

Gauge No. 1891		Depth 3955'		Clock No. 7105		12 hour		Ticket No. 435850			
First Flow Period		Closed In Pressure		Second Flow Period		Second Closed In Pressure		Third Flow Period		Third Closed In Pressure	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $t + \theta$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $t + \theta$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $t + \theta$
0	.0000 20.8	.0000		.0000	146.0	.0000		.0000	308.7		
1	.0327 38.2	.0197		.0668	180.0	.0266		.0266	1112.9		
2	.0653 60.8	.0395		.1337	214.7	.0532		.0532	1144.4		
3	.0980 81.7	.0592		.2005	251.3	.0799		.0799	1161.1		
4	.1307 101.7	.0789		.2673	273.0	.1065		.1065	1173.3		
5	.1633 120.8	.0987		.3342	291.3	.1331		.1331	1182.1		
6	.1960 140.8	.1184		.4010	308.7	.1597		.1597	1189.1		
7		.1381				.1864		.1864	1194.4		
8		.1579				.2130		.2130	1198.7		
9		.1776				.2396		.2396	1202.2		
10		.1973				.2662		.2662	1205.7		
11		.2171				.2928		.2928	1208.4		
12		.2368				.3195		.3195	1211.0		
13		.2565				.3461		.3461	1213.6		
14		.2763				.3727		.3727	1215.4		
15		.2960				.4060		.4060	1217.1*		

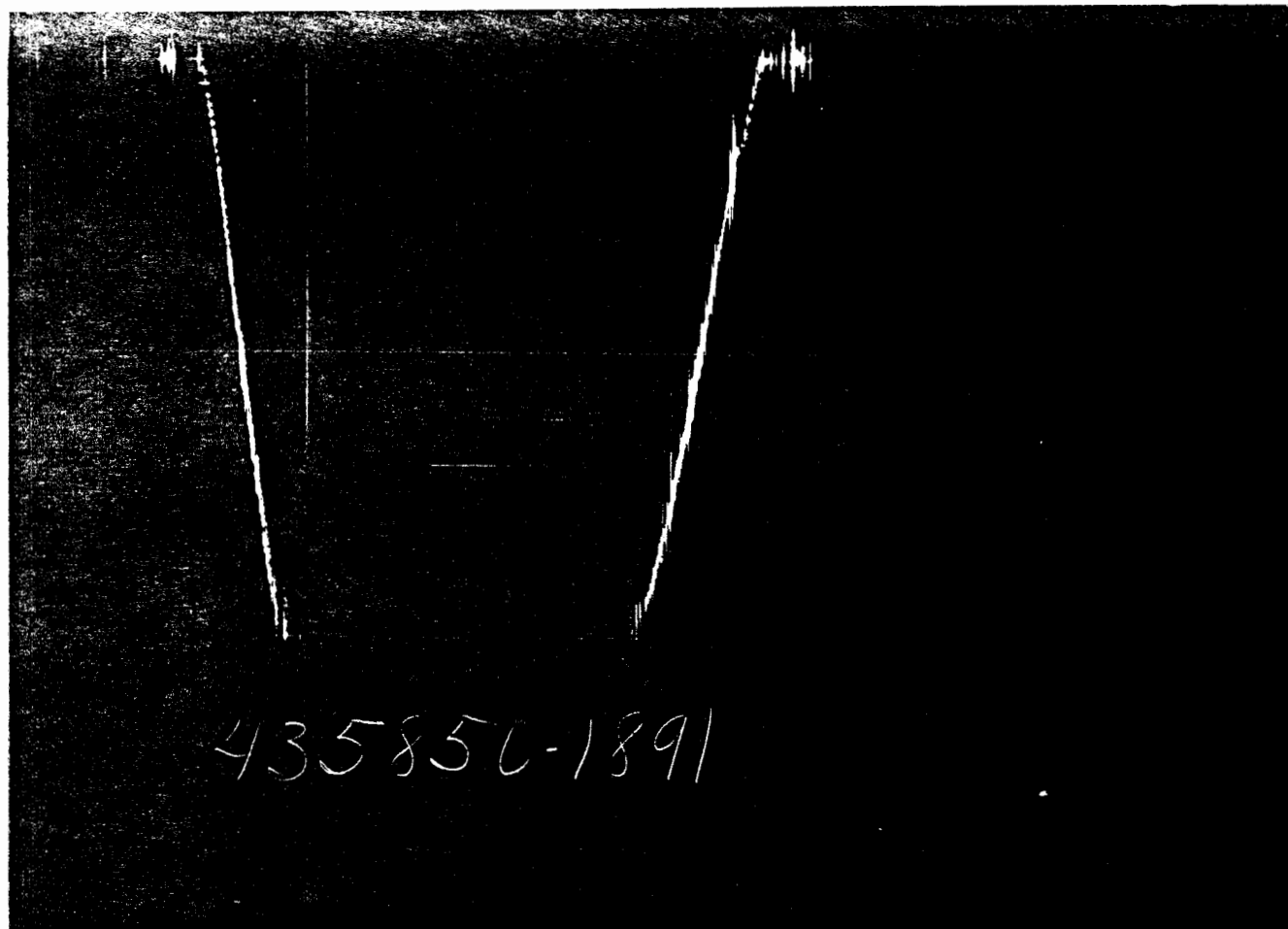
Gauge No. 1890		Depth 3961'		Clock No. 3000		12 hour	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $t + \theta$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $t + \theta$
0	.0000 25.1	.0000		.0000	149.9	.0000	
1	.0330 52.0	.0198		.0266	184.9	.0266	
2	.0660 78.0	.0396		.0532	222.6	.0532	
3	.0990 99.6	.0594		.0799	257.6	.0799	
4	.1320 121.1	.0792		.1065	279.1	.1065	
5	.1650 140.9	.0990		.1331	297.1	.1331	
6	.1980 153.5	.1188		.1597	314.1	.1597	
7		.1386		.1864		.1864	
8		.1584		.2130		.2130	
9		.1782		.2396		.2396	
10		.1980		.2662		.2662	
11		.2178		.2928		.2928	
12		.2376		.3195		.3195	
13		.2574		.3461		.3461	
14		.2772		.3727		.3727	
15		.2970		.4060		.4060	

Reading Interval 5		3		10		4		Minutes	

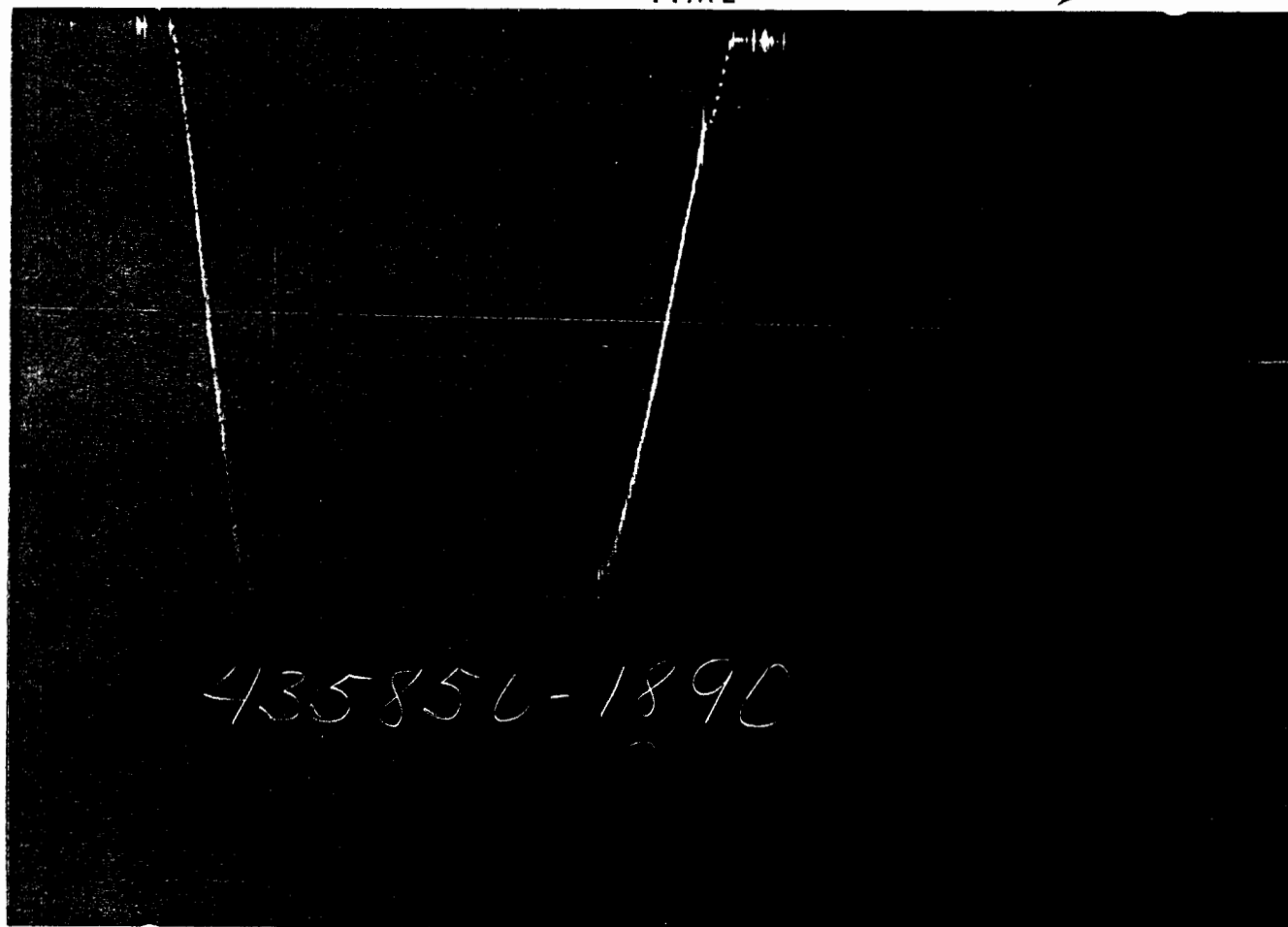
REMARKS: *Interval = 5 minutes

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Reversing Sub X Hole	6"	3"	1'	3806'
Water Cushion Valve				
Drill Pipe	4 $\frac{1}{2}$ "	3.826"	3396'	
Drill Collars	4 $\frac{1}{2}$ " WP	2.764"	534'	
Handling Sub & Choke Assembly				
Dual CIP Valve	5"	.87"	6'	3931'
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	5'	3941'
Multiple CIP Sampler				
Extension Joint				
AP Running Case				
Hydraulic Jar				
VR Safety Joint				
Pressure Equalizing Crossover				
Packer Assembly	6.75"	1.53"	6'	3946'
Distributor				
Packer Assembly	6.75"	1.53"	4'	3952'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case	5"	2.25"	4'	3955'
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5"	2.37"	4'	
HT-500	5"	2.25"	1'	3960'
Blanked-Off B.T. Running Case	5"	2.44"	4'	3961'
Total Depth				3965'

— PRESSURE —
↓



— TIME —→



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

TEMPERATURE RECORDER CHART

435850

115°

10° each circle

P_s	= Extrapolated Static Pressure	.....	Psig.
P_f	= Final Flow Pressure	.....	Psig.
P_{or}	= Potentiometric Surface (Fresh Water *)	.....	Feet
Q	= Average Adjusted Production Rate During Test	.....	bbls/day
Q_1	= 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	.....	—
μ	= Viscosity Gas or Liquid	.....	CP
Log	= Common Log		

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

Casing perms. _____ Bottom choke _____ Surf. temp _____ °F Ticket No. 631583
Gas gravity _____ Oil gravity _____ GOR _____
Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F
INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

Casing perfs. _____ Bottom choke _____ Surf. temp _____ °F Ticket No. _____

Gas gravity_____Oil gravity_____GOR_____

Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

[illegible]

Gauge No.		1891		Depth		4007'		Clock No.		7105		12 hour		Ticket No.		631583	
First Flow Period		First Closed In Pressure		Second Flow Period		Second Closed In Pressure		Third Flow Period		Third Closed In Pressure		Third Flow Period		Third Closed In Pressure		Third Flow Period	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.
0	.0000	14.7		.0000	100.0	.0000	106.0	.0000		.0000	254.7						
1	.0406	30.4*		.0135	1151.4**	.0797	132.1**	.0135		.0135	1140.1**						
2	.0745	44.3		.0336	1191.7	.1462	158.2	.0404		.0404	1184.7						
3	.1084	58.2		.0538	1207.5	.2126	183.4	.0674		.0674	1200.5						
4	.1423	73.0		.0740	1217.1	.2791	207.8	.0944		.0944	1208.4						
5	.1761	86.9		.0942	1223.3	.3456	231.3	.1213		.1213	1215.4						
6	.2100	100.0		.1144	1227.6	.4120	254.7	.1483		.1483	1218.9						
7				.1345	1231.1			.1753		.1753	1221.5						
8				.1547	1232.9			.2022		.2022	1224.1						
9				.1749	1234.6			.2292		.2292	1226.8						
10				.1951	1237.3			.2562		.2562	1228.5						
11				.2153	1238.1			.2831		.2831	1230.3						
12				.2355	1239.0			.3101		.3101	1231.1						
13				.2556	1239.9			.3371		.3371	1232.0						
14				.2758	1240.8			.3640		.3640	1232.9						
15				.2960	1241.6			.3910		.3910	1233.8						

Gauge No.		1890		Depth		4031'		Clock No.		3000X		12 hour	
First Flow Period		First Closed In Pressure		Second Flow Period		Second Closed In Pressure		Third Flow Period		Third Closed In Pressure		Third Flow Period	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.
0	.0000	28.7		.0000	113.1	.0000	118.4	.0000		.0000	268.4		
1	.0403	41.2*		.0133	1162.1**	.0794	145.4**	.0133		.0133	1148.6**		
2	.0738	56.5		.0333	1205.4	.1455	172.3	.0400		.0400	1199.0		
3	.1074	71.8		.0533	1221.6	.2116	196.5	.0667		.0667	1214.4		
4	.1409	86.1		.0733	1230.6	.2777	221.7	.0934		.0934	1223.4		
5	.1745	99.6		.0932	1236.9	.3439	245.9	.1201		.1201	1229.7		
6	.2080	113.1		.1132	1239.6	.4100	268.4	.1468		.1468	1233.3		
7				.1332	1244.1			.1735		.1735	1236.9		
8				.1532	1245.9			.2002		.2002	1238.7		
9				.1731	1248.6			.2269		.2269	1241.4		
10				.1931	1249.5			.2536		.2536	1243.2		
11				.2131	1251.3			.2802		.2802	1245.0		
12				.2331	1252.2			.3069		.3069	1245.9		
13				.2530	1253.1			.3336		.3336	1248.6		
14				.2730	1254.0			.3603		.3603	1249.5		
15				.2930	1254.9			.3870		.3870	1249.5		

Gauge No.		1890		Depth		4031'		Clock No.		3000X		12 hour	
First Flow Period		First Closed In Pressure		Second Flow Period		Second Closed In Pressure		Third Flow Period		Third Closed In Pressure		Third Flow Period	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.
0	.0000	28.7		.0000	113.1	.0000	118.4	.0000		.0000	268.4		
1	.0403	41.2*		.0133	1162.1**	.0794	145.4**	.0133		.0133	1148.6**		
2	.0738	56.5		.0333	1205.4	.1455	172.3	.0400		.0400	1199.0		
3	.1074	71.8		.0533	1221.6	.2116	196.5	.0667		.0667	1214.4		
4	.1409	86.1		.0733	1230.6	.2777	221.7	.0934		.0934	1223.4		
5	.1745	99.6		.0932	1236.9	.3439	245.9	.1201		.1201	1229.7		
6	.2080	113.1		.1132	1239.6	.4100	268.4	.1468		.1468	1233.3		
7				.1332	1244.1			.1735		.1735	1236.9		
8				.1532	1245.9			.2002		.2002	1238.7		
9				.1731	1248.6			.2269		.2269	1241.4		
10				.1931	1249.5			.2536		.2536	1243.2		
11				.2131	1251.3			.2802		.2802	1245.0		
12				.2331	1252.2			.3069		.3069	1245.9		
13				.2530	1253.1			.3336		.3336	1248.6		
14				.2730	1254.0			.3603		.3603	1249.5		
15				.2930	1254.9			.3870		.3870	1249.5		

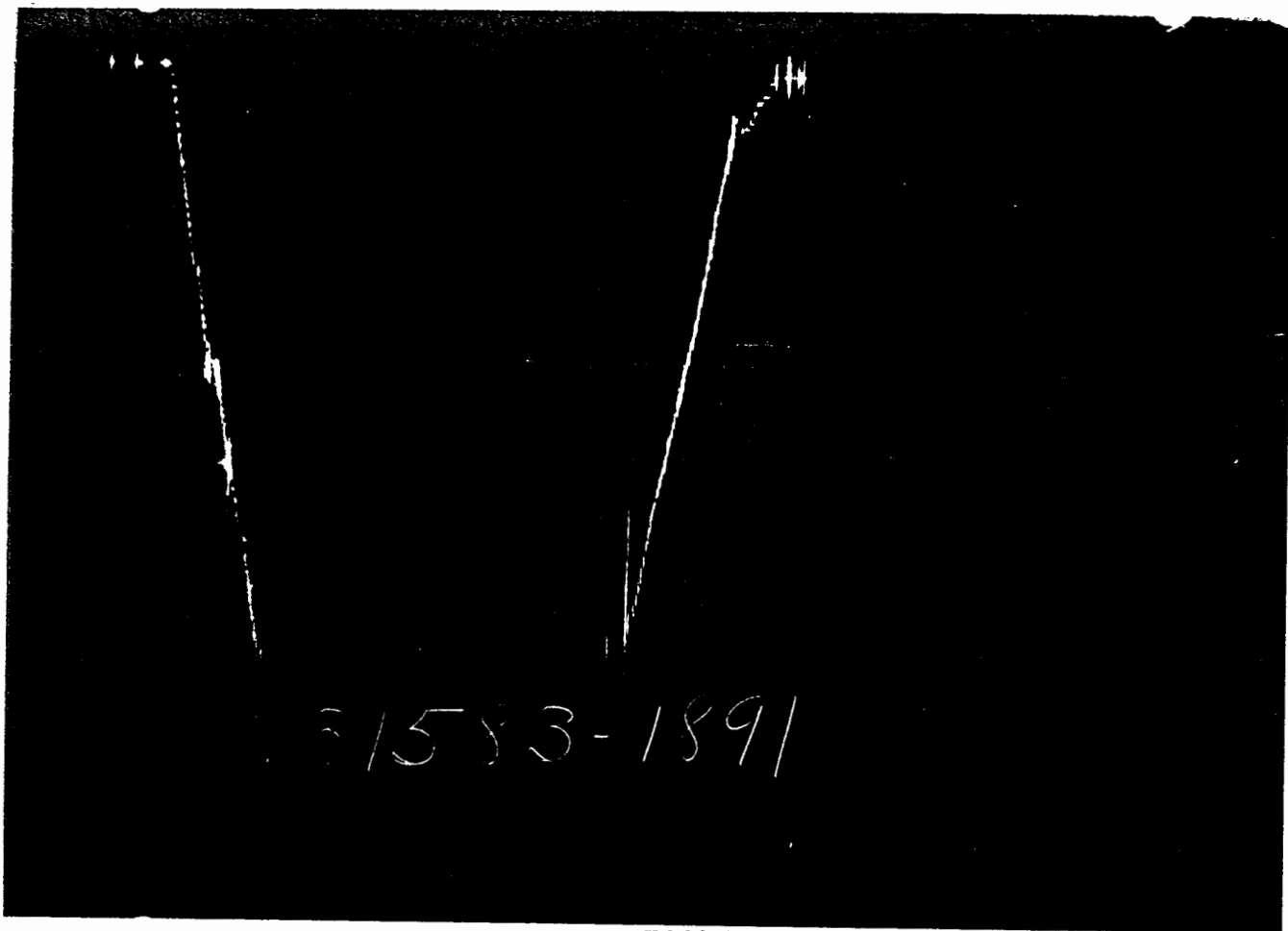
Gauge No.		1890		Depth		4031'		Clock No.		3000X		12 hour	
First Flow Period		First Closed In Pressure		Second Flow Period		Second Closed In Pressure		Third Flow Period		Third Closed In Pressure		Third Flow Period	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.
0	.0000	28.7		.0000	113.1	.0000	118.4	.0000		.0000	268.4		
1	.0403	41.2*		.0133	1162.1**	.0794	145.4**	.0133		.0133	1148.6**		
2	.0738	56.5		.0333	1205.4	.1455	172.3	.0400		.0400	1199.0		
3	.1074	71.8		.0533	1221.6	.2116	196.5	.0667		.0667	1214.4		
4	.1409	86.1		.0733	1230.6	.2777	221.7	.0934		.0934	1223.4		
5	.1745	99.6		.0932	1236.9	.3439	245.9	.1201		.1201	1229.7		
6	.2080	113.1		.1132	1239.6	.4100	268.4	.1468		.1468	1233.3		
7				.1332	1244.1			.1735		.1735	1236.9		
8				.1532	1245.9			.2002		.2002	1238.7		
9				.1731	1248.6			.2269		.2269	1241.4		
10				.1931	1249.5			.2536		.2536	1243.2		
11				.2131	1251.3			.2802		.2802	1245.0		
12				.2331	1252.2			.3069		.3069	1245.9		
13				.2530	1253.1			.3336		.3336	1248.6		
14				.2730	1254.0			.3603		.3603	1249.5		
15				.2930	1254.9			.3870		.3870	1249.5		

Gauge No.		1890		Depth		4031'		Clock No.		3000X		12 hour	
First Flow Period		First Closed In Pressure		Second Flow Period		Second Closed In Pressure		Third Flow Period		Third Closed In Pressure		Third Flow Period	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.
0	.0000	28.7		.0000	113.1	.0000	118.4	.0000		.0000	268.4		
1	.0403	41.2*		.0133	1162.1**	.0794	145.4**	.0133		.0133	1148.6**		
2	.0738	56.5		.0333	1205.4	.1455	172.3	.0400		.0400	1199.0		
3	.1074	71.8		.0533	1221.6	.2116	196.5	.0667		.0667	1214.4		
4	.1409	86.1		.0733	1230.6	.2777	221.7	.0934		.0934	1223.4		
5	.1745	99.6		.0932	1236.9	.3439	245.9	.1201		.1201	1229.7		
6	.2080	113.1		.1132	1239.6	.4100	268.4	.1468		.1468	1233.3		
7				.1332	1244.1			.1735		.1735	1236.9		
8				.1532	1245.9			.2002		.2002	1238.7		
9				.1731	1248.6			.2269		.2269	1241.4		
10				.1931	1249.5			.2536		.2536	1243.2		
11				.2131	1251.3			.2802		.2802	1245.0		
12				.2331	1252.2			.3069		.3069	1245.9		
13				.2530	1253.1			.3336		.3336	1248.6		
14				.2730	1254.0			.3603		.3603	1249.5		
15				.2930	1254.9			.3870		.3870	1249.5		

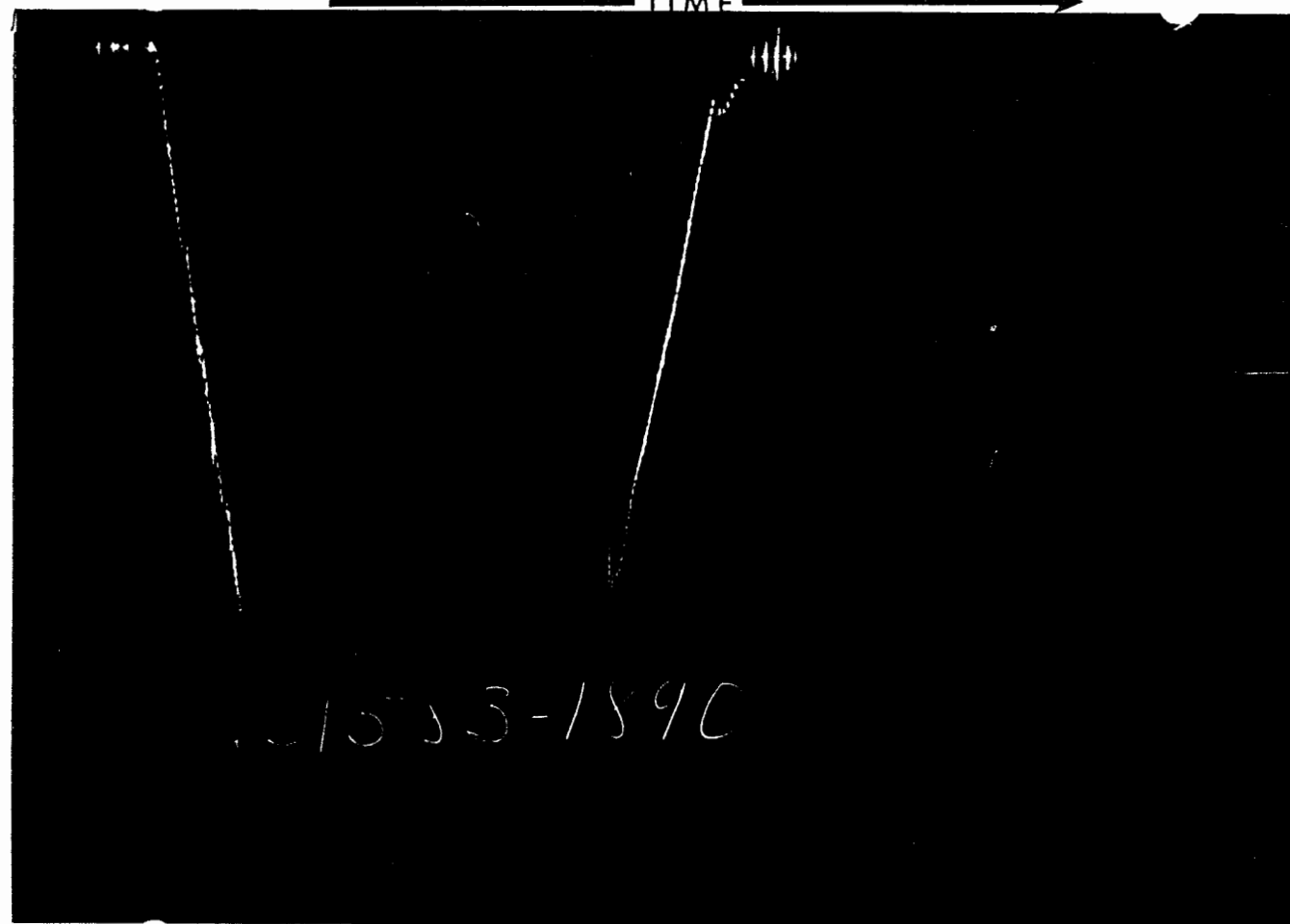
Gauge No.		1890		Depth		4031'		Clock No.		3000X		12 hour	
First Flow Period		First Closed In Pressure		Second Flow Period		Second Closed In Pressure		Third Flow Period		Third Closed In Pressure		Third Flow Period	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.
0	.0000	28.7		.0000	113.1	.0000	118.4	.0000		.0000	268.4		
1	.0403	41.2*		.0133	1162.1**	.0794	145.4**	.0133		.0133	1148.6**		
2	.0738	56.5		.0333	1205.4	.1455	172.3	.0400		.0400	1199.0		
3	.1074	71.8		.0533	1221.6	.2116	196.5	.0667		.0667	1214.4		
4	.1409	86.1		.0733	1230.6	.2777	221.7	.0934		.0934	1223.4		
5	.1745	99.6		.0932	1236.9	.3439	245.9	.1201		.1201	1229.7		
6	.2080	113.1		.1132	1239.6	.4100	268.4	.1468		.1468	1233.3		
7				.1332	1244.1			.1735		.1735	1236.9		
8				.1532	1245.9			.2002		.2002	1238.7		
9				.1731	1248.6			.2269		.2269	1241.4		
10				.1931	1249.5			.2536		.2536	1243.2		
11				.2131	1251.3			.2802		.2802	1245.0		
12				.2331	1252.2			.3069		.			

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing	5.75"	2.75"	1'	
Reversing Sub				
Water Cushion Valve				
Drill Pipe	4½"	3.826"	3478'	
Drill Collars	4½" WP	2.764"	514'	
Handling Sub & Choke Assembly				
Dual CIP Valve	5"	.87"	6'	3982'
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	5'	3992'
Multiple CIP Sampler				
Extension Joint				
AP Running Case				
Hydraulic Jar				
VR Safety Joint				
Pressure Equalizing Crossover				
Packer Assembly	6.75"	1.53"	6'	3998'
Distributor				
Packer Assembly	6.75"	1.53"	4'	4004'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case	5"	3.06"	4'	4007'
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5"	2.37"	20'	
HT-500	5"	3.75"	1'	4030'
Blanked-Off B.T. Running Case	5"	2.44"	4'	4031'
Total Depth				4035'

↓ PRESSURE



→ TIME



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

TEMPERATURE RECORDER CHART

63,533
1.5°

10° each circle

P_s	= Extrapolated Static Pressure	.....	Psig.
P_f	= Final Flow Pressure	.....	Psig.
P_{oi}	= Potentiometric Surface (Fresh Water *)	.....	Feet
Q	= Average Adjusted Production Rate During Test	.....	bbls/day
Q_1	= 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	.....	—
μ	= Viscosity Gas or Liquid	.....	CP
Log	= Common Log		

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

FLUID SAMPLE DATA				Date 7-7-79		Ticket Number 631584	
Sampler Pressure _____ P.S.I.G. at Surface				Kind of Job OPEN HOLE		Halliburton District OBERLIN	
Recovery: Cu. Ft. Gas _____				Tester NUTTING		Witness LEWELLYN	
cc. Oil _____				Drilling Contractor ABERCROMBIE DRILLING, INC. # 9 NM			
cc. Water _____				EQUIPMENT & HOLE DATA S			
cc. Mud _____				Formation Tested Lower Kansas City			
Tot. Liquid cc. _____				Elevation 3054' Ft.			
Gravity _____ ° API @ _____ °F.				Net Productive Interval 5' Ft.			
Gas/Oil Ratio _____ cu. ft./bbl.				All Depths Measured From Kelly Bushing			
RESISTIVITY CHLORIDE CONTENT				Total Depth 4255' Ft.			
Recovery Water @ _____ °F. _____ ppm				Main Hole/Casing Size 7 7/8"			
Recovery Mud @ _____ °F. _____ ppm				Drill Pipe Length 483' I.D. 2.764" WP			
Recovery Mud Filtrate @ _____ °F. _____ ppm				Drill Pipe Length 3691' I.D. 3.826"			
Mud Pit Sample @ _____ °F. _____ ppm				Packer Depth(s) 4179' - 4185' Ft.			
Mud Pit Sample Filtrate @ _____ °F. _____ ppm				Depth Tester Valve 4174' Ft.			
Mud Weight 9.4 vis 40 sec							
Cushion		TYPE	AMOUNT	Depth Back Pres. Valve	Surface Choke	Bottom Choke	
			NONE	NONE	.25"	.75"	
Recovered	65'	Feet of	mud				
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Remarks SEE PRODUCTION TEST DATA SHEET...							
RECEIVED AUG 10 1979 GREAT BEND DIVISION OFFICE TIME							
TEMPERATURE		Gauge No. 1891	Gauge No. 1890	Gauge No.			
		Depth: 4188' Ft.	Depth: 4251' Ft.	Depth:			
		12 Hour Clock	12 Hour Clock	Hour Clock			
Est. _____ °F.		Blanked Off NO	Blanked Off YES	Blanked Off			
4250' @						Tool _____ A.M.	
Actual 118 °F.						Opened 0855 P.M.	
						Opened _____ A.M.	
						Bypass 1125 P.M.	
						Reported _____	
						Computed _____	
						Minutes _____	
						Minutes _____	
First Period	Flow Initial	-	17.3	36	55.6		
	Flow Final	-	28.6	54	63.7		
	Closed in	-	1269.7	1293	1301.8		
Second Period	Flow Initial	-	34.7	54	68.2		
	Flow Final	-	44.3	54	78.0		
	Closed in	-	1250.4	1275	1283.7		
Third Period	Flow Initial	-					
	Flow Final	-					
	Closed in	-					
Final Hydrostatic		-	2112.3	2146	2138.4		

Legal Location
Sec. - Twp. - Rng.

2 - 13S - 33W

Field Area
MILDCAT

County

LOGAN

State

KANSAS

Lease Name

Well No.

Test No.

Tested Interval

Lease Owner/Company Name

VOTH

1

3

4185' - 4255'

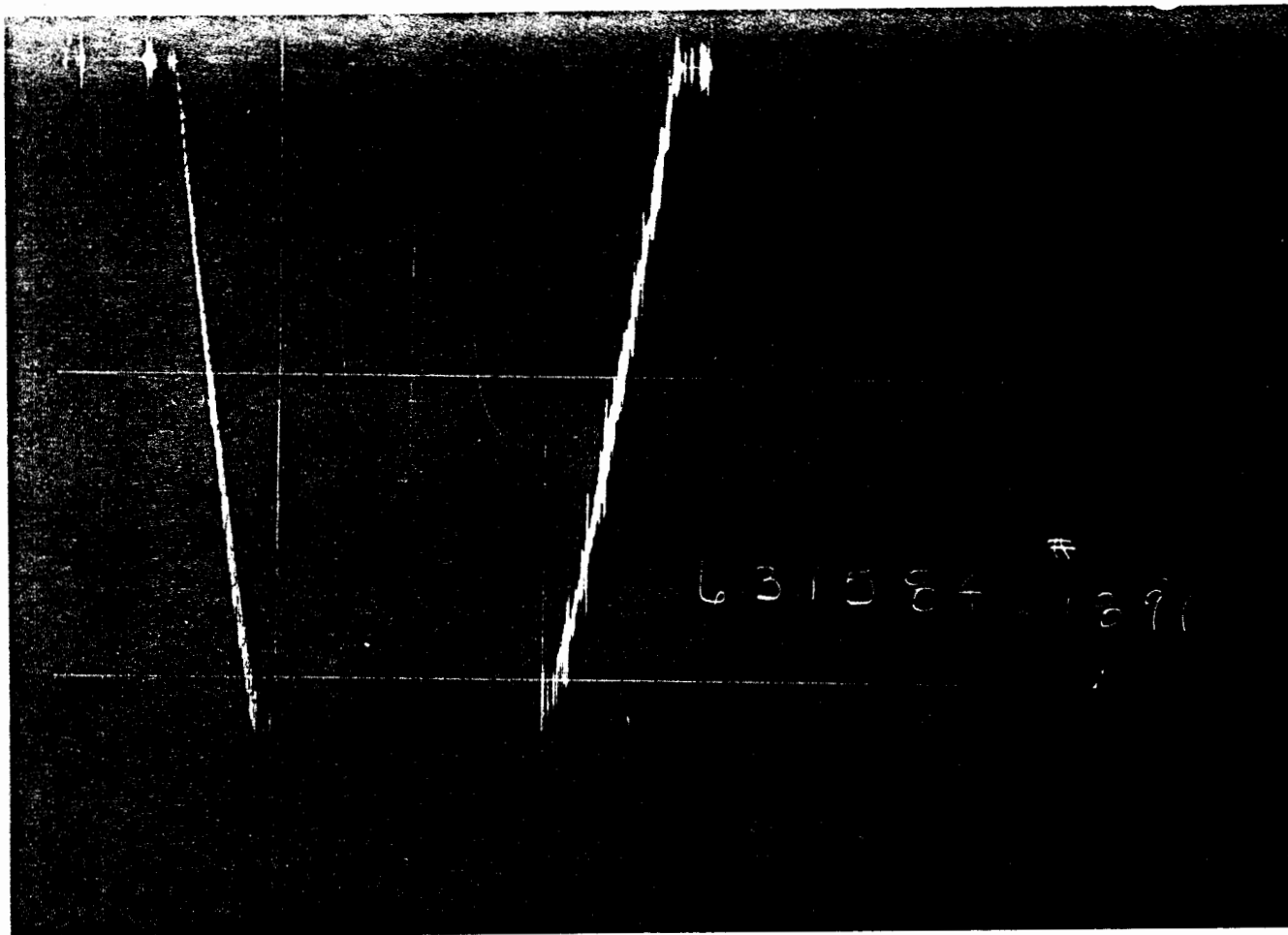
BEREN CORPORATION

Casing perf. _____ Bottom choke _____ Surf. temp _____ °F Ticket No. 631584
Gas gravity _____ Oil gravity _____ GOR _____
Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F
INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

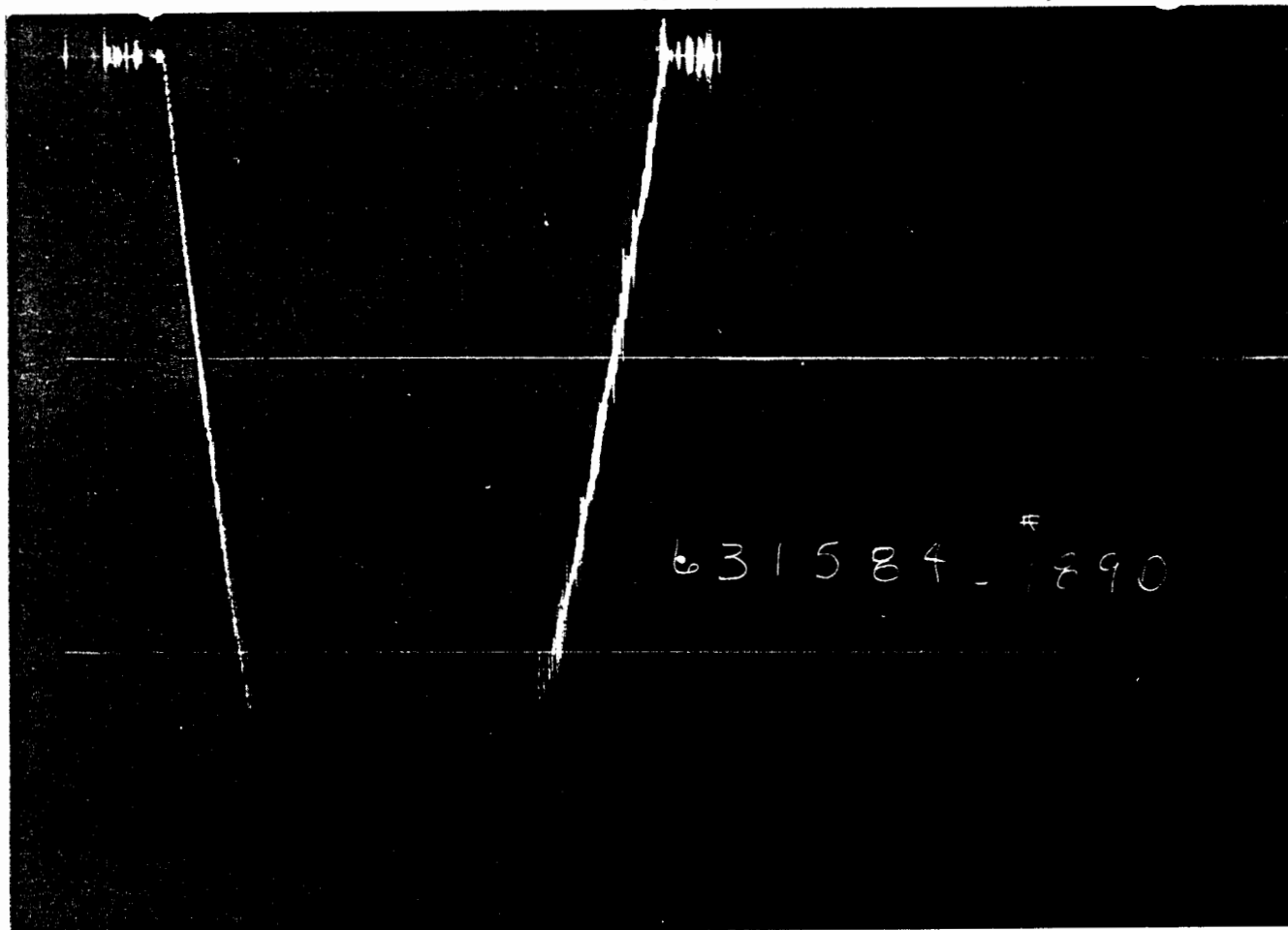
[illegible]

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing	5.75"	2.75"	1'	
Reversing Sub				
Water Cushion Valve				
Drill Pipe	4½"	3.826"	3691'	
Drill Collars WEIGHT PIPE	4½"	2.764"	483'	
Handling Sub & Choke Assembly				
Dual CIP Valve	5"	.87"	6'	4164'
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	5'	4174'
Multiple CIP Sampler				
Extension Joint				
AP Running Case				
Hydraulic Jar				
VR Safety Joint				
Pressure Equalizing Crossover				
Packer Assembly	6.75"	1.53"	6'	4179'
Distributor				
Packer Assembly	6.75"	1.53"	4'	4185'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case	5.00"	3.06"	4'	4188'
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars W.P.	4.5"	2.76"	31'	
Flush Joint Anchor	5.0"	2.37"	39'	
HT-500	5.00"	3.75"	1'	4250'
Blanked-Off B.T. Running Case	5.00"	2.44"	4'	4251'
Total Depth				4255'

— PRESSURE —
↓



— TIME —→



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

TEMPERATURE RECORDER CHART

118°
4631584

10° each circle

OF_3	= Theoretical Open Flow Potential with/Damage Removed Max.	MCF/D
OF_4	= 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
Q_1	= 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	—
μ	= Viscosity Gas or Liquid	CP
Log	= Common Log	

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

Casing perms. _____ Bottom choke _____ Surf. temp _____ °F Ticket No. 631585
 Gas gravity _____ Oil gravity _____ GOR _____
 Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F
 INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

[illegible]

Gauge No.		1891		Depth		4395'		Clock No.		7105		12 hour		Ticket No.		631585	
First Flow Period		First Closed In Pressure		Second Flow Period		Second Closed In Pressure		Third Flow Period		Third Closed In Pressure		Third Flow Period		Third Closed In Pressure		Third Flow Period	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.
0	.0000	18.2		.0000	20.0	.0000		.0000		.0000							
1	.0387*	18.2		.0135**	87.8	.0379*		.0203		.0203							
2	.0710	18.2		.0338	316.5	.0695		.0406		.0406							
3	.1032	19.1		.0541	527.8	.1012		.0609		.0609							
4	.1355	20.0		.0744	693.9	.1328		.0812		.0812							
5	.1677	20.0		.0946	823.4	.1644		.1015		.1015							
6	.2000	20.0		.1149	922.6	.1960		.1218		.1218							
7				.1352	1000.0			.1421		.1421							
8				.1555	1059.5			.1624		.1624							
9				.1758	1107.7			.1827		.1827							
10				.1960	1140.1			.2030		.2030							
11																	
12																	
13																	
14																	
15																	

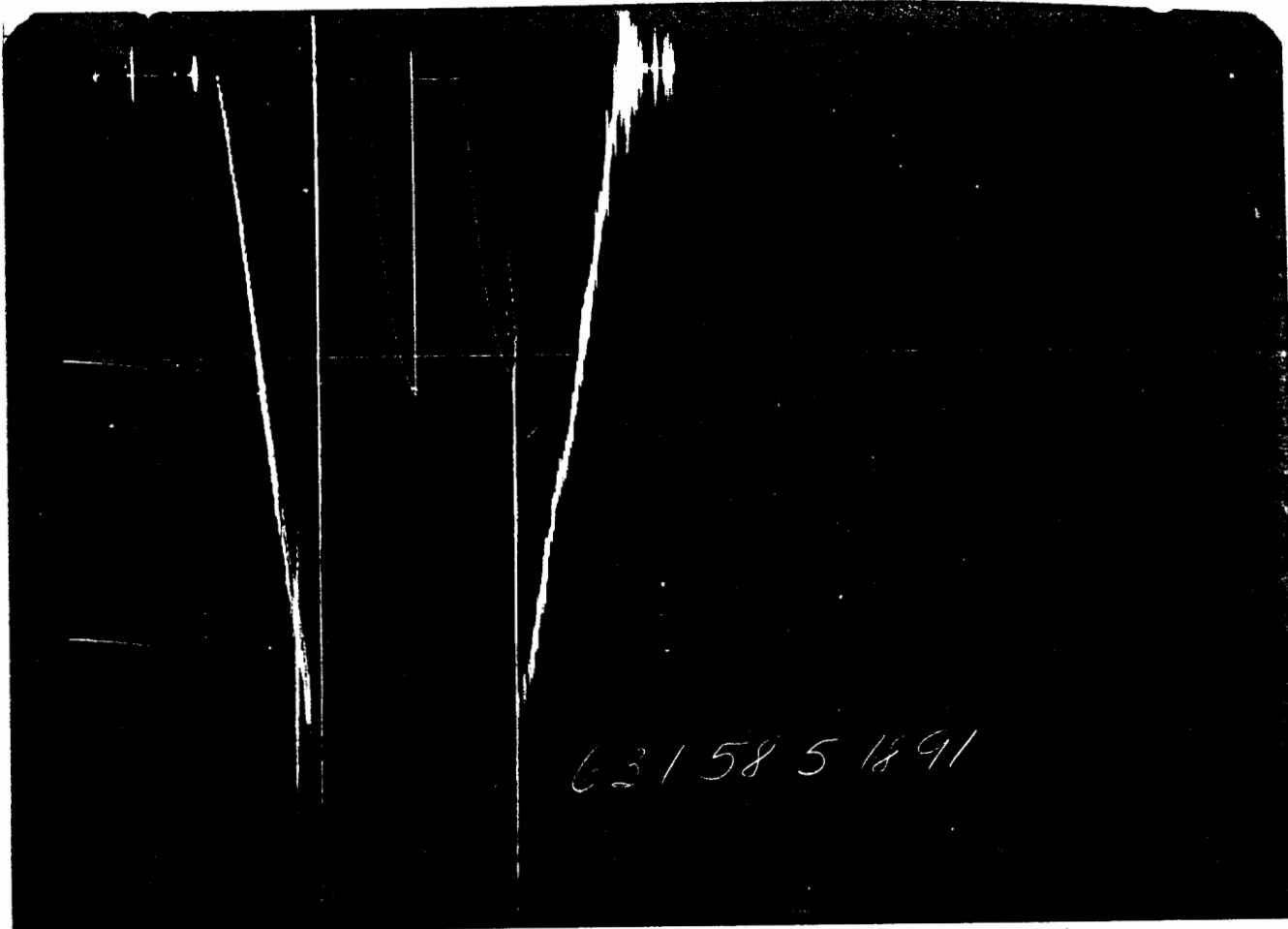
Gauge No.		1890		Depth		4487'		Clock No.		3000X		12 hour	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\log \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.
0	.0000	67.3		.0000	70.9	.0000		.0000		.0000			
1	.0395*	67.3		.0131**	135.5	.0393*		.0199		.0199			
2	.0724	69.1		.0328	376.1	.0720		.0398		.0398			
3	.1053	70.0		.0524	587.8	.1048		.0597		.0597			
4	.1382	70.0		.0721	757.1	.1375		.0796		.0796			
5	.1711	70.9		.0917	878.1	.1703		.0995		.0995			
6	.2040	70.9		.1114	982.1	.2030		.1194		.1194			
7				.1310	1054.0			.1393		.1393			
8				.1507	1110.8			.1592		.1592			
9				.1703	1163.9			.1791		.1791			
10				.1900	1188.2			.1990		.1990			
11													
12													
13													
14													
15													

Reading Interval 5 3 5 3

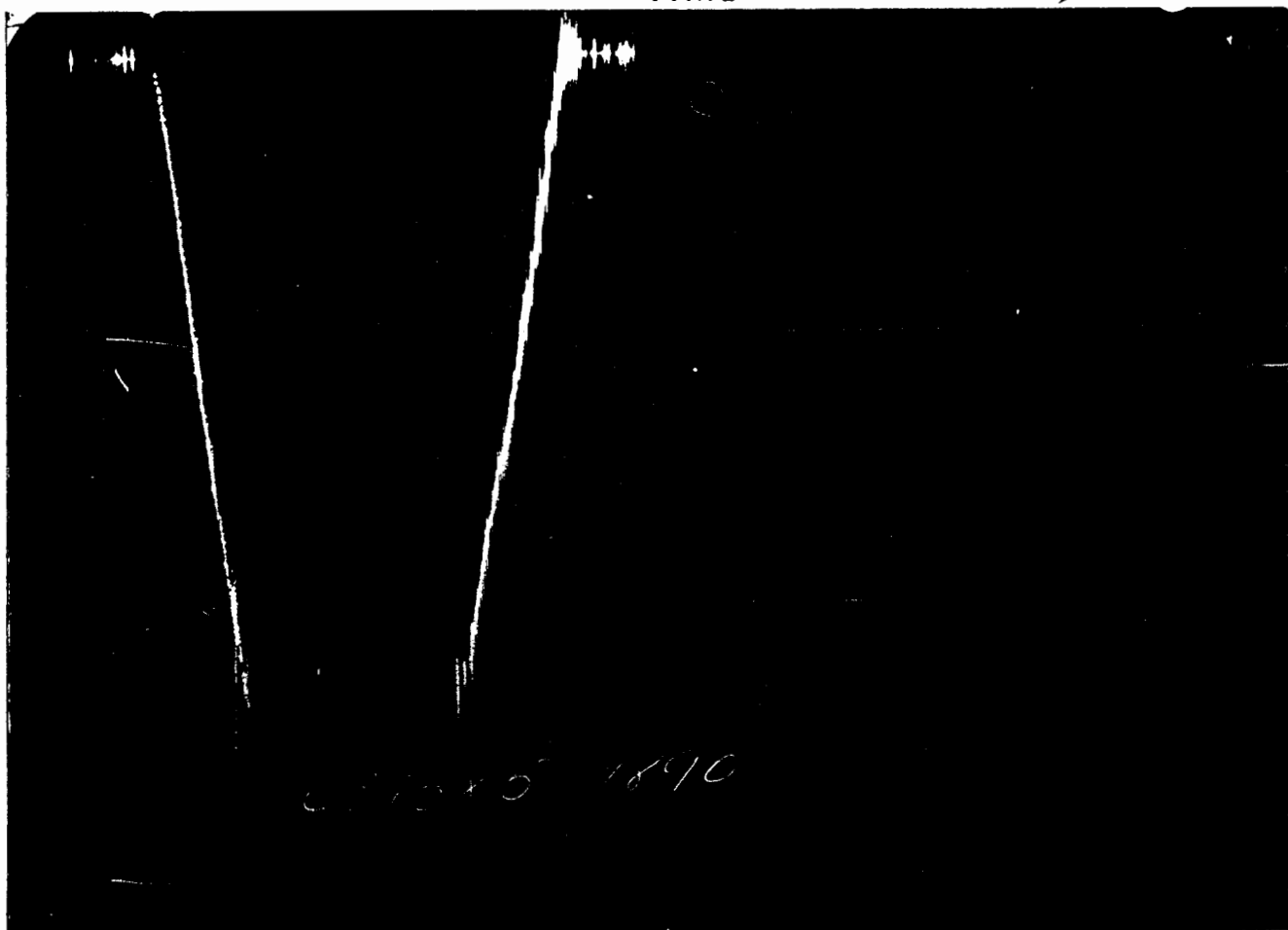
REMARKS: *First interval is equal to 6 minutes. ** = 2 minutes.

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Reversing Sub	5.75"	2.75"	1'	
Water Cushion Valve				
Drill Pipe	4 1/2"	3.826"	3928'	
Drill Collars	4 1/2"	2.764"	453'	
Handling Sub & Choke Assembly				
Dual CIP Valve	5"	.87"	6'	4371'
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	5'	4381'
Multiple CIP Sampler				
Extension Joint				
AP Running Case				
Hydraulic Jar				
VR Safety Joint				
Pressure Equalizing Crossover				
Packer Assembly	6.75"	1.53"	6'	4386'
Distributor				
Packer Assembly	6.75"	1.53"	4'	4392'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off-B.T. Running Case	5"	3.06"	4'	4395'
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars Wt. pipe	4.5"	2.76"	63'	
Flush Joint Anchor	5"	2.36"	24'	
HT 500	5"	3.75"	1'	4485'
Blanked-Off B.T. Running Case	5"	2.44"	4'	4487'
Total Depth				4490'

— PRESSURE —
↓



— TIME —→



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

TEMPERATURE RECORDER CHART



10° each circle

- OF_3 = Theoretical Open Flow Potential with/Damage Removed Max. . . . MCF/D
- OF_4 = Theoretical Open Flow Potential with/Damage Removed Min. . . . MCF/D
- P_s = Extrapolated Static Pressure Psig.
- P_f = Final Flow Pressure Psig.
- P_{or} = Potentiometric Surface (Fresh Water *) Feet
- Q = Average Adjusted Production Rate During Test bbls/day
- Q_1 = 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 —
- μ = Viscosity Gas or Liquid CP
- Log = Common Log

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

VOTH

Lease Name

Well No.

Test No.

4530' - 4660'

Tested Interval

BEREN CORPORATION

Lease Owner/Company Name

Legal Location
Sec. - Twp. - Rng.

2 - 13 S - 33 W

Field Area

WILDCAT

County

LOGAN

State

KANSAS

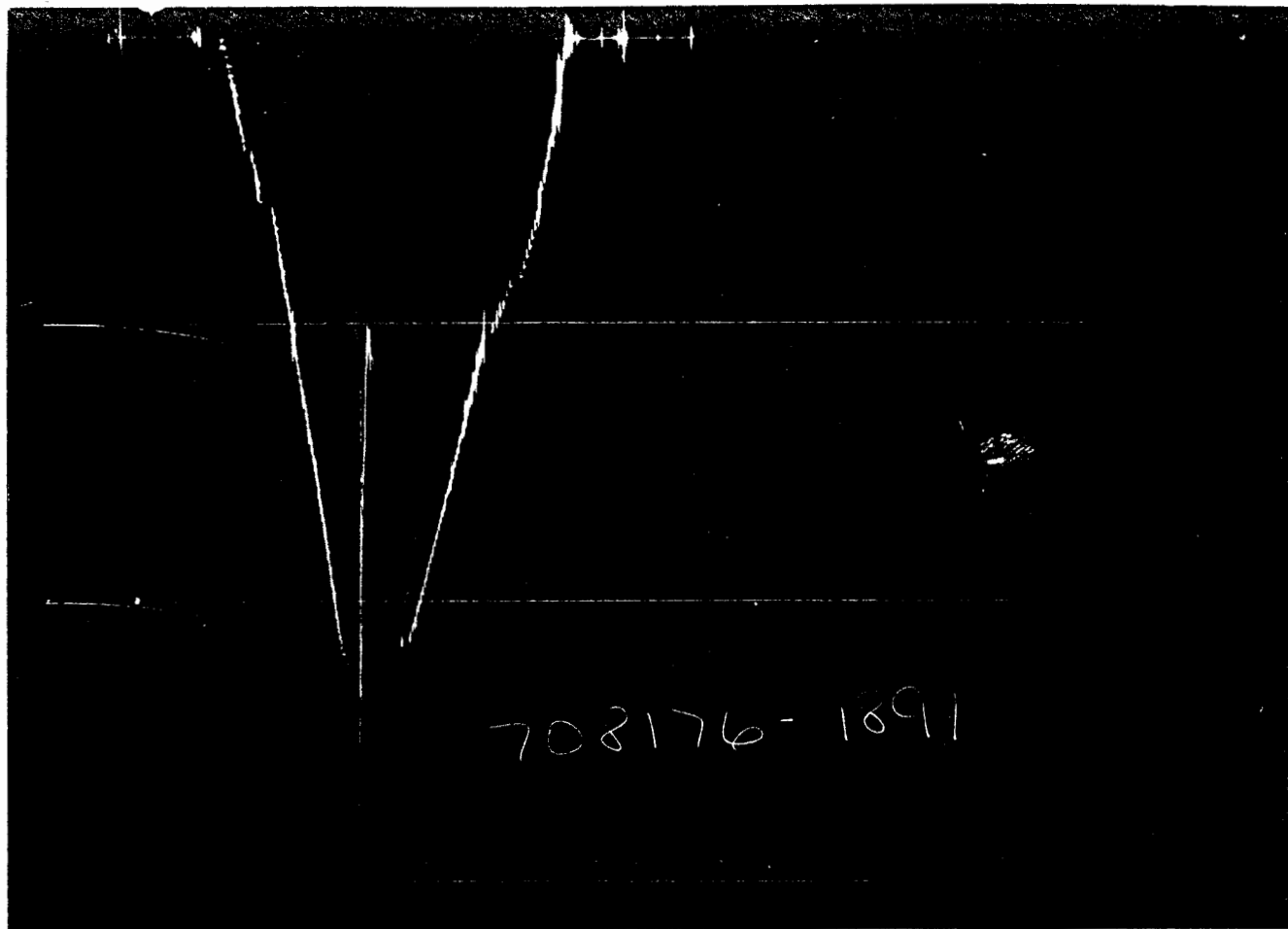
FLUID SAMPLE DATA				Date 7-10-79		Ticket Number 708176	
Sampler Pressure _____ P.S.I.G. at Surface				Kind of Job OPEN HOLE TEST		Halliburton District OBERLIN	
Recovery: Cu. Ft. Gas _____				Tester J. MONDERO		Witness B. LEWELLYN	
cc. Oil _____				Drilling Contractor ABERCROMBIE DRILLING #9 PW			
cc. Water _____				EQUIPMENT & HOLE DATA			
cc. Mud _____				Formation Tested Johnson			
Tot. Liquid cc. _____				Elevation 3054' Ft.			
Gravity _____ ° API @ _____ °F.				Net Productive Interval _____ Ft.			
Gas/Oil Ratio _____ cu. ft./bbl.				All Depths Measured From Kelly Bushing			
RESISTIVITY _____ CHLORIDE CONTENT _____				Total Depth 4660' Ft.			
Recovery Water _____ @ _____ °F. _____ ppm				Main Hole/Casing Size 7 7/8"			
Recovery Mud _____ @ _____ °F. _____ ppm				Drill Collar Length 441' WP I.D. 2.764"			
Recovery Mud Filtrate _____ @ _____ °F. _____ ppm				Drill Pipe Length 4067' I.D. 3.826"			
Mud Pit Sample _____ @ _____ °F. _____ ppm				Packer Depth(s) 4524' - 4530' Ft.			
Mud Pit Sample Filtrate _____ @ _____ °F. _____ ppm				Depth Tester Valve 4519' Ft.			
Mud Weight 9.4 vis 41 Sec. Φ							
TYPE		AMOUNT		Depth Back		Surface	
Cushion				Ft. Pres. Valve		Choke .25" Bottom Choke .75"	
Recovered		2100 Feet of muddy saltwater.					
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Remarks		- MISRUN -					
Used a standard clock factor to obtain times.....							
- SEE PRODUCTION TEST DATA SHEET -							
Q = Questionable.....							
TEMPERATURE		Gauge No. 1891		Gauge No. 1890		Gauge No. _____	
Depth: 4533 Ft.		Depth: 4657 Ft.		Depth: _____		RECEIVED OCT 10 1979 GREAT BEND Division Office	
Est. _____ °F.		12 Hour Clock		12 Hour Clock		Hour Clock	
Blanked Off No		Blanked Off Yes		Blanked Off		Tool _____ A.M.	
4655' @						Opened 0200 P.M.	
Actual 123 °F.		Pressures		Pressures		Opened _____ A.M.	
		Pressures		Pressures		Bypass _____ P.M.	
		Field Office		Field Office		Field Office	
Initial Hydrostatic		2229.2		2293.2		Reported _____ Computed _____	
First Period Flow Initial		1751.3-Q		2227.6-Q		Minutes _____ Minutes _____	
Flow Final		1134.8		1285.5		5 8	
Closed in		2053.9		2118.3		17	
Second Period Flow Initial							
Flow Final							
Closed in							
Third Period Flow Initial							
Flow Final							
Closed in							
Final Hydrostatic		2136.2		2198.5			

Casing perms. _____ Bottom choke _____ Surf. temp. _____ °F Ticket No. 700170
 Gas gravity _____ Oil gravity _____ GOR _____
 Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F
 INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

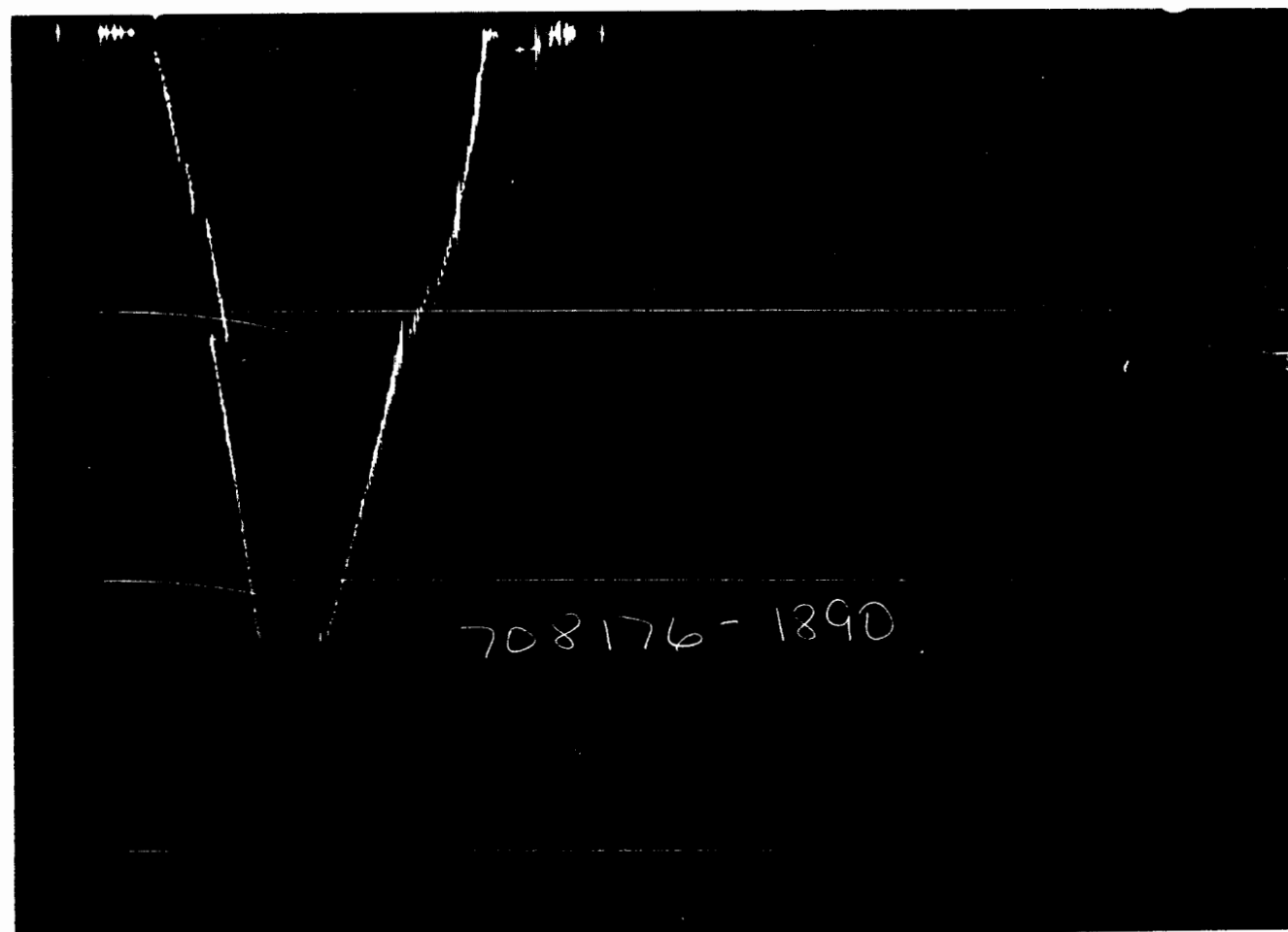
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	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing	6"	3"	1'	4384'
Reversing Sub				
Water Cushion Valve				
Drill Pipe	4 1/2"	3.826"	4067'	
Drill Collars Wt. Pipe	4 1/2"	2.764"	441'	
Handling Sub & Choke Assembly	5"	.87"	6'	4509'
Dual CIP Valve				
Dual CIP Sampler	5"	.75"	5'	4519'
Hydro-Spring Tester				
Multiple CIP Sampler				
Extension Joint				
AP Running Case				
Hydraulic Jar				
VR Safety Joint				
Pressure Equalizing Crossover				
Packer Assembly	6.75"	1.53"	6'	4524'
Distributor				
Packer Assembly	6.75"	1.53"	4'	4530'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case	5"	2.25"	4'	4533'
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor X-Overs	5.75"	2.75"	4'	
Drill Collars Wt. Pipe	5.75"	2.76"	93'	
Flush Joint Anchor	5"	2.37"	24'	
HT-500	5"	2.25"	1'	4655'
Blanked-Off B.T. Running Case	5"	2.44"	4'	4657'
Total Depth				4660'

↑
PRESSURE
↓



TIME →



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

TEMPERATURE RECORDER CHART

708176

123

10° each circle

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 —

μ = Viscosity Gas or Liquid CP

Log = Common Log

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