

OCT - 6 1993

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

clst
File

Type Test ☒ Initial ☐ Annual ☐ Special		Test Date 1-5-93	
Company C.W. Trainer		Connection Flare	
Pool West White Ranch		Formation Mississippian	
Completion Date		Total Depth	Plug Back TD 8100
Elevation		Farm or Lease Name West White Ranch	
Csg. Size 5.5	Wt. 17	Set At 4.892	Perforations: From 7753 To 7770
Tbg. Size 2.875	Wt. 6.5	Set At 2.441	Perforations: From -- To --
Type Well - Single - Drindhead - G.G. or G.O. Multiple Single (gas)		Packer Set At 7658	Unit #1
Producing Thru Tbg. (gas) L 7762	Reservoir Temp. °F 137 #7762	Mean Annual Temp. °F 60	State NM
H 7762	Gg 0.690	% CO ₂ 0.44	% N ₂ 1.42
% H ₂ S 0.00	Prover 0.00	Meter Run 3.0	Taps Flg.

FLOW DATA						TUBING DATA		BHP DATA		Duration of Flow	
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. hw	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI							1882	60	2381	137	72.0
1.	3.0 x	1.000		280	46	65	1730	60	2186	137	1.0
2.	3.0 x	1.000		255	100	65	1510	60	1903	137	1.0
3.	3.0 x	1.500		270	40	65	1265	60	1589	137	1.0
4.	3.0 x	2.000		265	17	65	800	60	1004	137	1.0
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor, F _{sp}	Rate of Flow Q, Mcfd
1	4.801	116.1	293.2	0.9952	1.204	1.034	691
2	4.801	163.8	268.2	0.9952	1.204	1.030	971
3	11.23	106.4	283.2	0.9952	1.204	1.032	1478
4	21.90	68.8	278.2	0.9952	1.204	1.032	1863
5							

NO.	R ₁	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	Mcf/bbl.
1	0.438	525	1.37	0.936	A.P.I. Gravity of Liquid Hydrocarbons	Deq.
2	0.401	525	1.37	0.942	Specific Gravity Separator Gas 0.690	XXXXXX
3	0.423	525	1.37	0.939	Specific Gravity Flowing Fluid XXXXX	
4	0.416	525	1.37	0.939	Critical Pressure 669 P.S.I.A.	P.S.I.A.
5					Critical Temperature 383 R	R

P _r 2394	P _w 5732			
NO.	P _i	P _w	P _r	P _r ² - P _w ²
1		2199	4836	896
2		1916	3672	2060
3		1602	2567	3165
4		1017	1035	4697
5				

$$(1) \frac{P_r^2}{P_r^2 - P_w^2} = 1.803$$

$$(2) \left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 1.433$$

$$AOF = Q \left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 2036$$

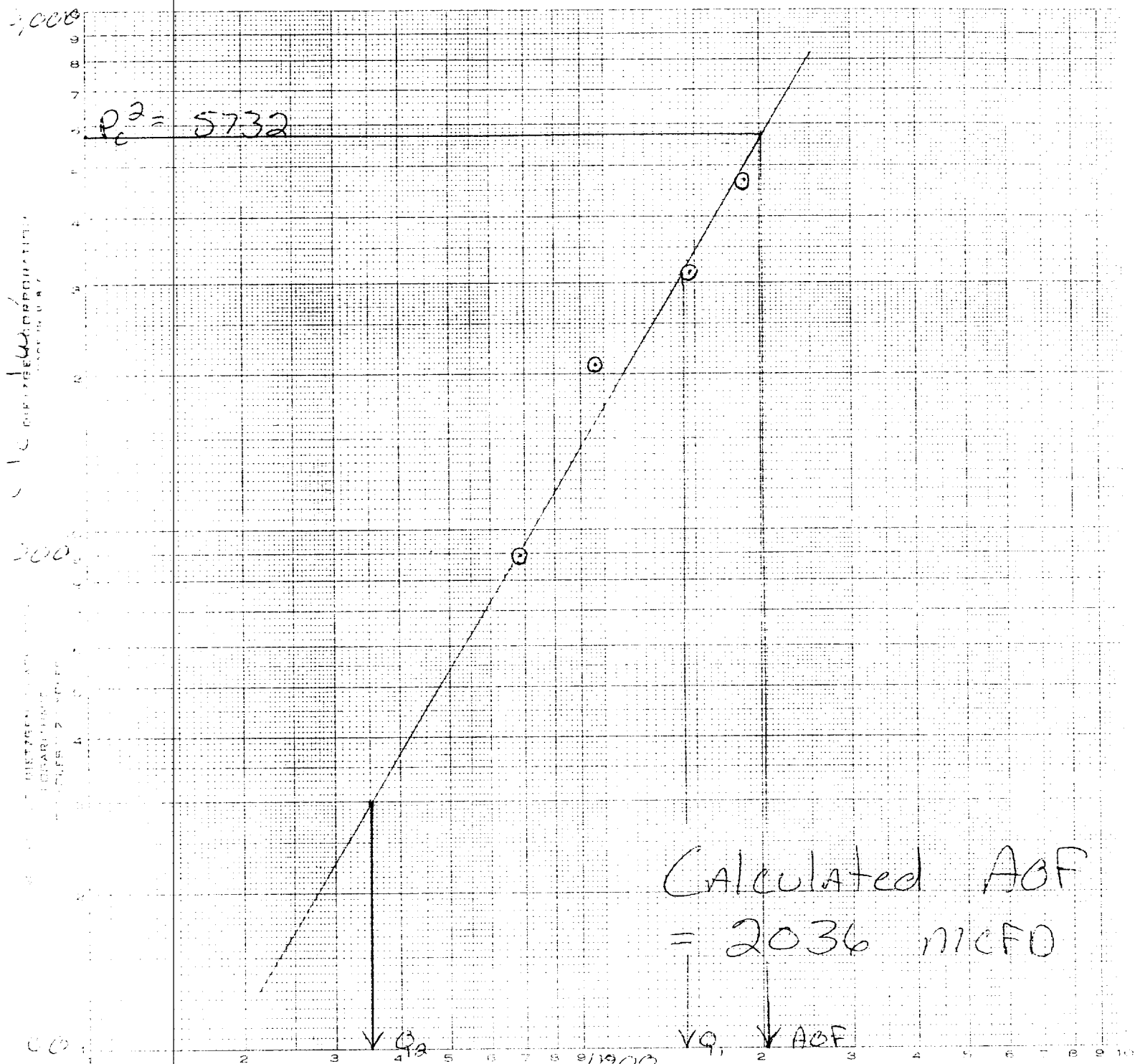
Absolute Open Flow 2036	Mcf @ 15.025	Angle of Slope α	Slope, n 0.610
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Remarks: Choke sizes 1st rate = 8/64, 2nd - 10/64, 3rd - 12/64, 4th - 17.5/64

Approved By Division	Conducted By Keltic Services	Calculated by James W Smith	Checked By
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Company :
 Well :
 Location :
 County :
 Date :

C. W. Tr
 West White Ranch #1
 CHANCES
 1-5-93



$\Delta P_1 = 3000$
 $\Delta P_2 = 300$
 $Q_1 = 1425$
 $Q_2 = 350$

Q_1 , mcf/d

$\log Q_1 = 3.154$

$\log Q_2 = 2.544$

$n = 0.610$

FIELD DATA SHEET

Type Test:	☐ Initial	☐ Annual	☐ Special	Test Date	1-5-93	Lease No. or Serial No.
Company	C. W. TIRRENER				Connection	Allottee
Field	Reservoir		Location		Unit	
Completion Date	Total Depth	Plug Back TD	Elevation		Form or Lease Name	
Csg. Size	Wt.	d	Set At	Perforations: From	To	Well No. H-1
Tbg. Size	Wt.	d	Set At	Perforations: From	To	Sec. Twp - Blk Rge - Sur
Type Completion (Describe)	Packer Set At				County or Parish	
Producing Thru	Reservoir Temp. F		Mean Ground Temp. F		Baro. Press. - P _a	State
L	H	G _g	% CO ₂	% N ₂	% H ₂ S	Prover Meter Run Taps

DATE	ELAP. TIME	WELLHEAD WORKING PRESSURE			METER OR PROVER				REMARKS
Time of Reading	Hrs.	Tbg. Psig	Csg. Psig	Temp. F	Pressure Psig	Diff.	Temp. F	Orifice	(Include liquid production data: Type - API Gravity - Amount)
544T	IN	1882							
15-93				Choke					
1130	0	1882		8/64	250			1.000	
1145	1/4	1820		"	250	32		"	
1200	1/2	1785		"	250	30		"	
1215	3/4	1760		"	250	26		"	
1230	1	1730		"	280	46		"	
									NO FLOW
1245	1 1/4	1650		10/64	265	100		1.000	
100	1 1/2	1600		"	265	97		"	
115	1 3/4	1555		"	265	96		"	
130	2	1510		"	255	100		"	
									NO FLOW
145	2 1/4	1420		12/64	270	40		1.5	
200	2 1/2	1320		"	260	44		"	
215	2 3/4	1295		"	270	44		"	
230	3	1265		"	270	46		"	
									NO FLOW
245	3 1/4	1100		17 1/2/64	265	26		2.0	
300	3 1/2	1010		"	265	24		"	
315	3 3/4	880		"	265	21		"	
330	4	800		"	265	17		"	
									2 BBLS Oil 4 BBLS H ₂ O
345	4 1/4	600		24/64	265	16		2.00	
400	4 1/2	520		"	265	21		"	
415	4 3/4	480		"	265	17		"	
430	5	440		"	265	11		"	
									1458.6 mcfD
500	5 1/2	400		"	268	11		2.00	
600	6 1/2	350		"	270	6		"	1466.5
700	7 1/2	330		"	270	16		1.50	1686.9
800	8 1/2	315		"	270	13		"	910.1
900	9 1/2	300		"	270	8		"	820.4
930	10	300		"	270	46		1.00	643.6
									659.7

FIELD DATA SHEET

Type Test:	☐ Initial ☐ Annual ☐ Special			Test Date	Lease No. or Serial No.
Company	Connection				Allottee
Field	Reservoir			Location	
Completion Date	Total Depth		Plug Back TD	Elevation	
Csg. Size	Wt.	d	Set At	Perforations: From	To
Tbg. Size	Wt.	d	Set At	Perforations: From	To
Type Completion (Describe)	Packer Set At				Sec. Twp - Blk Rge - Sur
Producing Thru	Reservoir Temp. F		Mean Ground Temp. F		Baro. Press. - P _a
L	H	G _g	% CO ₂	% N ₂	% H ₂ S
Prover			Meter Run		Taps

DATE	ELAP. TIME	WELLHEAD WORKING PRESSURE			METER OR PROVER				REMARKS
		Tbg. Psig	Csg. Psig	Temp. F	Pressure Psig	Diff.	Temp. F	Orifice	
									(Include liquid production data: Type - API Gravity - Amount)
1-6-93									
900Am	21.42	250			240	10		1.00	290 mcfD
430pm	29	250			240	7		1.00	243
1-7-93	45.5	250			240	9		1.00	275.9
900Am									
400		350			240	39		.750	320.0
700pm		120			120	32		.75	LOWER BACK PRESSURE
									209.5
1-8-93	69.5	110			120	14		.75	138.6
900Am									
400Am		110			120	8		.75	104.7
1-9-93	93.5	110			120	6		.75	90.7
900Am									
PULL PRESSURE Elements & RIH Hole FOR 96 HR BUILD UP TEST									
TOTAL FLUID MADE IN 93.5 HRS.									
4 BBLs OIL									
8 BBLs H ₂ O									

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DATA POINT	REAL TIME	DELTA TIME HRS	DEFLECTION IN	PRESSURE PSIG	COMMENTS
1	9:45: 0	0.000	0.8979	2229.65	BOMBS @ 7761 FT
2	10: 3:39	0.311	0.8979	2229.65	
3	10:24:56	0.666	0.8979	2229.65	
4	10:40:24	0.923	0.8979	2229.65	
5	10:56:43	1.195	0.8979	2229.65	
6	11:12:54	1.465	0.8979	2229.65	
7	11:17:34	1.543	0.8982	2230.40	
8	11:30:33	1.759	0.8736	2168.65	
9	11:46:44	2.029	0.8634	2143.05	START 4 pt.
10	12: 6:42	2.362	0.8590	2132.01	
11	12:20:42	2.595	0.8412	2087.35	
12	12:36: 9	2.852	0.8156	2023.12	
13	12:47: 5	3.035	0.8018	1988.50	END FIRST RATE
14	13: 0:47	3.263	0.7894	1957.40	
15	13:14:30	3.492	0.7748	1920.79	
16	13:16:58	3.533	0.7681	1903.99	
17	13:28:21	3.722	0.7557	1872.90	END SECOND RATE
18	13:41:19	3.939	0.7282	1803.96	
19	13:47:44	4.046	0.6978	1727.77	
20	13:55: 1	4.167	0.6640	1643.08	
21	14: 4:21	4.323	0.6500	1608.02	
22	14:12:57	4.466	0.6402	1583.47	
23	14:23:45	4.646	0.6302	1558.43	
24	14:30:36	4.760	0.5894	1456.27	
25	14:40:57	4.933	0.5427	1339.39	END THIRD RATE
26	14:52:10	5.119	0.5028	1239.56	
27	15: 3:50	5.314	0.4592	1130.52	
28	15:12:18	5.455	0.4436	1091.52	
29	15:21:55	5.615	0.4195	1031.27	
30	15:26:35	5.693	0.4110	1010.03	
31	15:32: 7	5.785	0.3758	922.07	
32	15:42:46	5.963	0.3218	787.18	
33	15:53:16	6.138	0.2951	720.51	END FOURTH RATE
34	16: 4:12	6.320	0.2734	666.34	
35	16:15:43	6.512	0.2548	619.92	
36	16:26:48	6.697	0.2428	589.97	
37	16:37:44	6.879	0.2299	557.78	
38	16:49:23	7.073	0.2181	528.34	
39	17: 3:23	7.306	0.2059	497.90	
40	17:18:15	7.554	0.1968	475.20	
41	17:42:36	7.960	0.1919	462.98	
42	18: 9:26	8.407	0.1860	448.27	
43	18:57:59	9.216	0.1861	448.52	
44	20: 4:36	10.327	0.1861	448.52	
45	20:54:54	11.165	0.1861	448.52	
46	21:39:13	11.904	0.1879	453.01	
47	22:49:12	13.070	0.1884	454.25	
48	23:54:57	14.166	0.1905	459.49	
49	0:43:13	14.970	0.1917	462.48	
50	1: 7:42	15.378	0.1923	463.98	

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DATA POINT	REAL TIME	DELTA TIME HRS	DEFLECTION IN	PRESSURE PSIG	COMMENTS
51	1:36:26	15.857	0.1956	472.21	
52	2:10: 6	16.418	0.2002	483.69	
53	2:47:52	17.048	0.2040	493.16	
54	3:27:22	17.706	0.2086	504.64	
55	3:58:52	18.231	0.2128	515.12	
56	4:38:14	18.887	0.2193	531.33	
57	5:19:29	19.575	0.2240	543.06	
58	6: 0:18	20.255	0.2299	557.78	
59	6:36:19	20.855	0.2345	569.26	
60	7:13:38	21.477	0.2387	579.74	
61	8: 0:35	22.260	0.2431	590.72	
62	8:49:34	23.076	0.2476	601.95	
63	9:41:37	23.944	0.2531	615.68	
64	10:30:36	24.760	0.2579	627.65	
65	11:22:13	25.620	0.2623	638.64	
66	12:14:42	26.495	0.2671	650.62	
67	13:16:48	27.530	0.2725	664.10	
68	14:16:26	28.524	0.2771	675.58	
69	15:22: 3	29.617	0.2822	688.31	
70	16:36:50	30.864	0.2854	696.30	
71	17:52: 4	32.118	0.2888	704.79	
72	19:13: 7	33.469	0.2943	718.52	
73	20:24:34	34.659	0.2987	729.50	
74	21:37:54	35.882	0.3020	737.74	
75	23:15:34	37.509	0.3058	747.23	
76	0:30:57	38.766	0.3101	757.97	
77	1:49:49	40.080	0.3154	771.20	
78	2:58:38	41.227	0.3195	781.44	
79	4:21:44	42.612	0.3233	790.93	
80	5:52: 7	44.119	0.3266	799.17	
81	7:13:29	45.475	0.3306	809.16	
82	8:34:58	46.833	0.3356	821.65	
83	10: 1:43	48.279	0.3418	837.13	
84	11:24:32	49.659	0.3470	850.12	
85	12:49:23	51.073	0.3525	863.86	
86	14:21:57	52.616	0.3570	875.10	
87	15:56:43	54.195	0.3616	886.59	
88	16:24:52	54.664	0.3634	891.09	
89	16:38: 8	54.886	0.3535	866.36	
90	16:50: 5	55.085	0.3418	837.13	
91	17: 1:27	55.274	0.3433	840.88	
92	17: 8: 1	55.384	0.3253	795.92	
93	17:20:59	55.600	0.3071	750.48	
94	17:36:35	55.860	0.2934	716.27	
95	17:55:24	56.173	0.2678	652.36	
96	18:15:13	56.504	0.2434	591.47	
97	18:27: 2	56.701	0.2330	565.52	
98	18:49:47	57.080	0.2307	559.78	
99	19:15:35	57.510	0.2273	551.29	
100	19:22:43	57.629	0.2211	535.82	

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DATA POINT	REAL TIME	DELTA TIME HRS	DEFLECTION IN	PRESSURE PSIG	COMMENTS
101	19:37: 1	57.867	0.2179	527.84	
102	20: 2: 5	58.285	0.2173	526.34	
103	20:33:43	58.812	0.2201	533.33	
104	21:18:11	59.553	0.2255	546.80	
105	21:59:45	60.246	0.2315	561.77	
106	22:37:30	60.875	0.2353	571.26	
107	23:22:59	61.633	0.2424	588.97	
108	0:26:42	62.695	0.2461	598.21	
109	1:25:10	63.669	0.2501	608.19	
110	2:41:33	64.942	0.2557	622.16	
111	3:54:27	66.157	0.2600	632.90	
112	4:51:45	67.113	0.2636	641.88	
113	6: 6:59	68.366	0.2690	655.36	
114	7:38:23	69.890	0.2744	668.84	
115	8:50: 7	71.085	0.2830	690.31	
116	10:18:19	72.555	0.2886	704.29	
117	11:42:27	73.958	0.2934	716.27	
118	13:18:40	75.561	0.2994	731.25	
119	14:51:23	77.106	0.3045	743.98	
120	16:36:56	78.866	0.3096	756.72	
121	18:10:59	80.433	0.3146	769.20	
122	19:39:46	81.913	0.3192	780.69	
123	20:48:52	83.064	0.3223	788.43	
124	22:19: 7	84.569	0.3272	800.67	
125	0: 1:54	86.282	0.3328	814.65	
126	1:38: 7	87.885	0.3362	823.15	
127	3:16: 5	89.518	0.3412	835.63	
128	4:52:45	91.129	0.3456	846.62	
129	6:43:51	92.981	0.3506	859.11	
130	8:28:31	94.725	0.3562	873.10	
131	9:23:29	95.641	0.3585	878.85	
132	12: 0: 0	98.250	0.3633	890.84	WELL SHUT-IN
133	12:16: 7	98.519	0.3675	901.33	
134	12:38:28	98.891	0.3712	910.58	
135	13: 1: 7	99.269	0.3749	919.82	
136	13:33:47	99.813	0.3802	933.06	
137	14: 1:40	100.278	0.3846	944.06	
138	14:40:18	100.922	0.3912	960.55	
139	15:18:11	101.553	0.3988	979.54	
140	15:57:50	102.214	0.4063	998.28	
141	16:43: 8	102.969	0.4142	1018.03	
142	17:21:28	103.608	0.4215	1036.27	
143	18: 7:38	104.377	0.4286	1054.02	
144	18:57:18	105.205	0.4350	1070.02	
145	19:40:43	105.929	0.4417	1086.77	
146	20:31:32	106.776	0.4469	1099.77	
147	21:35:25	107.840	0.4541	1117.77	
148	22:33:21	108.806	0.4607	1134.27	
149	23:29:59	109.750	0.4657	1146.78	
150	0:27:29	110.708	0.4709	1159.78	

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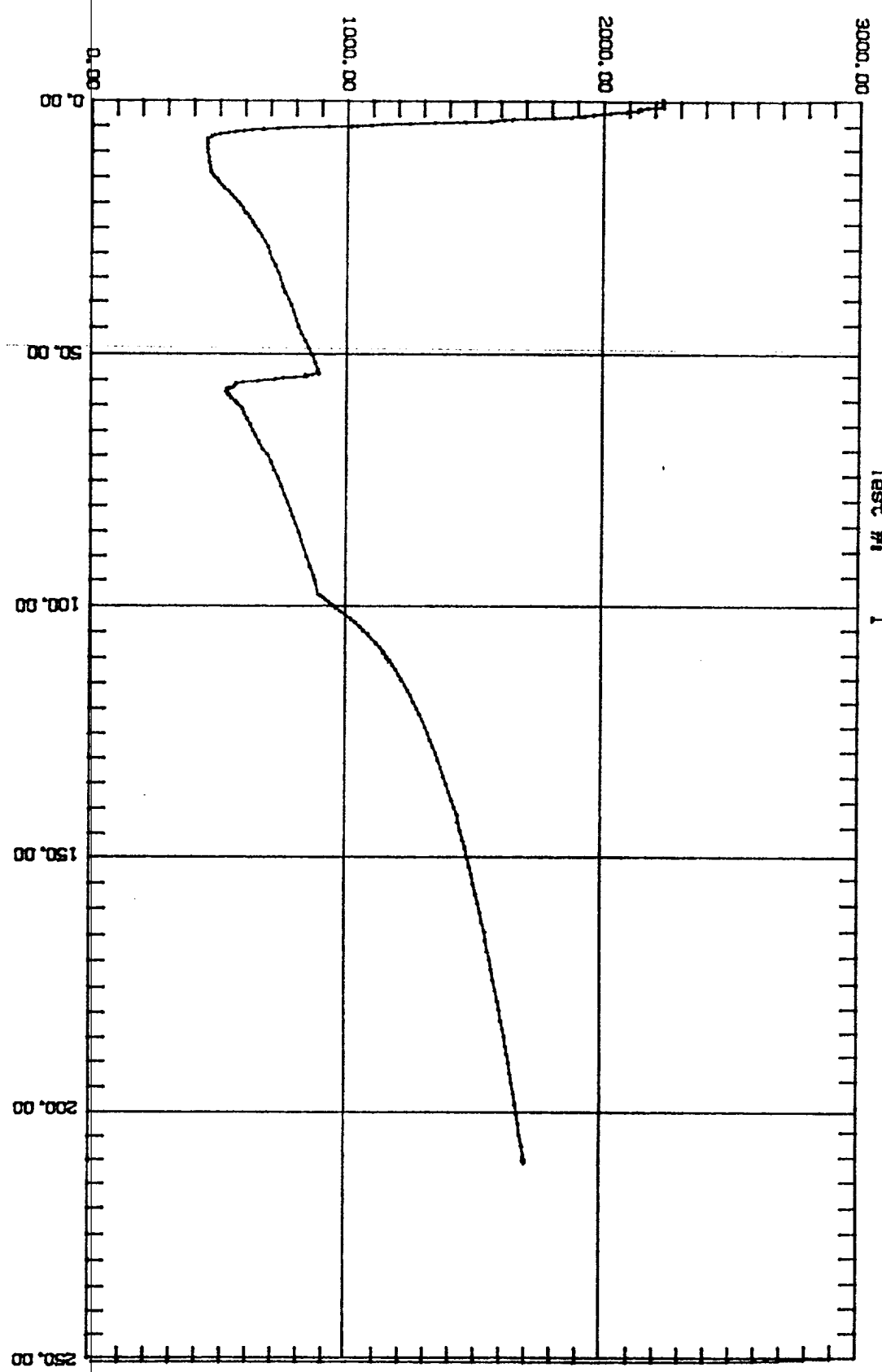
DATA POINT	REAL TIME	DELTA TIME HRS	DEFLECTION IN	PRESSURE PSIG	COMMENTS
151	1:13:4	111.468	0.4755	1171.28	
152	2:5:47	112.346	0.4803	1183.29	
153	3:6:11	113.353	0.4847	1194.29	
154	4:7:10	114.369	0.4894	1206.04	
155	5:13:5	115.468	0.4943	1218.30	
156	6:17:7	116.535	0.4997	1231.81	
157	7:22:45	117.629	0.5044	1243.56	
158	8:22:43	118.629	0.5088	1254.57	
159	9:38:31	119.892	0.5132	1265.58	
160	10:59:24	121.240	0.5191	1280.34	
161	12:2:59	122.300	0.5229	1289.84	
162	13:27:56	123.716	0.5278	1302.10	
163	14:39:22	124.906	0.5318	1312.11	
164	16:1:24	126.273	0.5366	1324.12	
165	17:17:47	127.546	0.5400	1332.63	
166	18:33:0	128.800	0.5440	1342.64	
167	20:3:27	130.307	0.5491	1355.40	
168	21:23:2	131.634	0.5524	1363.66	
169	22:52:46	133.129	0.5569	1374.92	
170	0:40:12	134.920	0.5614	1386.18	
171	2:11:32	136.442	0.5659	1397.45	
172	3:41:42	137.945	0.5691	1405.45	
173	5:17:24	139.540	0.5739	1417.47	
174	6:44:31	140.992	0.5779	1427.48	
175	8:13:57	142.483	0.5832	1440.75	
176	9:37:36	143.877	0.5840	1442.75	
177	11:24:10	145.653	0.5878	1452.26	
178	13:11:28	147.441	0.5916	1461.78	
179	14:49:12	149.070	0.5956	1471.79	
180	16:38:14	150.887	0.5992	1480.80	
181	18:20:10	152.586	0.6026	1489.31	
182	19:55:25	154.174	0.6062	1498.33	
183	21:47:48	156.047	0.6089	1505.09	
184	23:37:0	157.867	0.6125	1514.10	
185	1:21:41	159.611	0.6159	1522.62	
186	3:14:39	161.494	0.6193	1531.13	
187	5:1:22	163.273	0.6224	1538.89	
188	6:51:0	165.100	0.6265	1549.16	
189	8:32:12	166.787	0.6285	1554.17	
190	10:31:59	168.783	0.6315	1561.68	
191	11:59:59	170.250	0.6347	1569.69	
192	14:2:41	172.295	0.6377	1577.21	
193	15:53:19	174.139	0.6403	1583.72	
194	18:0:13	176.254	0.6440	1592.99	
195	20:5:49	178.347	0.6472	1601.00	
196	21:57:11	180.203	0.6502	1608.52	
197	0:21:57	182.616	0.6526	1614.53	
198	2:8:6	184.385	0.6556	1622.04	
199	3:47:51	186.047	0.6583	1628.81	
200	5:39:57	187.916	0.6601	1633.31	

Plot starting data: 1/5/92
Gauge S/N 23914
timer: 9:45:0

Company: KELTIC SERVICES
Client: C.W. TRAINER
Well name: WEST WHITE RANCH
Well #: #1
Test #: 1

Location: N/A
Operator: LARRY MOSSBARGER
Comments: 4 pt. w/ EXTENDED FLOW AND BUILD-UP.

PRESSURE - PSIG



DELTA TIME - HRS

PAGE START DATE: 1/13/92

GAUGE S/N: 23914

DATA FILE: 3

DATA POINT	REAL TIME	DELTA TIME HRS	DEFLECTION IN	PRESSURE PSIG	COMMENTS
201	7:27: 6	189.702	0.6622	1638.58	
202	9:13:41	191.478	0.6651	1645.84	
203	11:12:36	193.460	0.6669	1650.35	
204	13: 7:27	195.374	0.6696	1657.11	
205	15:12: 2	197.451	0.6728	1665.13	
206	17:15:36	199.510	0.6751	1670.89	
207	19:14:13	201.487	0.6778	1677.66	
208	21:16: 3	203.517	0.6805	1684.42	
209	23:18:36	205.560	0.6824	1689.18	
210	1:34: 4	207.818	0.6862	1698.70	
211	3:41:16	209.938	0.6886	1704.72	
212	4:31:21	210.772	0.6901	1708.47	