

Flow Time	1st 5 Min.	2nd 55 Min.	Date	9-3-65	Ticket Number	447171
Closed In Press. Time	1st 30 Min.	2nd 30 Min.	Kind of Job	OPEN HOLE	Halliburton District	HILL CITY
Pressure Readings	Field	Office Corrected	Tester	JOSLIN	Witness	MC CULLUM
Depth Top Gauge	4355' Ft.	NO Blanked Off	Drilling Contractor	PEEL BROTHERS DRILLING COMPANY		
BT. P.R.D. No.	690	12 Hour Clock	Elevation	2480' D.F.	Top Packer	4349'
Initial Hydro Mud Pressure		2443	Total Depth	4372'	Bottom Packer	4354'
Initial Closed in Pres.		110	Interval Tested	4354' - 4372'	Formation Tested	FT. SCOTT
Initial Flow Pres.		1 13	Casing or Hole Size	7 7/8"	Casing } Top	-
		2 18			Perfs. } Bot.	-
Final Flow Pres.		1 13	Surface Choke	3/4"	Bottom Choke	3/4"
		2 23				
Final Closed in Pres.		29	Size & Kind Drill Pipe	4 1/2"	Drill Collars Above Tester	I.D. - LENGTH 2.76" - 510'
Final Hydro Mud Pressure		2396	Mud Weight	10.3	Mud Viscosity	47
Depth Cen. Gauge		Blanked Off	Temperature	113 °F Est. 116 °F Actual	Anchor Size & Length	ID 2.76" OD 5" X 18'
BT. P.R.D. No.		Hour Clock	Depths Mea. From	DERRICK FLOOR	Depth of Tester Valve	4339' Ft.
Initial Hydro Mud Pres.			TYPE AMOUNT	Cushion	NONE	Depth Back Pres. Valve
						NONE
Initial Closed in Pres.			Recovered	20'	Feet of mud	
Initial Flow Pres.		1	Recovered		Feet of	
		2	Recovered		Feet of	
Final Flow Pres.		1	Recovered		Feet of	
		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	4368' Ft.	YES Blanked Off	Gas Gravity		Surface Pressure	psi
BT. P.R.D. No.	228	12 Hour Clock	Tool Opened	7:30 PM	A.M. P.M.	Tool Closed
						9:30 PM
Initial Hydro Mud Pres.	2511	2446	Remarks	Tool opened @ 7:30 with no blow for a 5		
Initial Closed in Pres.	111	117	minute first flow. Tool closed @ 7:35. Rotated			
Initial Flow Pres.	18	1 21	tool for a 30 minute initial closed in pressure.			
		2 25				
Final Flow Pres.	18	1 21	Tool reopened @ 8:05 - flushed anchor @ 8:20 - flushed			
		2 31	anchor @ 8:40 - no blow. Tool closed @ 9:00. Took			
Final Closed in Pres.	37	39				
Final Hydro Mud Pres.	2511	2401	a 30 minute final closed in pressure. Off bottom @ 9:30.			

FORMATION TEST DATA

Legal Location
Sec. - Twp. - Rng.

21 - 16 - 23

Lease Name

Well No.

Test No.

Field Area

WILDGAT

County

NESS

State

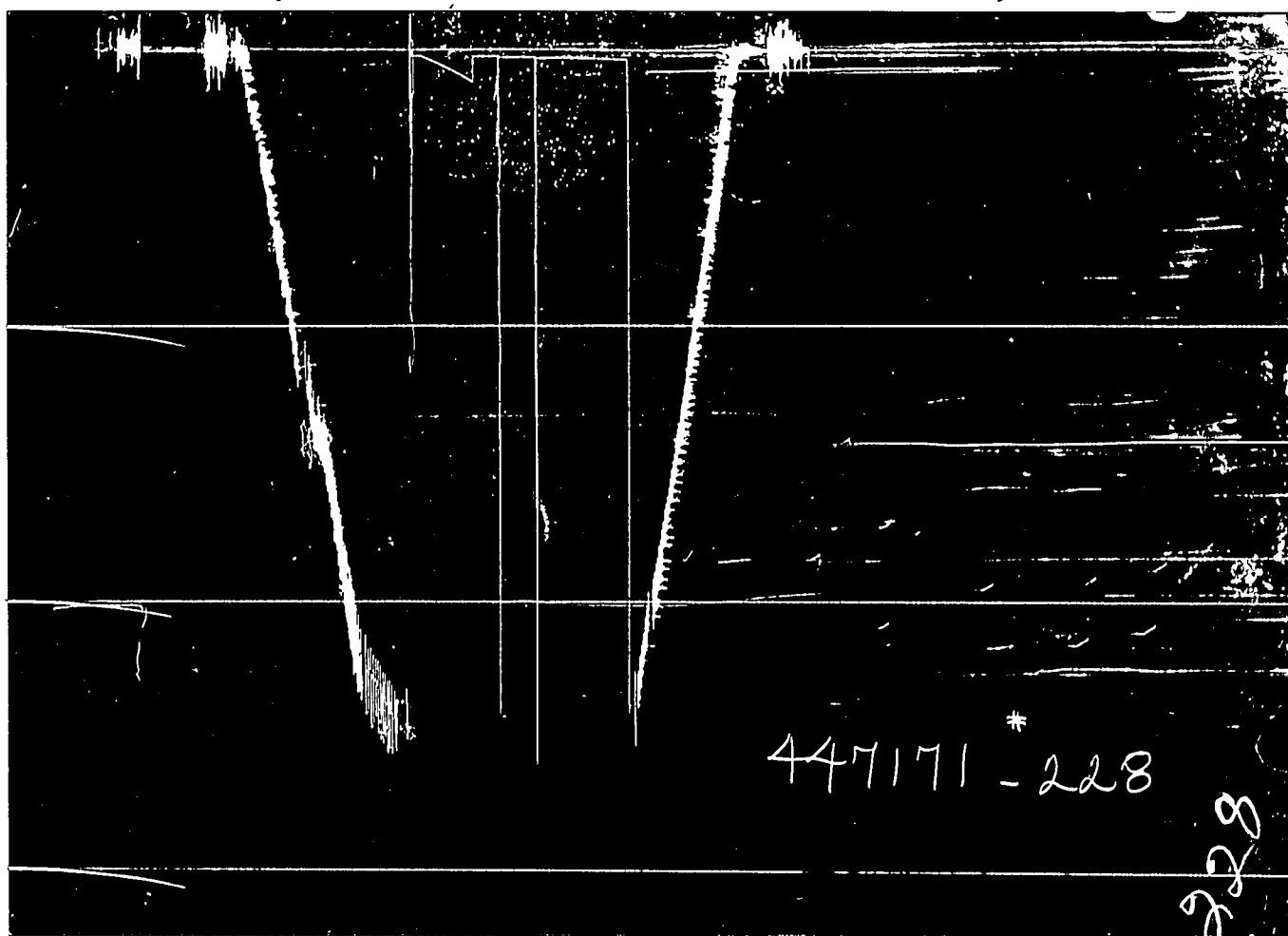
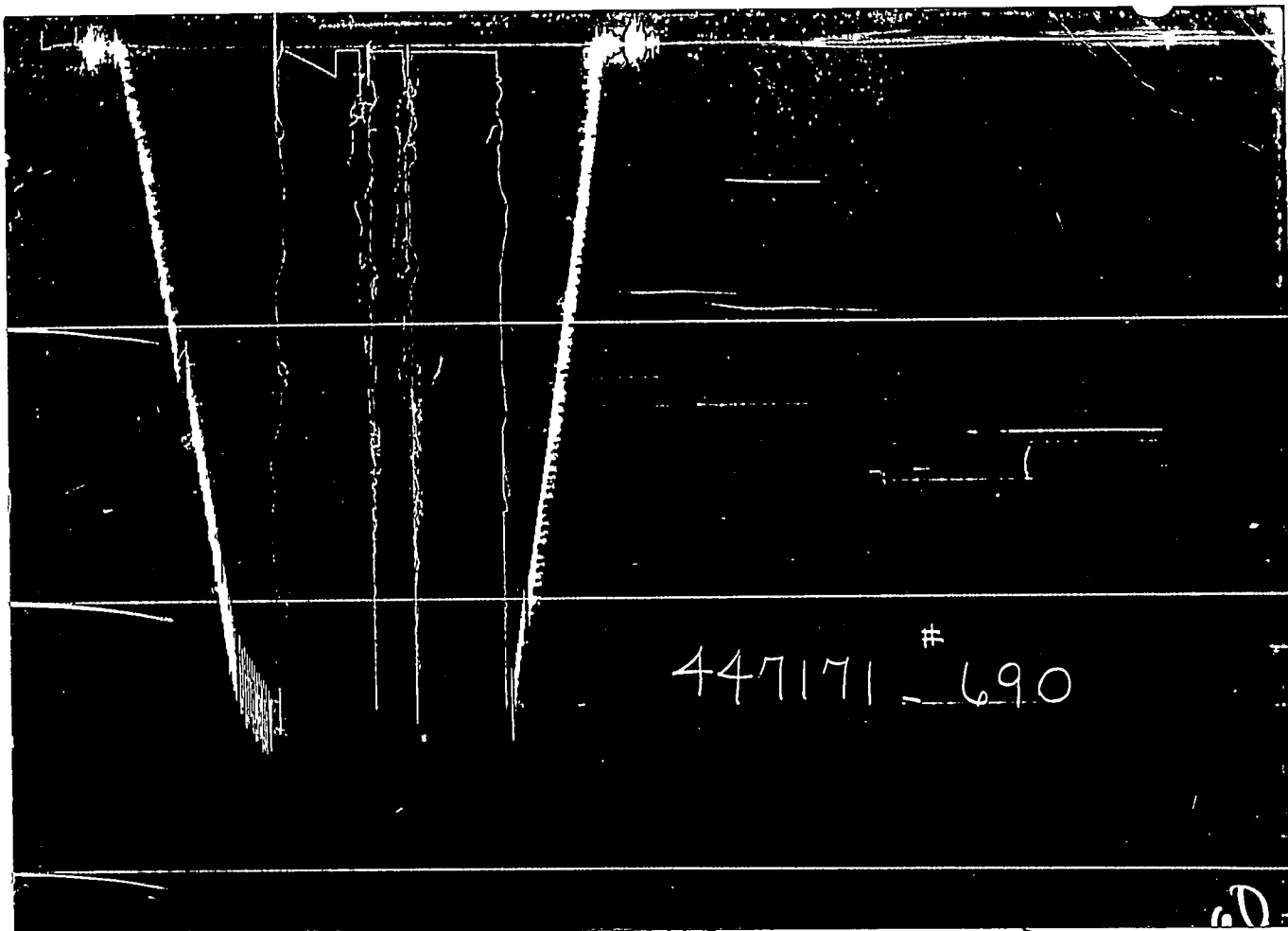
KANSAS

CITIES SERVICE OIL COMPANY

RUSSELL, KANSAS

Owner's District

PRESSURE



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

228

Flow Time	1st Min. 30	2nd Min. 30	Date	9-4-65	Ticket Number	447172 S
Closed In Press. Time	1st Min. 30	2nd Min. 30	Kind of Job	OPEN HOLE	Halliburton District	HILL CITY
Pressure Readings	Field	Office Corrected	Tester	H. JOSLIN	Witness	F. MC CULLUM
Depth Top Gauge	4423 Ft.	Blanked Off	Drilling Contractor	PELL BROTHERS DRILLING COMPANY	SS	
BT. P.R.D. No.	690	Hour Clock 12	Elevation	2480' D.F.	Top Packer	4433'
Initial Hydro Mud Pressure	2386	2368	Total Depth	4446'	Bottom Packer	4438'
Initial Closed in Pres.	393	396	Interval Tested	4438' - 4436'	Formation Tested	MISSISSIPPI
Initial Flow Pres.	146	140	Casing or Hole Size	7 7/8"	Casing Perfs. } Top	
Final Flow Pres.	146	137	Surface Choke	3/4"	Bottom Choke	3/4"
Final Closed in Pres.	393	400	Size & Kind Drill Pipe	4 1/2"	Drill Collars Above Tester	2.76" X 510
Final Hydro Mud Pressure	2386	2368	Mud Weight	10.1	Mud Viscosity	45
Depth Cen. Gauge		Blanked Off	Temperature	114 °F Est. 112 °F Actual	Anchor Size & Length	ID 2.76" X 8' OD 5"
BT. P.R.D. No.		Hour Clock	Depths Mea. From DERRICK FLOOR		Depth of Tester Valve	4418' Ft.
Initial Hydro Mud Pres.			TYPE AMOUNT		Depth Back Pres. Valve	
Initial Closed in Pres.			Cushion			
Initial Flow Pres.	1		Recovered	255 Feet of mud		
Final Flow 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	4442 Ft.	Blanked Off	Gas Gravity		Surface Pressure	psi
BT. P.R.D. No.	228	Hour Clock 12	Tool Opened	9:15 p.m.	A.M. P.M.	Tool Closed 11:15 p.m. A.M. P.M.
Initial Hydro Mud Pres.	2344	2376	Remarks	Tool opened for 30 minute first flow with		
Initial Closed in Pres.				fair blow decreased to weak. Closed for 30 minute		
Initial Flow Pres.	1			initial closed in pressure. Reopened for 30 minute		
Final Flow Pres.	1			second flow with no blow flush anchor, weak blow for		
Final Closed in Pres.				five minutes. Closed for 30 minute final closed in		
Final Hydro Mud Pres.		2376		pressure.		

FORMATION TEST DATA

3

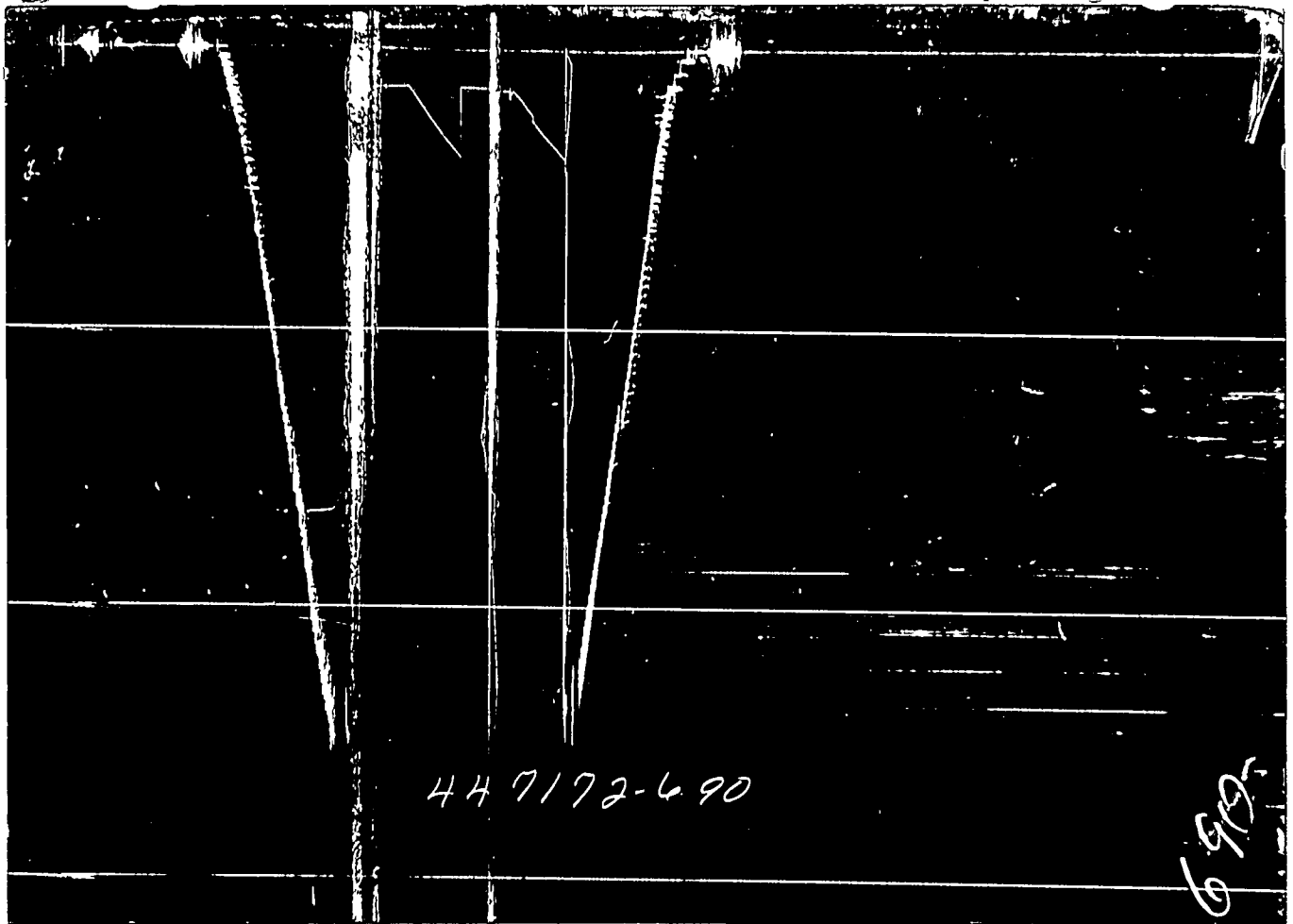
KRAUS A. Lease Name
1
2
WELL No.
Test No.
CITIES SERVICE OIL COMPANY
Lease Owner/Company Name
WILDCAT
County
NESS
State
KANSAS
GREAT BEND
Owner's District

Gauge No. 690		Depth 4423'		Clock 12 hour		Ticket No. 447172				
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	140	.000		137	.000	141	.000		162
P ₁	.156	137	.213		396	.205	162	.208		400
P ₂										
P ₃										
P ₄										
P ₅										
P ₆										
P ₇										
P ₈										
P ₉										
P ₁₀										

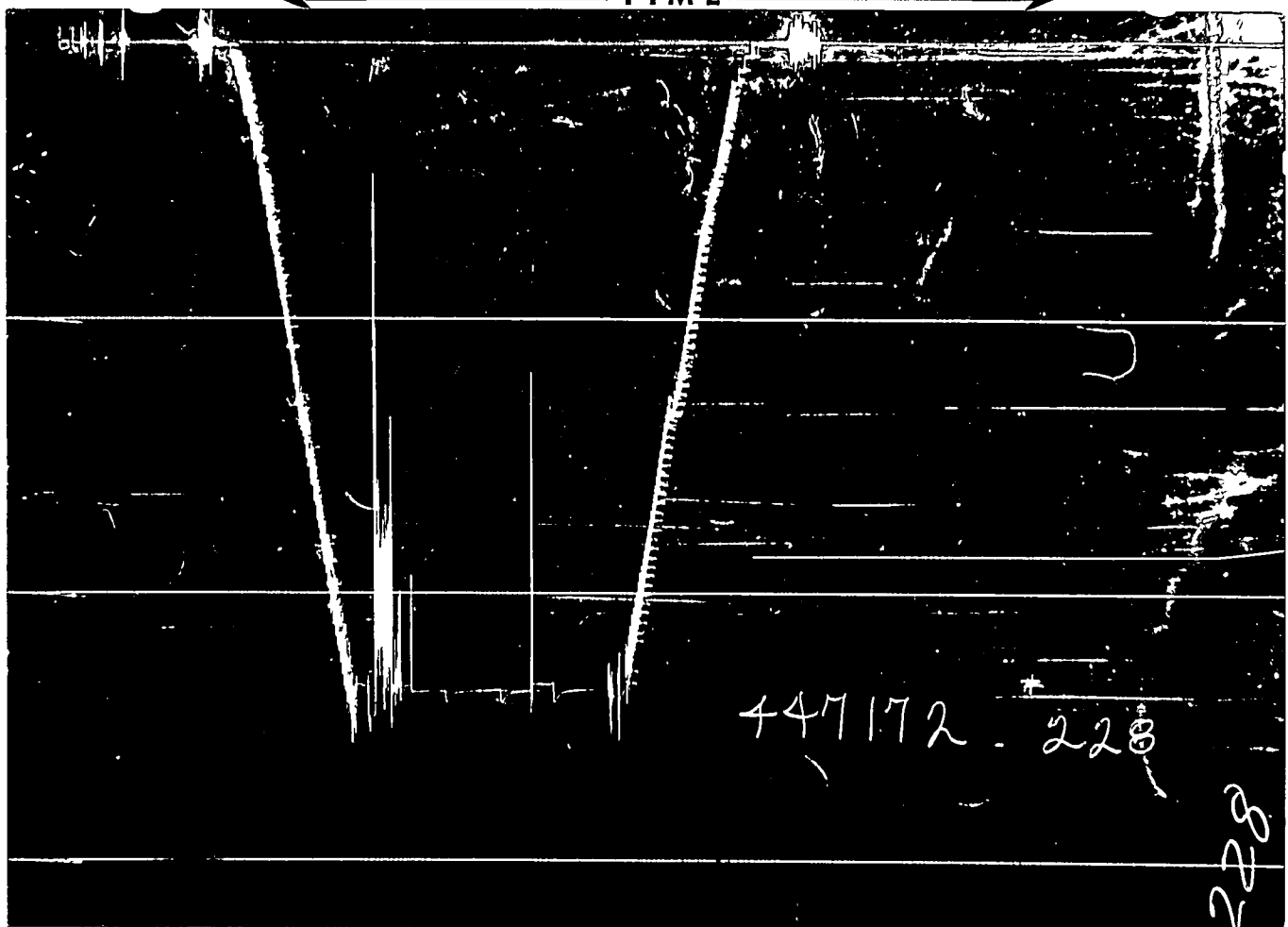
Gauge No.			Depth			Clock		hour		
228			4442'			12				
P ₀			PLUGGING							
P ₁										
P ₂										
P ₃										
P ₄										
P ₅										
P ₆										
P ₇										
P ₈										
P ₉										
P ₁₀										
Reading Interval								Minutes		
REMARKS:										

SPECIAL PRESSURE DATA

↑ PRESSURE ↓



← TIME →



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

Flow Time	1st 30 Min.	2nd 60 Min.	Date	9-5-65	Ticket Number	447173 S
Closed In Press. Time	1st 30 Min.	2nd 30 Min.	Kind of Job	OPEN HOLE	Halliburton District	HILL CITY
Pressure Readings	Field	Office Corrected	Tester	H. JOSLIN	Witness	R. HALLOM
Depth Top Gauge	4431 Ft.	no Blanked Off	Drilling Contractor	PEEL BROTHERS DRILLING COMPANY LC		
BT. P.R.D. No.	690	12 Hour Clock	Elevation	2480' - DF	Top Packer	4441'
Initial Hydro Mud Pressure	-	2454	Total Depth	4456'	Bottom Packer	4446'
Initial Closed in Pres.	-	1083	Interval Tested	4446' - 4456'	Formation Tested	Mississippi
Initial Flow Pres.	-	1 16	Casing or Hole Size	7 7/8"	Casing Perfs. } Top	
Final Flow Pres.	-	1 25	Surface Choke	3/4"	Bottom Choke	3/4"
Final Closed in Pres.	-	1008	Size & Kind Drill Pipe	4 1/2"	Drill Collars Above Tester	I.D. - LENGTH 2.76" - 510'
Final Hydro Mud Pressure	-	2366	Mud Weight	10.1	Mud Viscosity	52
Depth Cen. Gauge	Ft.	Blanked Off	Temperature	114 °F Est. 118 °F Actual	Anchor Size & Length	ID 2.76" OD 5" X 10'
BT. P.R.D. No.		Hour Clock	Depths Mea. From	Derrick Floor	Depth of Tester Valve	4426 Ft.
Initial Hydro Mud Pres.			Cushion	TYPE none	Depth Back Pres. Valve	none Ft.
Initial Closed in Pres.			Recovered	120 Feet of heavy oil cut 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	4452 Ft.	yes Blanked Off	Gas Gravity		Surface Pressure	psi
BT. P.R.D. No.	228	12 Hour Clock	Tool Opened	10:15 A.M.	Tool Closed	12:45 P.M.
Initial Hydro Mud Pres.	2473	2470	Remarks	Tool opened for a 30 minute first flow with a		
Initial Closed in Pres.	1093	1091		weak blow. Closed tool for a 30 minute initial		
Initial Flow Pres.	18	24		closed in pressure. Reopened tool for a 60 minute		
Final Flow Pres.	46	49		second flow with a weak blow throughout test. Clos-		
Final Closed in Pres.	1009	1014		ed tool for a 30 minute final closed in pressure.		
Final Hydro Mud Pres.	2473	2381				

FORMATION TEST DATA

3

KRAUS, A
Lease Name
21 16 23
Well No.
1
Test No.
3
CITIES SERVICE OIL COMPANY
Lease Owner/Company Name
WILDCAT
County
NESS
State
KANSAS
Owner's District
GREAT BEND

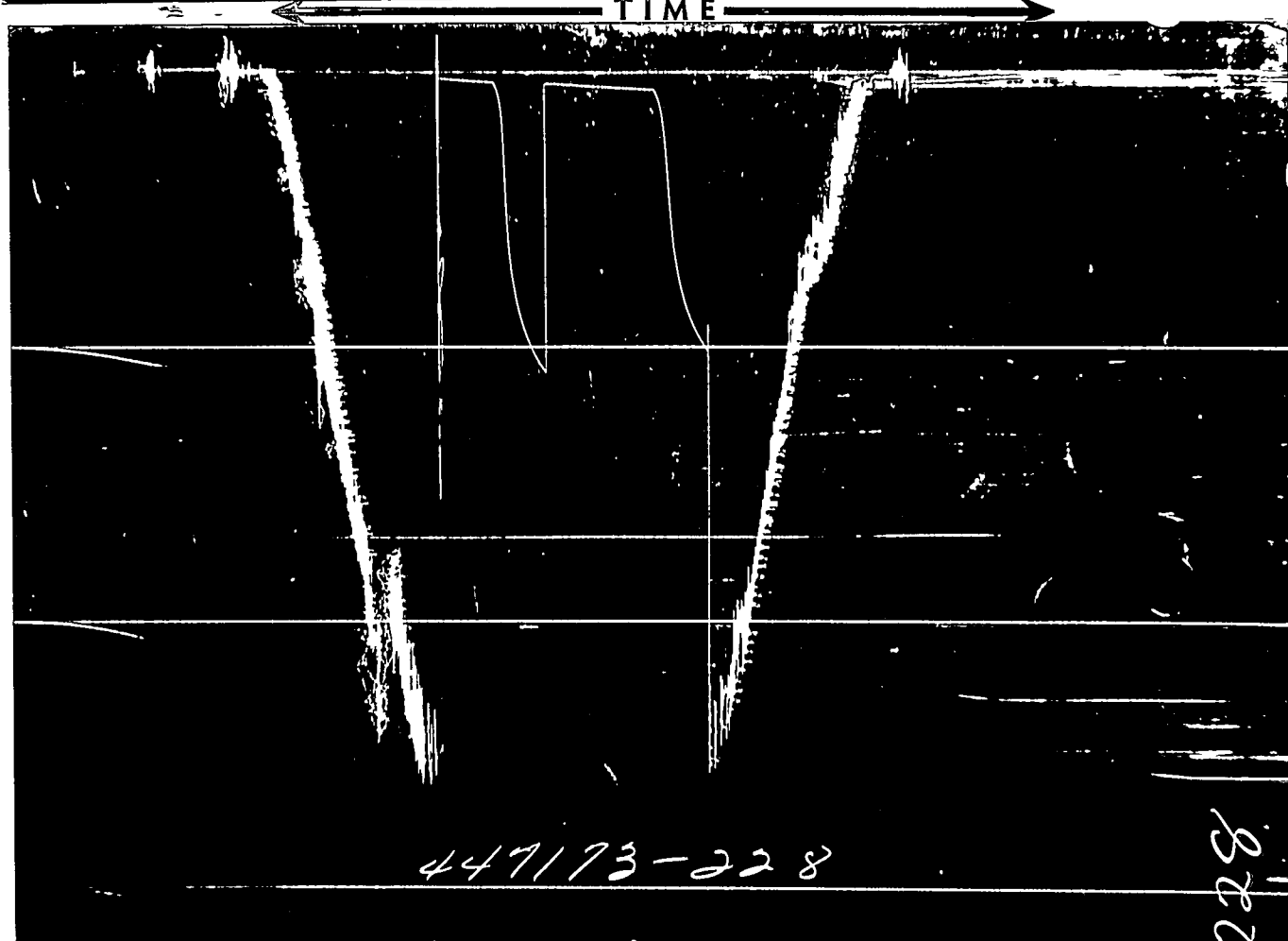
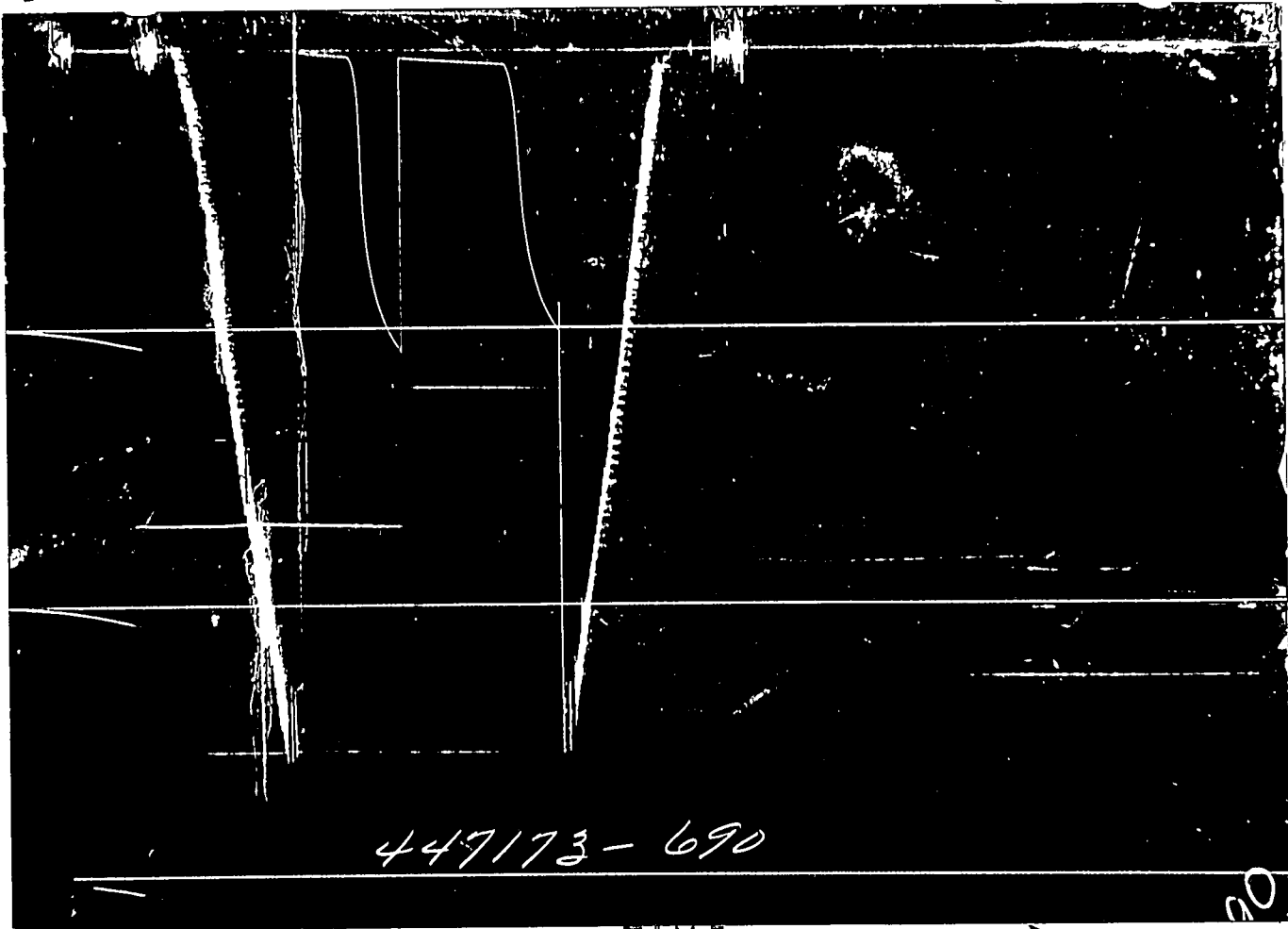
Gauge No. 690			Depth 4431'			Clock 12 hour		Ticket No. 447173		
First Flow Period			Initial Closed In Pressure			Second Flow Period		Final Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
P ₀	.000	16	.000		25	.000	32	.000		55
P ₁	.0408	12	.021		58	.1033	38	.021		96
P ₂	.0816	16	.042		200	.2066	43	.042		209
P ₃	.1224	19	.063		583	.3099	49	.063		458
P ₄	.1632	23	.084		759	.4130	55	.084		479
P ₅	.2040	25	.105		860			.105		769
P ₆			.126		928			.126		844
P ₇			.147		982			.147		901
P ₈			.168		1023			.168		944
P ₉			.189		1055			.189		978
P ₁₀			.210		1083			.210		1008

Gauge No. 228			Depth 4452'			Clock 12 hour				
P ₀	.000	24	.000		38	.000	49	.000		65
P ₁	.0434	28	.0214		79	.1075	48	.0217		108
P ₂	.0868	30	.0428		241	.2150	54	.0434		234
P ₃	.1302	33	.0642		607	.3225	60	.0651		490
P ₄	.1736	35	.0856		769	.4300	65	.0868		675
P ₅	.2170	38	.1070		866			.1085		782
P ₆			.1284		936			.1302		856
P ₇			.1498		987			.1519		908
P ₈			.1712		1031			.1736		951
P ₉			.1926		1064			.1953		986
P ₁₀			.2140		1091			.2170		1014

Reading Interval 6			3			15		3 Minutes		
REMARKS:										

SPECIAL PRESSURE DATA

PRESSURE



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

Flow Time	1st Min. 15	2nd Min. 75	Date	9-6-65	Ticket Number	447174 - S
Closed In Press. Time	1st Min. 30	2nd Min. 30	Kind of Job	OPEN HOLE	Halliburton District	HILL CITY
Pressure Readings	Field	Office Corrected	Tester	MR. JOSLIN	Witness	MR. MC COLLUM
Depth Top Gauge	4436 Ft.	NO Blanked Off	Drilling Contractor	PEEL BROTHERS DRILLING COMPANY IC		
BT. P.R.D. No.	690	12 Hour Clock	Elevation	2480' D.F.	Top Packer	4451'
Initial Hydro Mud Pressure		2392	Total Depth	4466'	Bottom Packer	4456'
Initial Closed in Pres.		1082	Interval Tested	4456' - 4466'	Formation Tested	MISSISSIPPI
Initial Flow Pres.	1 11	2 44	Casing or Hole Size	7 7/8"	Casing Perfs. } Top	
Final Flow Pres.	1 38	2 106	Surface Choke	3/4"	Bottom Choke	3/4"
Final Closed in Pres.		745	Size & Kind Drill Pipe	4 1/2"	Drill Collars Above Tester	I.D. - LENGTH 2.76" x 510'
Final Hydro Mud Pressure		2387	Mud Weight	10.1	Mud Viscosity	52
Depth Cen. Gauge		Blanked Off	Temperature	114 °F Est. °F Actual	Anchor Size & Length	ID 2.76" OD 5.00" X 10'
BT. P.R.D. No.		Hour Clock	Depths Mea. From	DERRICK FLOOR	Depth of Tester Valve	4431' Ft.
Initial Hydro Mud Pres.			TYPE AMOUNT		Depth Back Pres. Valve	
Initial Closed in Pres.			Cushion			
Initial Flow Pres.	1		Recovered	145 Feet of	Free oil	
Final Flow Pres.	2		Recovered	100 Feet of	Very heavy oil cut mud	
Final Flow Pres.	1		Recovered			
Final Closed in Pres.	2		Recovered			
Final Hydro Mud Pres.			Oil A.P.I. Gravity	40 +	Water Spec. Gravity	
Depth Bot. Gauge	4462 Ft.	YES Blanked Off	Gas Gravity		Surface Pressure	psi
BT. P.R.D. No.	228	12 Hour Clock	Tool Opened	11:00 AM A.M.	Tool Closed	1:30 PM A.M.
Initial Hydro Mud Pres.	2511	2403	Remarks	Opened tool for 15 minute 1st flow with a		
Initial Closed in Pres.	1093	1087	weak blow. Closed tool for 30 minute initial			
Initial Flow Pres.	18 1	24 2	closed in pressure. Reopened tool for 75 minute			
Final Flow Pres.	37 2	59 1	2nd flow with weak blow throughout test. Closed			
Final Closed in Pres.	55 1	45 2	tool for 30 minute final closed in pressure.			
Final Hydro Mud Pres.	2511	2397				

FORMATION TEST DATA

KRAUS A

Lease Name

SEC. 21 - 16 - 23

Well No.

Test No.

Field Area

WILDCAT

County

NESS

State

KANSAS

CITIES SERVICE OIL COMPANY

Lease Owner/Company Name

GREAT BEND

Owner's District

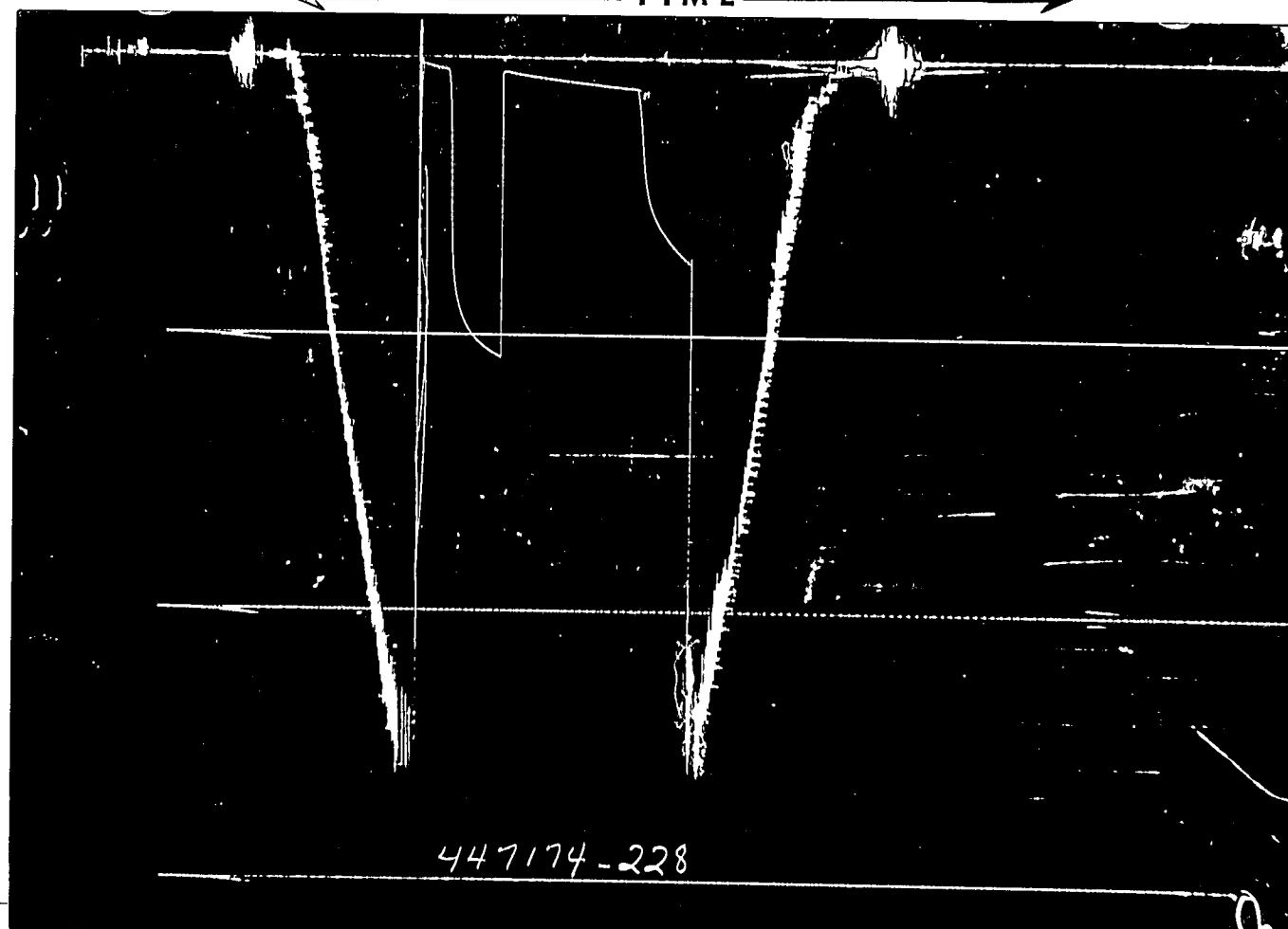
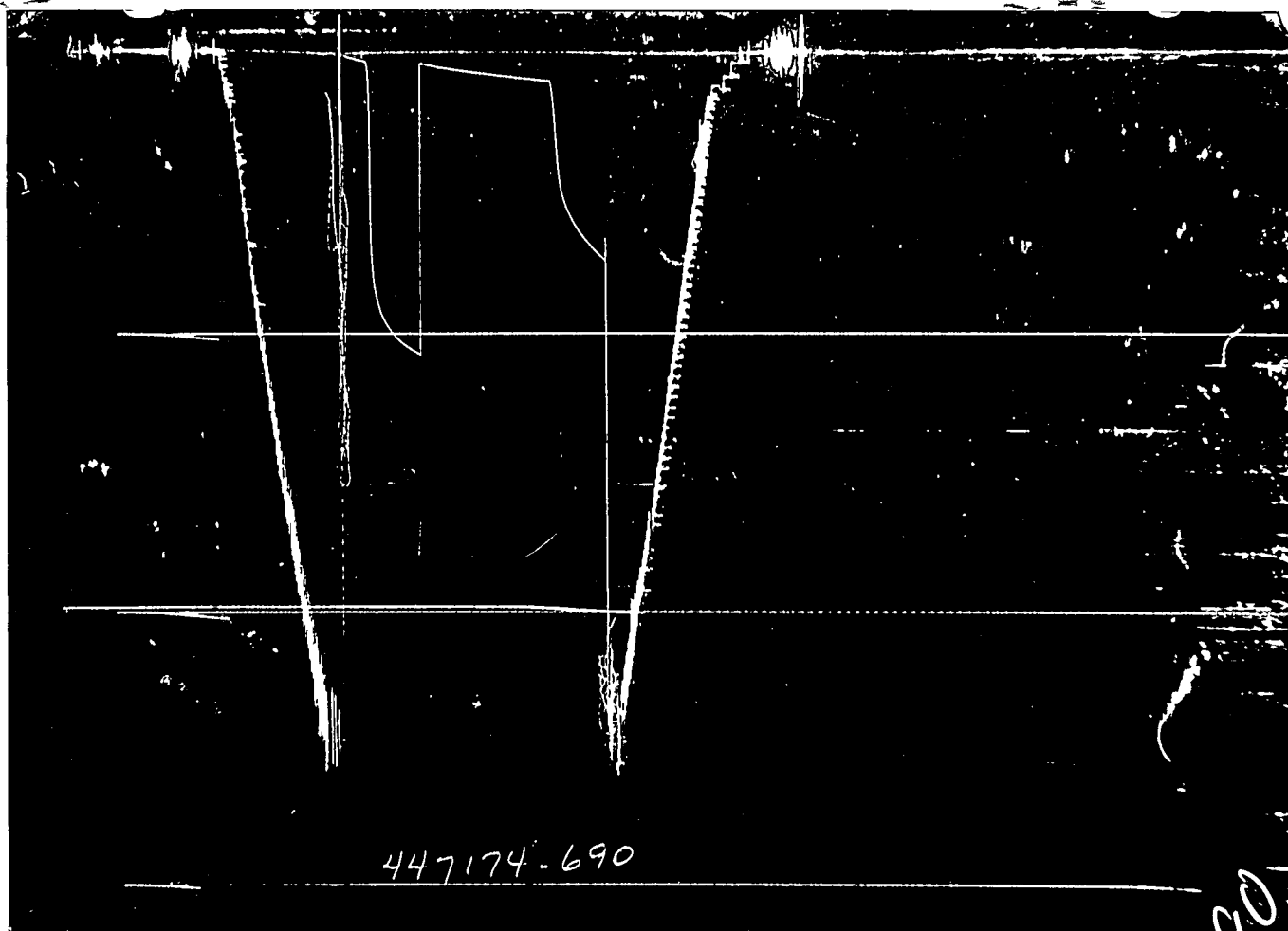
Gauge No. 690			Depth 4436'			Clock 12 hour			Ticket No. 447174		
First Flow Period			Initial Closed In Pressure			Second Flow Period			Final Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	
P ₀	.000	11	.000		38	.000	44	.000		106	
P ₁	.021	16	.021		726	.1022	60	.0212		302	
P ₂	.042	22	.042		888	.2044	74	.0424		497	
P ₃	.063	28	.063		949	.3066	85	.0636		561	
P ₄	.084	32	.084		985	.4088	96	.0848		604	
P ₅	.105	38	.105		1009	.5110	106	.1060		636	
P ₆			.126		1029			.1272		662	
P ₇			.147		1046			.1484		687	
P ₈			.168		1060			.1696		709	
P ₉			.189		1072			.1908		728	
P ₁₀			.210		1082			.2120		745	

Gauge No. 228			Depth 4462'			Clock 12 hour					
P ₀	.000	24	.000		45	.000	59	.000		112	
P ₁	.0226	25	.0214		693	.1062	67	.0215		305	
P ₂	.0452	32	.0428		883	.2124	80	.0430		503	
P ₃	.0678	36	.0642		950	.3186	92	.0645		567	
P ₄	.0904	40	.0856		988	.4248	102	.0860		610	
P ₅	.1130	45	.1070		1015	.5310	112	.1075		641	
P ₆			.1284		1035			.1290		669	
P ₇			.1498		1051			.1505		693	
P ₈			.1712		1067			.1720		714	
P ₉			.1926		1077			.1935		733	
P ₁₀			.2140		1087			.2150		751	

Reading Interval	3		3			15			3	Minutes
REMARKS:										

SPECIAL PRESSURE DATA

↑
PRESSURE
↓



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

Legal Location
Sec. - Twp. - Rng. 21-16-23Field Area
WILDCAT

County NESS

State KANSAS

Flow Time	1st 15	Min.	2nd 45	Min.	Date	9-6-65		Ticket Number	447175 S	
Closed In Press. Time	1st 30	Min.	2nd 30	Min.	Kind of Job	OPEN HOLE		Halliburton District	HILL CITY	
Pressure Readings	Field		Office Corrected		Tester	H. JOSLIN		Witness	F. MC COLLUM	
Depth Top Gauge	4446	Ft.	no	Blanked Off	Drilling Contractor	PEEL BROTHERS DRILLING COMPANY		SS		
BT. P.R.D. No.	690		12	Hour Clock	Elevation	2480' D.F.		Top Packer	4461'	
Initial Hydro Mud Pressure			2414		Total Depth	4476'		Bottom Packer	4466'	
Initial Closed in Pres.			1311		Interval Tested	4466' - 4476'		Formation Tested	MISSISSIPPI	
Initial Flow Pres.		1	12		Casing or Hole Size	7 7/8"		Casing Perfs.	{ Top Bot.	
Final Flow Pres.		1	168		Surface Choke	3/4"		Bottom Choke	3/4"	
Final Closed in Pres.			1311		Size & Kind Drill Pipe	4 1/2"		Drill Collars Above Tester	I.D. - LENGTH 2.76" X 510'	
Final Hydro Mud Pressure			2382		Mud Weight	10.2		Mud Viscosity	52	
Depth Cen. Gauge		Ft.		Blanked Off	Temperature	114	°F Est.	Anchor Size & Length	ID 2.76" X 10' OD 5"	
BT. P.R.D. No.				Hour Clock	Depths Mea. From	DERRICK FLOOR		Depth of Tester Valve	4441' Ft.	
Initial Hydro Mud Pres.					Cushion	TYPE AMOUNT		Depth Back Pres. Valve	Ft.	
Initial Closed in Pres.					Recovered	1034 Feet of		muddy salt water		
Initial Flow Pres.		1			Recovered	Feet of				
Final Flow Pres.		1			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	4472	Ft.	yes	Blanked Off	Gas Gravity			Surface Pressure	psi	
BT. P.R.D. No.	228		12	Hour Clock	Tool Opened	12:30 p.m.	A.M. P.M.	Tool Closed	2:30 p.m.	A.M. P.M.
Initial Hydro Mud Pres.	2511		2408		Remarks	Tool opened for 15 minute first flow with				
Initial Closed in Pres.	1325		1325		weak blow to strong in 5 minutes. Closed for 30					
Initial Flow Pres.	37	1	31		minute initial closed in pressure. Reopened for					
Final Flow Pres.	185	1	180		45 minute second flow with strong blow throughout					
Final Closed in Pres.	1316		1324		test. Closed for 30 minute final closed in pressure.					
Final Hydro Mud Pres.	2511		2397							

FORMATION TEST DATA

3

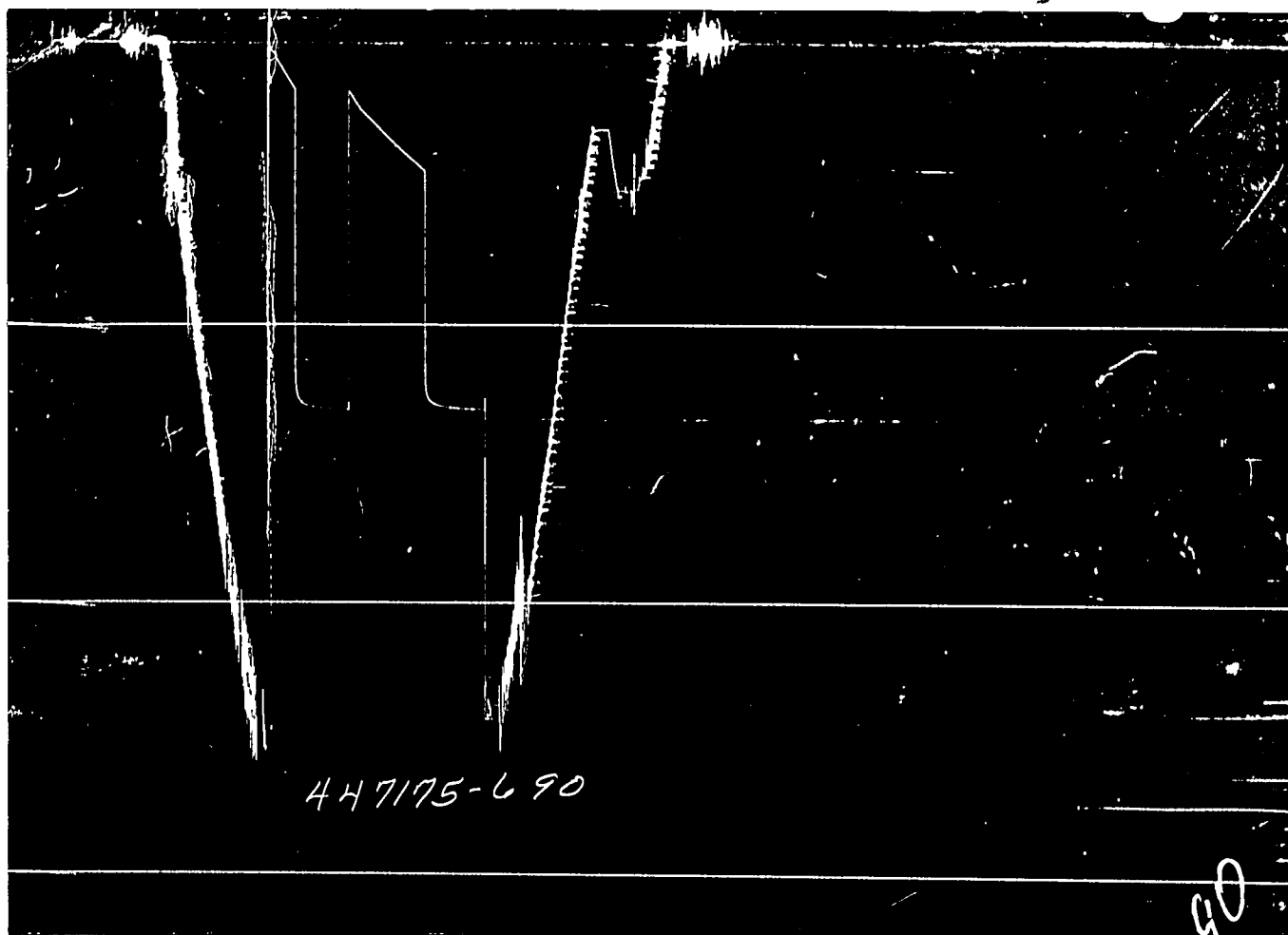
Gauge No. 690			Depth 4446'			Clock 12 hour		Ticket No. 447175		
First Flow Period			Initial Closed In Pressure			Second Flow Period		Final Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\phi}{\phi}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\phi}{\phi}$	PSIG Temp. Corr.
P ₀	.000	12	.000		168	.000	175	.000		460
P ₁	.0208	43	.0212		1279	.060	251	.0238		1282
P ₂	.0416	76	.0424		1295	.120	307	.0476		1295
P ₃	.0624	107	.0636		1300	.180	362	.0714		1300
P ₄	.0832	138	.0848		1305	.240	412	.0952		1303
P ₅	.104	168	.1060		1307	.300	460	.1190		1305
P ₆			.1272		1309			.1428		1307
P ₇			.1484		1310			.1666		1309
P ₈			.1696		1311			.1904		1310
P ₉			.1908		1311			.2142		1311
P ₁₀			.212		1311			.238		1311

Gauge No. 228			Depth 4472'			Clock 12		hour		
P ₀	.000	31	.000		180	.000	191	.000		473
P ₁	.0212	58	.022		1290	.0624	264	.0246		1294
P ₂	.0424	90	.044		1307	.1248	320	.0492		1307
P ₃	.0636	122	.066		1314	.1872	372	.0738		1313
P ₄	.0848	151	.088		1317	.2496	422	.0984		1316
P ₅	.106	180	.110		1319	.312	473	.1230		1318
P ₆			.132		1321			.1476		1320
P ₇			.154		1322			.1722		1321
P ₈			.176		1323			.1968		1322
P ₉			.198		1324			.2214		1323
P ₁₀			.220		1325			.246		1324
Reading Interval 3			3			9		3 Minutes		

REMARKS:

SPECIAL PRESSURE DATA

PRESSURE



TIME

