

Legal Location Sec. - Twp. - Rng.

27-9S-19W

Field Area

County

ROOKS

State

KANSAS

Owner's District

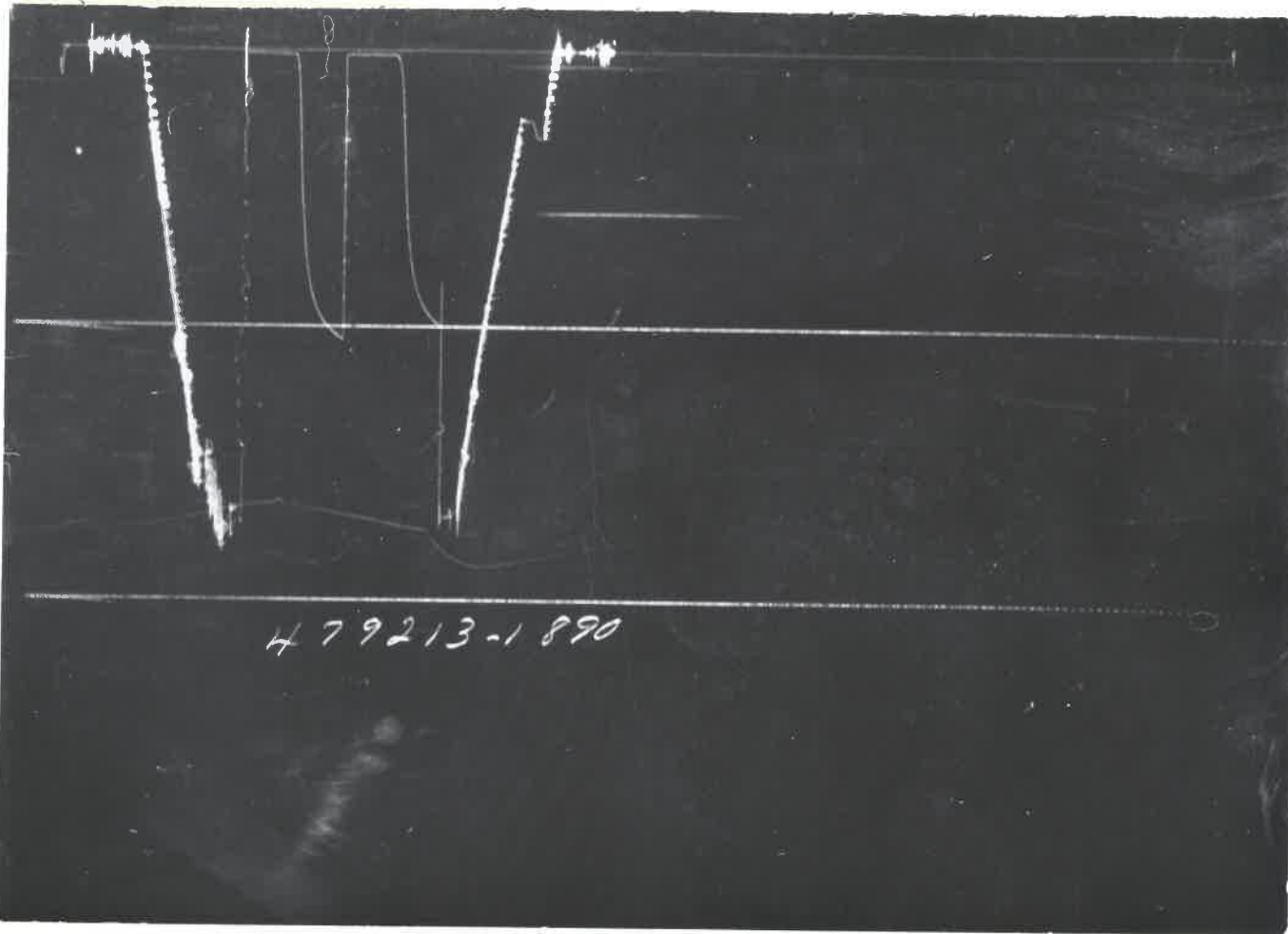
Gauge No. 1890			Depth 3284'			Clock 12 hour		Ticket No. 479213		
First Flow Period			Initial Closed In Pressure			Second Flow Period		Final Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
P ₀	.000	10	.000		13	.000	20	.000		18
P ₁	.0406	11	.0207		185	.041	16	.0193		90
P ₂	.0812	12	.0414		591	.082	16	.0386		440
P ₃	.1624	13	.0621		616	.123	16	.0579		691
P ₄	.203	13	.0828		890	.164	16	.0772		812
P ₅			.1035		943	.205	18	.0965		880
P ₆			.1242		976			.1158		920
P ₇			.1449		1000			.1351		949
P ₈			.1656		1020			.1544		987
P ₉			.1863		1035			.1737		1000
P ₁₀			.207		1045			.193		

Gauge No. 1891			Depth 3312'			Clock 12 hour						
P ₀	.000	39	.000		41	.000	54	.000		43		
P ₁	.0426	40	.0204		314	.043	45	.0194		132		
P ₂	.0852	41	.0408		651	.086	43	.0388		515		
P ₃	.1278	41	.0612		827	.129	43	.0582		738		
P ₄	.1704	41	.0810		910	.172	42	.0776		840		
P ₅	.213	41	.1020		960	.215	43	.0970		898		
P ₆			.1224		994			.1164		936		
P ₇			.1428		1018			.1358		965		
P ₈			.1632		1036			.1552		986		
P ₉			.1836		1050			.1746		1003		
P ₁₀			.204		1062			.194		1016		
Reading Interval		6			3			6			3	Minutes
REMARKS:												

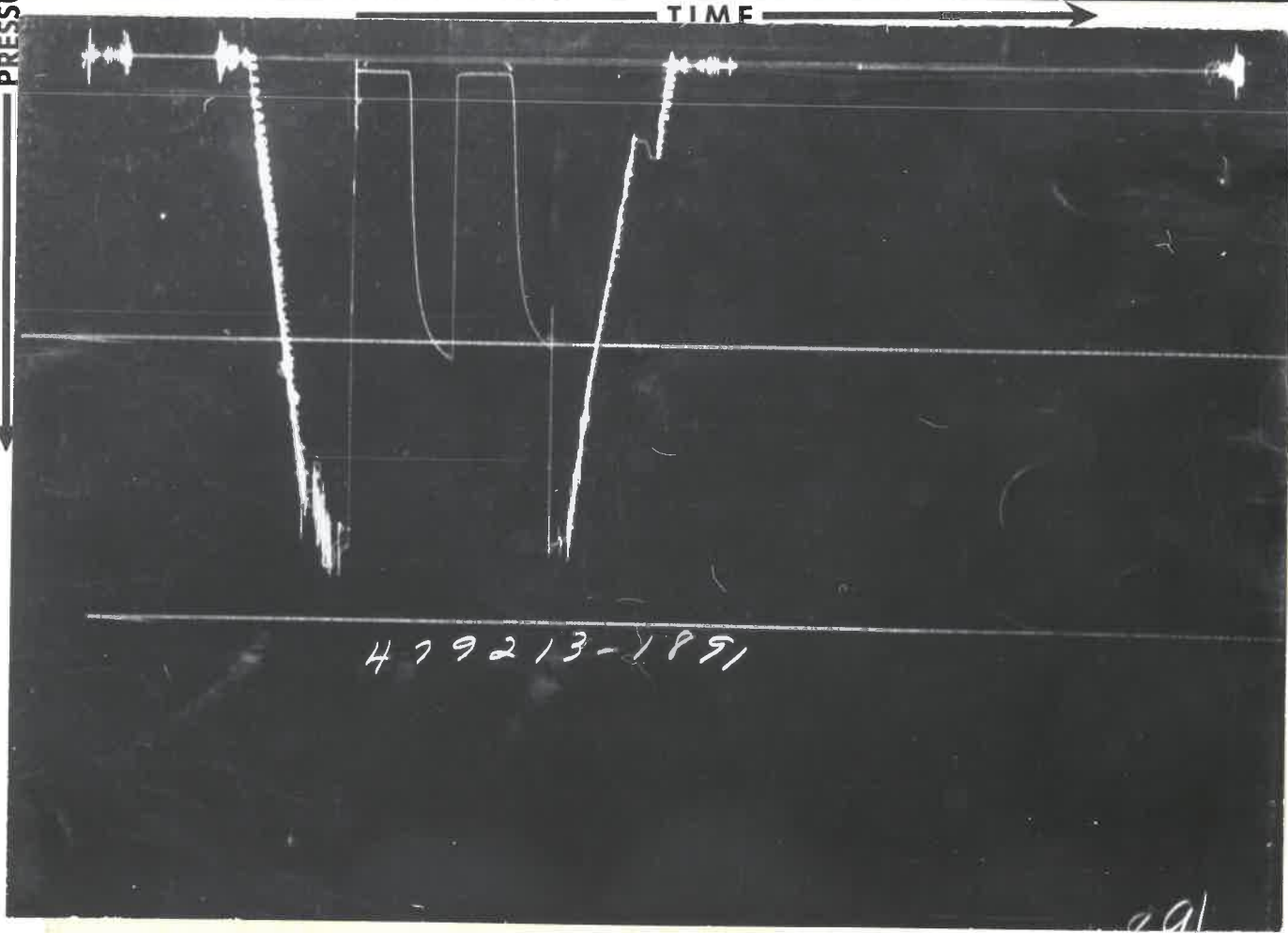
SPECIAL PRESSURE DATA

5

PRESSURE
↓



TIME →



Each Horizontal Line Equal to 1000 p.s.i.

Flow Time	1st 30 Min.	2nd 30 Min.	Date	3-25-67	Ticket Number	479194 - S	Legal Location Sec. - Twp. - Rng. SEC. 27 - 9 - 19	SW/NE/NE	Field Area	County	ROCKS	State	KANSAS	BARTOS "A"	Lease Name	"A"-5	Well No.	2	Test No.	CITIES SERVICE OIL COMPANY	Lease Owner/Company Name	RUSSELL	Owner's District
Closed In Press. Time	1st 30 Min.	2nd 30 Min.	Kind of Job	OPEN HOLE	Halliburton District	HAYS																	
Pressure Readings	Field	Office Corrected	Tester	MR. IVES MR. WEATHERBEE	Witness	MR. MC CLUSKEY																	
Depth Top Gauge	3381 Ft.	Blanked NO Off	Drilling Contractor	GARVEY DRILLING COMPANY	IC																		
BT. P.R.D. No.	374	Hour 12 Clock	Elevation	2208' K.B.	Top Packer	3379'																	
Initial Hydro Mud Pressure	-	1749	Total Depth	3425'	Bottom Packer	-																	
Initial Closed in Pres.	-	893	Interval Tested	3379'-3425'	Formation Tested	LANSING																	
Initial Flow Pres.	-	1 14	Casing or Hole Size	7 7/8"	Casing } Top Perfs. Bot.	-																	
Final Flow Pres.	-	1 15	Surface Choke	1"	Bottom Choke	3/4"																	
Final Closed in Pres.	-	805	Size & Kind Drill Pipe	4 1/2" F.H.	Drill Collars Above Tester	-																	
Final Hydro Mud Pressure	-	1742	Mud Weight	9.7	Mud Viscosity	42																	
Depth Cen. Gauge	Ft.	Blanked Off	Temperature	104 °F Est. 105 °F Actual	Anchor Size & Length	ID 2 7/8" X 46' OD 5"																	
BT. P.R.D. No.		Hour Clock	Depths Mea. From	KELLY BUSHINGS	Depth of Tester Valve	3376' Ft.																	
Initial Hydro Mud Pres.			TYPE	AMOUNT	Depth Back Pres. Valve	- Ft.																	
Initial Closed in Pres.			Cushion	-		-																	
Initial Flow Pres.	1		Recovered	15	Feet of Mud																		
Final Flow Pres.	2		Recovered		Feet of																		
Final Closed in Pres.	1		Recovered		Feet of																		
Final Hydro Mud Pres.	2		Recovered		Feet of																		
Initial Flow Pres.	1		Recovered		Feet of																		
Final Flow Pres.	2		Recovered		Feet of																		
Initial Closed in Pres.			Recovered		Feet of																		
Initial Hydro Mud Pres.			Oil A.P.I. Gravity	-	Water Spec. Gravity	-																	
Depth Bot. Gauge	3422 Ft.	Blanked YES Off	Gas Gravity	-	Surface Pressure	- psi																	
BT. P.R.D. No.	294	Hour 12 Clock	Tool Opened	3:20 PM	A.M. P.M.	Tool Closed	5:20 PM	A.M. P.M.															
Initial Hydro Mud Pres.	1794	1771	Remarks	Opened tool for 30 minute 1st flow with a																			
Initial Closed in Pres.	916	914	weak blow for 10 minutes. Closed tool for 30																				
Initial Flow Pres.	36	1 34	minute initial closed in pressure. Reopened tool																				
Final Flow Pres.	36	2 42	for 30 minute 2nd flow with no blow. Closed tool																				
Final Closed in Pres.	40	1 34	for 30 minute final closed in pressure.																				
Final Hydro Mud Pres.	40	2 38																					
Final Flow Pres.	821	826																					
Final Hydro Mud Pres.	1721	1766																					

FORMATION TEST DATA

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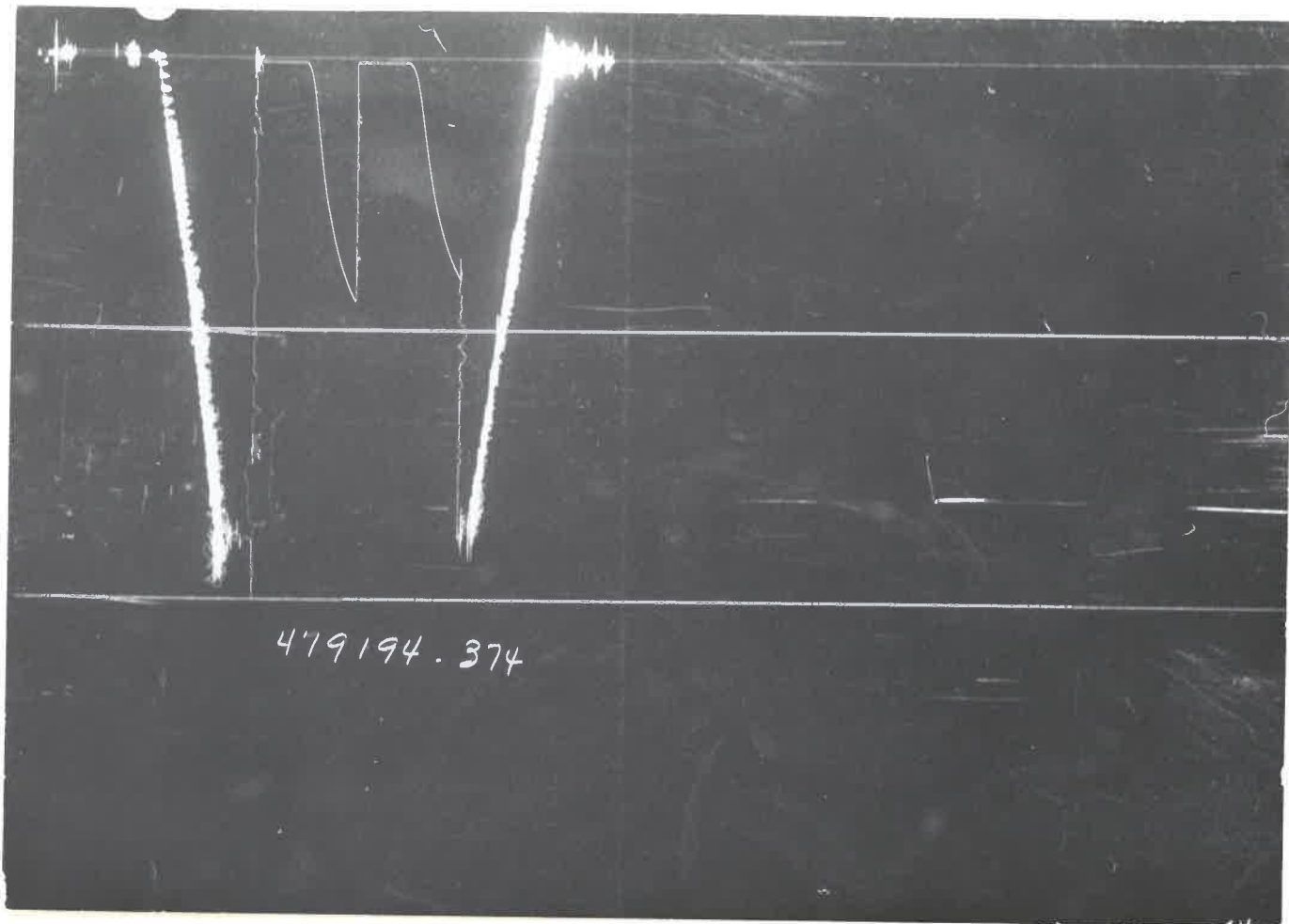
Gauge No.			374			Depth			3381'			Clock			12			hour			Ticket No.			479194		
First Flow Period			Initial Closed In Pressure			Second Flow Period			Final Closed In Pressure																	
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.																
P ₀	.000	14	.000		15	.000	20	.000		16																
P ₁	.205	15	.0205		56	.205	16	.0212		42																
P ₂			.0410		188			.0424		117																
P ₃			.0615		351			.0636		252																
P ₄			.0820		495			.0848		393																
P ₅			.1025		599			.1060		508																
P ₆			.1230		687			.1272		594																
P ₇			.1435		753			.1484		661																
P ₈			.1640		810			.1696		719																
P ₉			.1845		857			.1908		766																
P ₁₀			.2050		893			.2120		805																

Gauge No.			294			Depth			3422'			Clock			12			hour		
P ₀	.000	34	.000		34	.000	42	.000		38										
P ₁	.208	34	.0205		73	.208	38	.0211		66										
P ₂			.0410		207			.0422		152										
P ₃			.0615		380			.0633		290										
P ₄			.0820		522			.0844		430										
P ₅			.1025		624			.1055		538										
P ₆			.1230		710			.1266		623										
P ₇			.1435		777			.1477		691										
P ₈			.1640		833			.1688		745										
P ₉			.1845		877			.1899		790										
P ₁₀			.2050		914'			.2110		826										
Reading Interval			3						3			Minutes								
REMARKS:																				

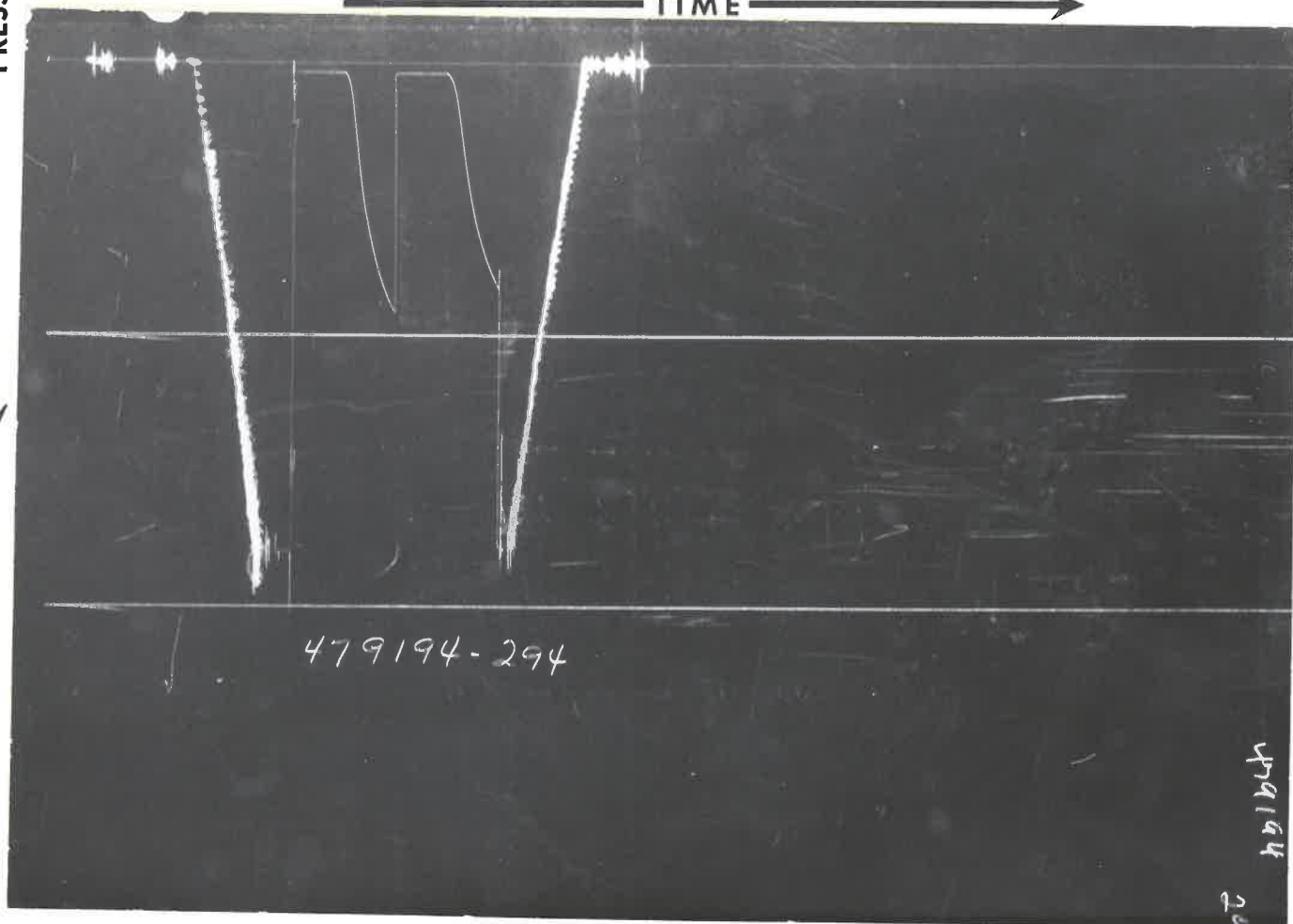
SPECIAL PRESSURE DATA

5

PRESSURE



TIME



Each Horizontal Line Equal to 1000 p.s.i.

Flow Time	1st	Min.	2nd	Min.	Date	3-27-67	Ticket Number	479195 - S	Legal Location Sec. - Twp. - Rng.	BARTOS
Closed In Press. Time	1st	Min.	2nd	Min.	Kind of Job	OPEN HOLE	Halliburton District	HAYS		
Pressure Readings	Field		Office Corrected		Tester	MR. IVES MR. WEATHERBEE	Witness	MR. MC ELUSKEY	SEC. 27 - 9 - 19	SW/NE/NE
Depth Top Gauge	3533 Ft.		Blanked NO Off		Drilling Contractor	GARVEY DRILLING COMPANY IC				
BT. P.R.D. No.	738		12 Hour Clock		Elevation	2208' K.B.	Top Packer	3531'	Well No.	A-5
Initial Hydro Mud Pressure	-		1878		Total Depth	3613'	Bottom Packer	-		
Initial Closed in Pres.	-		210		Interval Tested	3531'-3613'	Formation Tested	KANSAS CITY	Field Area	3
Initial Flow Pres.	-	1	18		Casing or Hole Size	7 7/8"	Casing Perfs. { Top Bot.			
Final Flow Pres.	-	1	17		Surface Choke	1/4"	Bottom Choke	3/4"	I.D. - LENGTH	Test No.
Final Closed in Pres.	-	2	22		Size & Kind Drill Pipe	4 1/2" F.H.	Drill Collars Above Tester	-		
Final Hydro Mud Pressure	-		1859		Mud Weight	9.9	Mud Viscosity	43	County	ROCKS
Depth Cen. Gauge	Ft.		Blanked Off		Temperature	106	Anchor Size & Length	ID 2 7/8" X 82'		
BT. P.R.D. No.			Hour Clock		Depths Mea. From	KELLY BUSHINGS	Depth of Tester Valve	3526' Ft.	Lease Owner/Company Name	CITIES SERVICE OIL COMPANY
Initial Hydro Mud Pres.					Cushion	-	Depth Back Pres. Valve	-		
Initial Closed in Pres.					Recovered	34	Feet of Mud with slight speck	Mea. From Tester Valve	State	KANSAS
Initial Flow Pres.	1				Recovered		Feet of			
Final Flow Pres.	1				Recovered		Feet of			
Final Closed in Pres.	2				Recovered		Feet of			
Final Hydro Mud Pres.					Oil A.P.I. Gravity	-	Water Spec. Gravity	-	Owner's District	RUSSELL
Depth Bot. Gauge	3610 Ft.		Blanked YES Off		Gas Gravity	-	Surface Pressure	-		
BT. P.R.D. No.	272		12 Hour Clock		Tool Opened	3:15 AM	A.M. P.M.	Tool Closed	5:15 AM	A.M. P.M.
Initial Hydro Mud Pres.	1903		1922		Remarks	Opened tool for 30 minute 1st flow with a				
Initial Closed in Pres.	263		254		weak blow. Closed tool for 30 minute initial					
Initial Flow Pres.	70	1	59		closed in pressure. Reopened tool for 30 minute					
Final Flow Pres.	70	1	59		2nd flow with no blow. Closed tool for 30 minute					
Final Closed in Pres.	93		96		final closed in pressure.					
Final Hydro Mud Pres.	1930		1904							

FORMATION TEST DATA

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Gauge No. 738			Depth 3533'			Clock 12 hour		Ticket No. 479195		
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	18	.000		17	.000	27	.000		22
P ₁	.208	17	.196		210	.236	22	.164		49
P ₂										
P ₃										
P ₄										
P ₅										
P ₆										
P ₇										
P ₈										
P ₉										
P ₁₀										

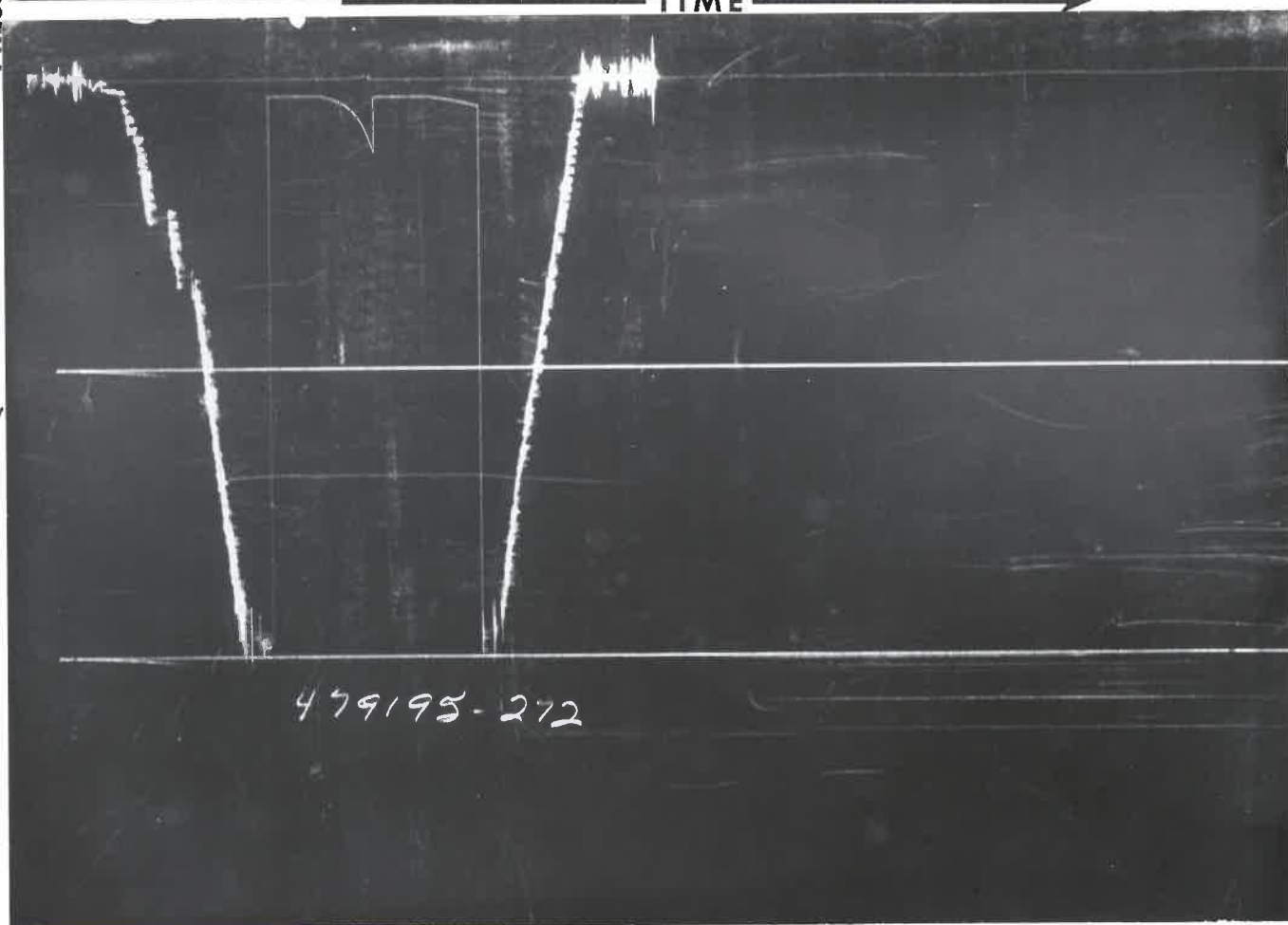
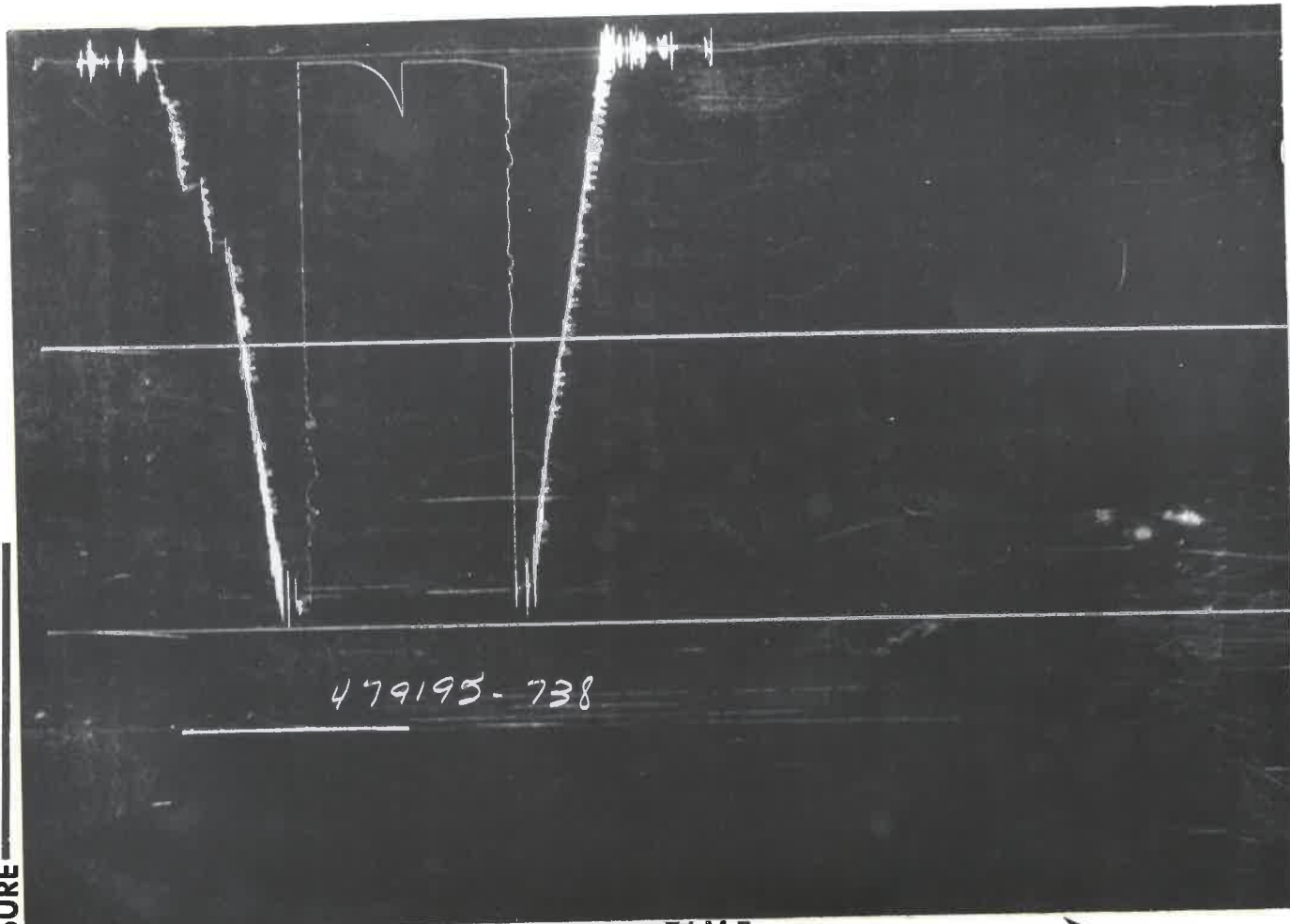
Gauge No. 272			Depth 3610'			Clock 12 hour				
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\phi}{\phi}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\phi}{\phi}$	PSIG Temp. Corr.
P ₀	.000	59	.000		59	.000	68	.000		63
P ₁	.205	59	.200		254	.207	63	.196		96
P ₂										
P ₃										
P ₄										
P ₅										
P ₆										
P ₇										
P ₈										
P ₉										
P ₁₀										

Reading Interval								Minutes		
REMARKS:										

SPECIAL PRESSURE DATA

5

PRESSURE



Each Horizontal Line Equal to 1000 p.s.i.