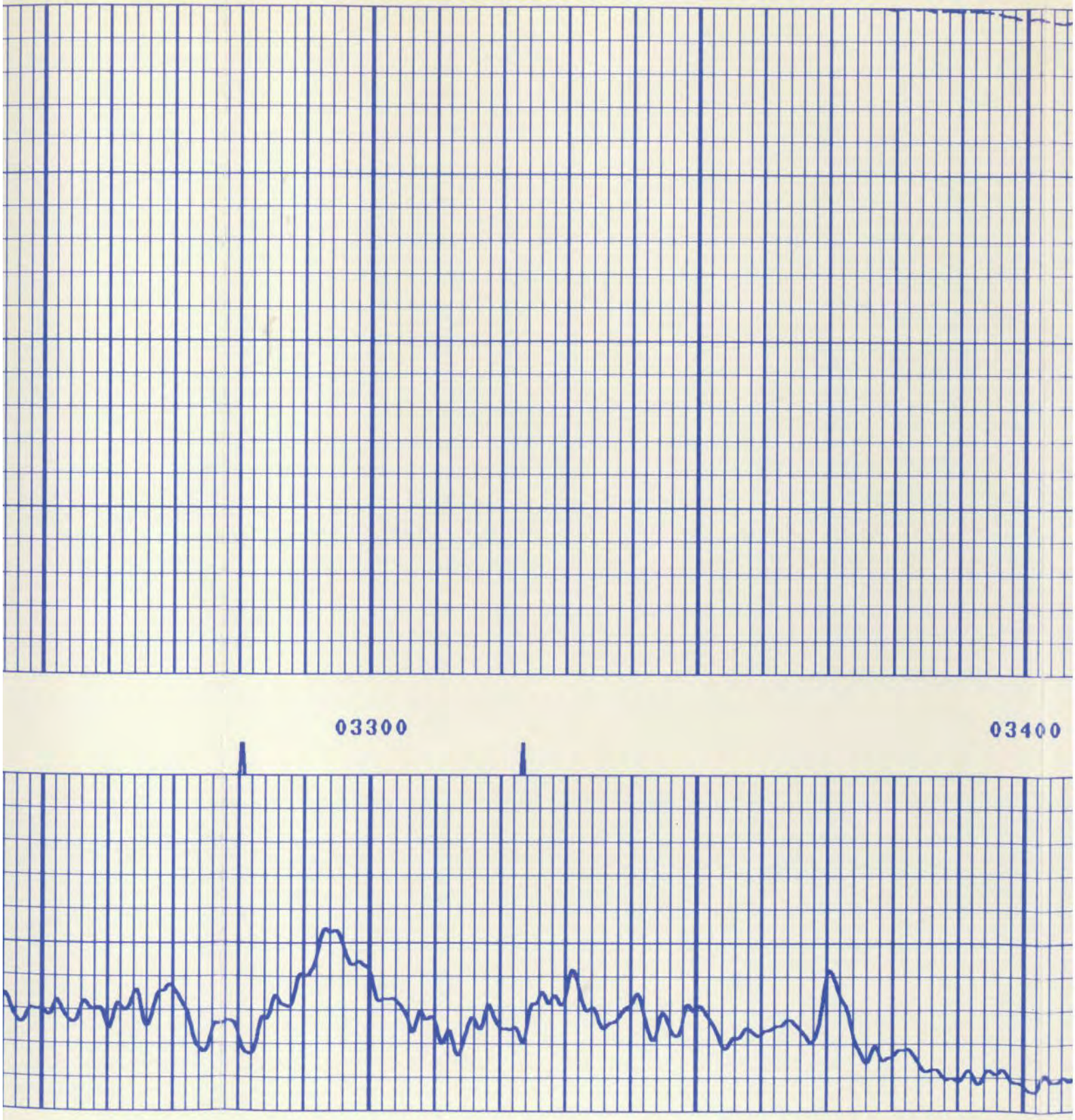
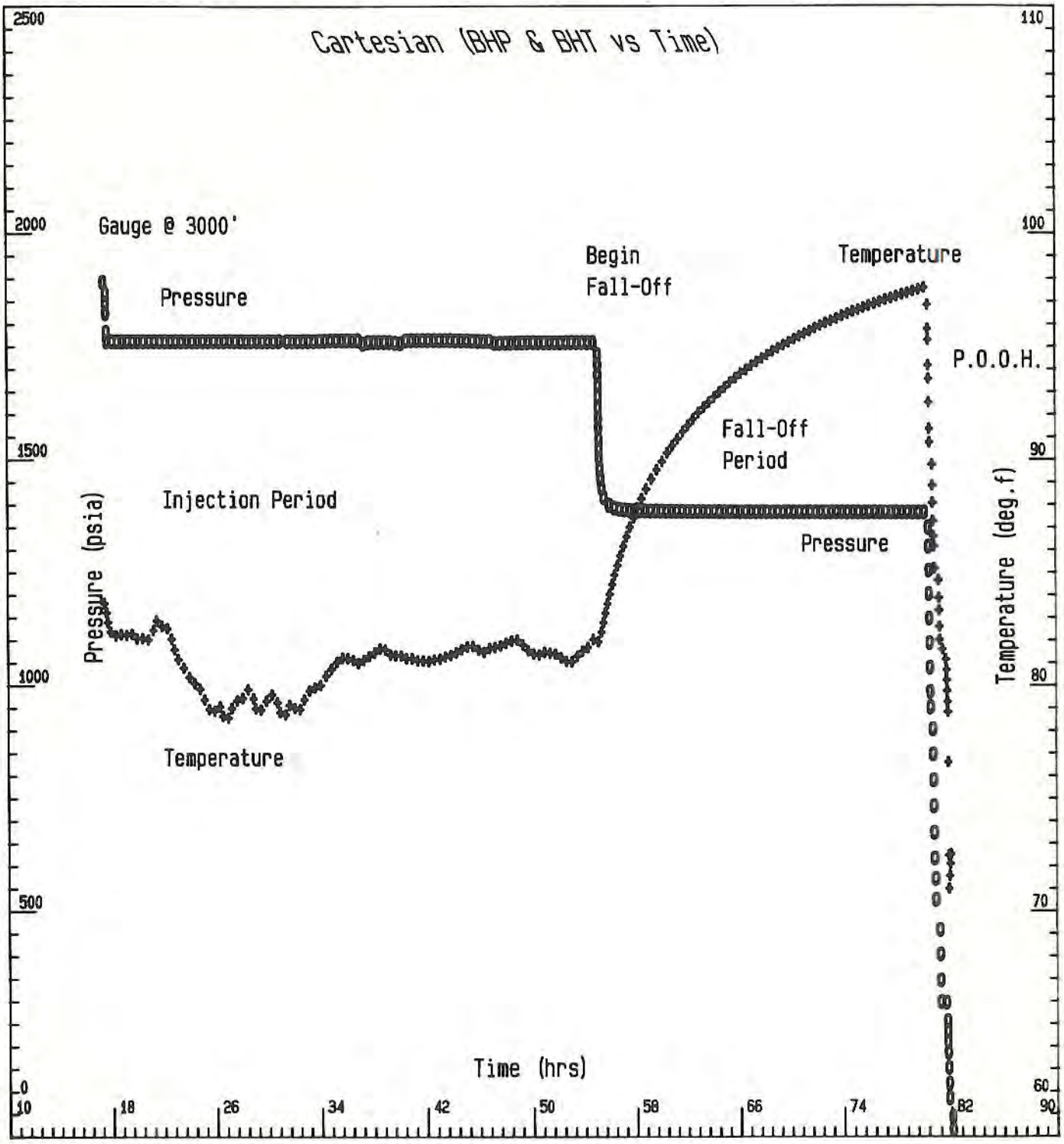

03300
03400

APPENDIX E - PRESSURE FALLOFF TEST DATA AND PLOTS



Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4
Field: BAY CITY, TEXAS PLANT

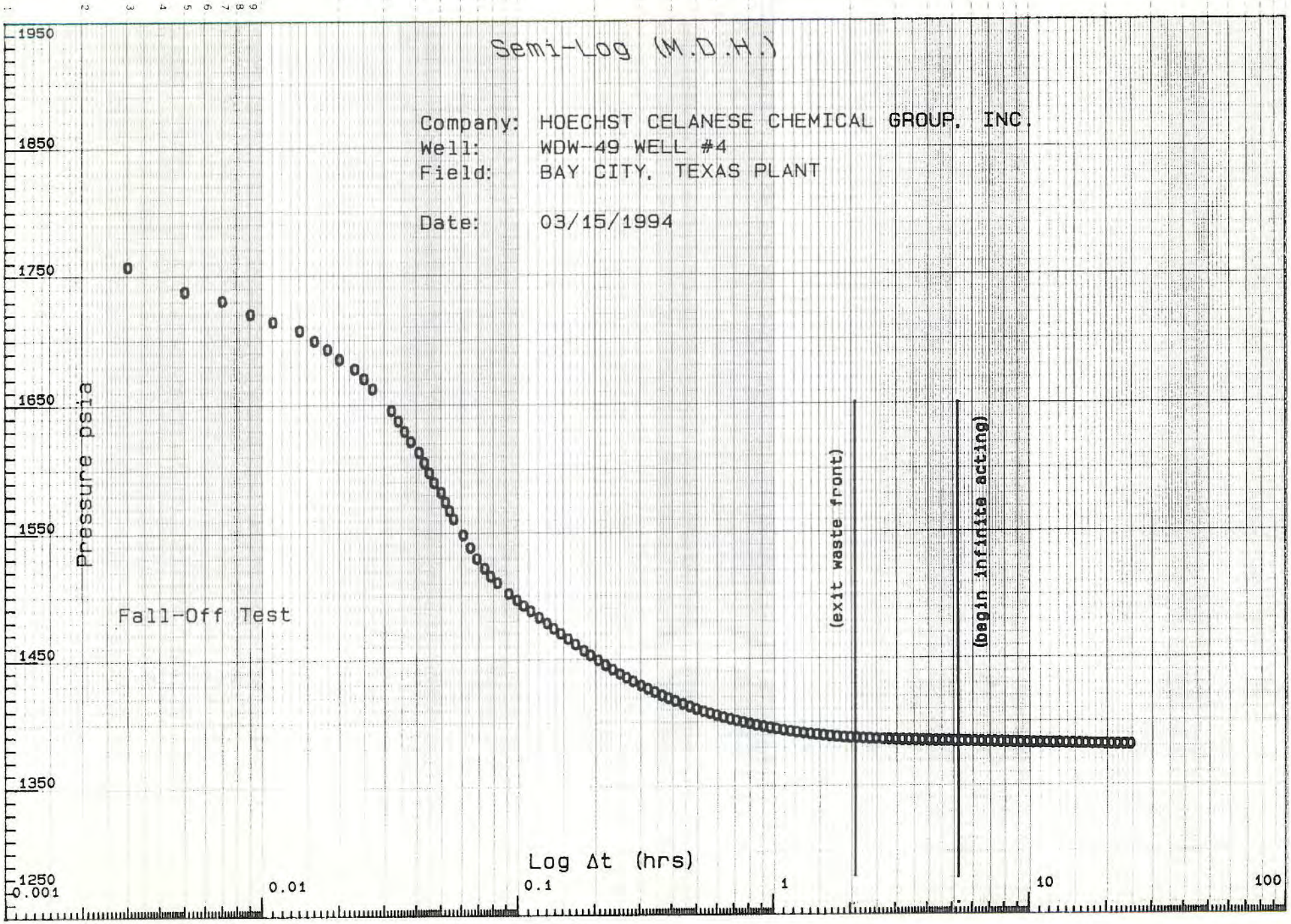
Date: 03/15/1994

Begin Time: 17:22:28 03/15/94
End Time: 10:02:43 03/18/94

Injection Pressure = 1758 psi
Shut-In Pressure = 1381 psi
Injection Rate = 168 GPM

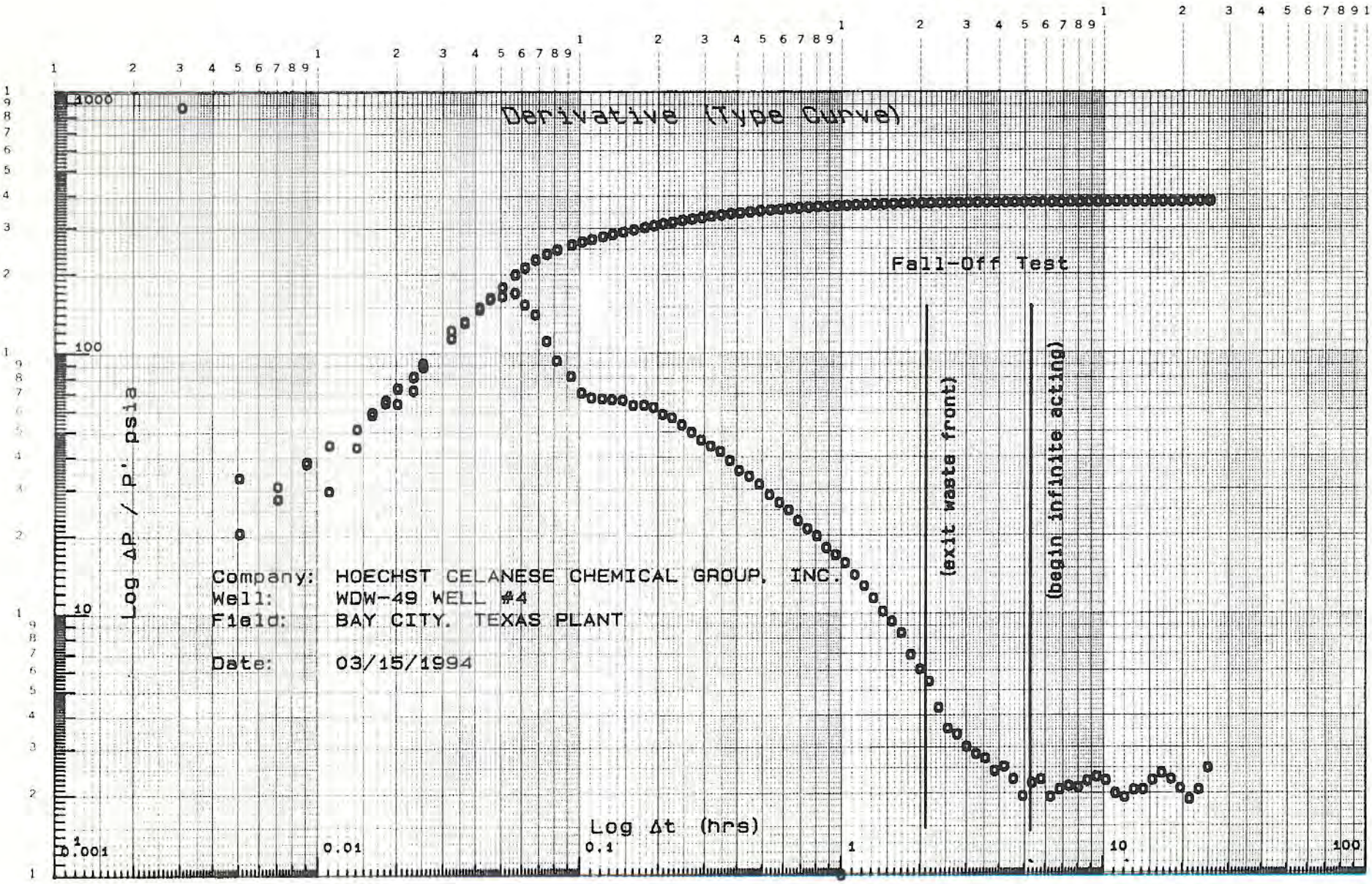
K+E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 6210

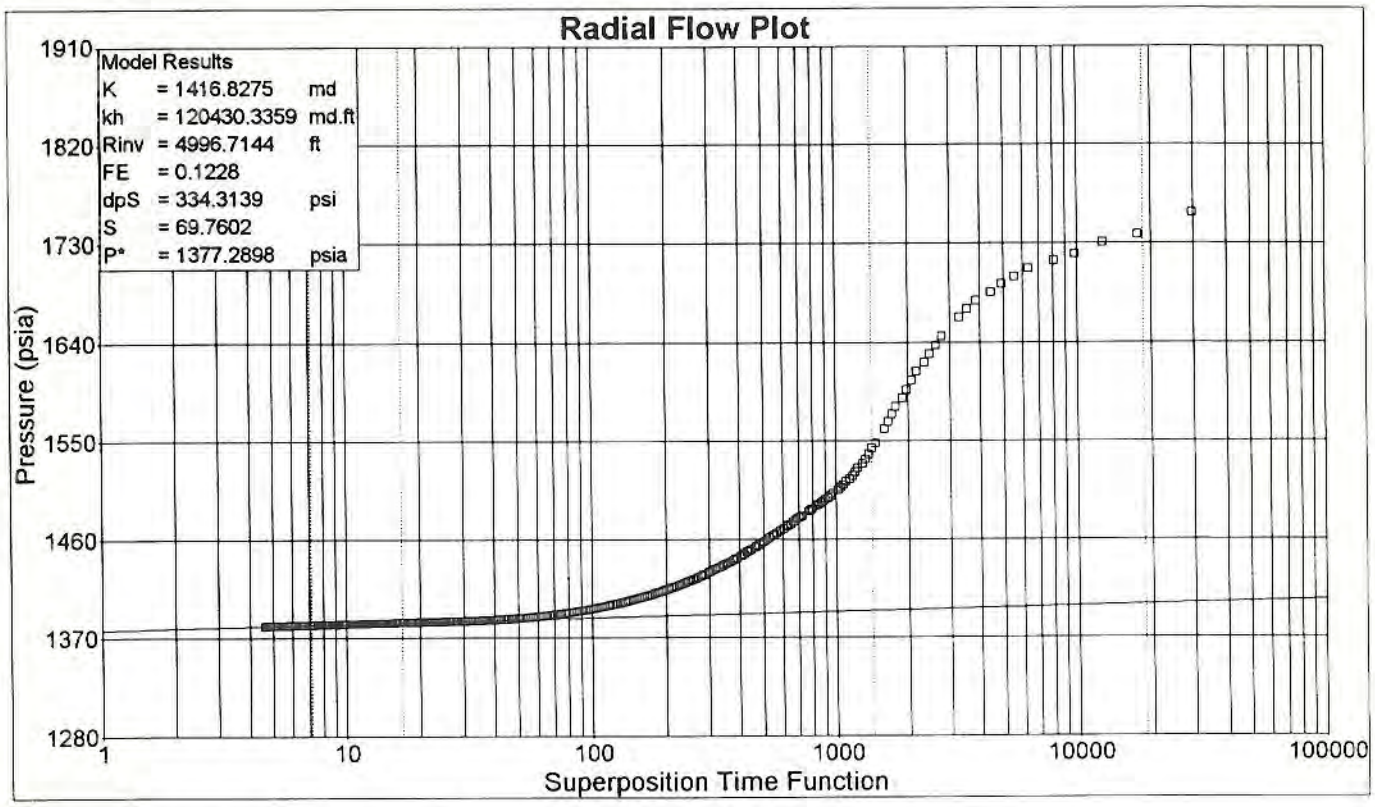


K+E LOGARITHMIC 3 x 5 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 7520



Edinburgh Petroleum Services Ltd.		Report File:	WDW49-#4.PAN
PanSystem Version 2.1		Analysis Date:	4/20/94
Well Test Analysis Report			



HOECHST CELANESE CHEMICAL GROUP, INC.
WDW-49 Well #4
Bay City, Facility, Texas

03/15 - 18/1994

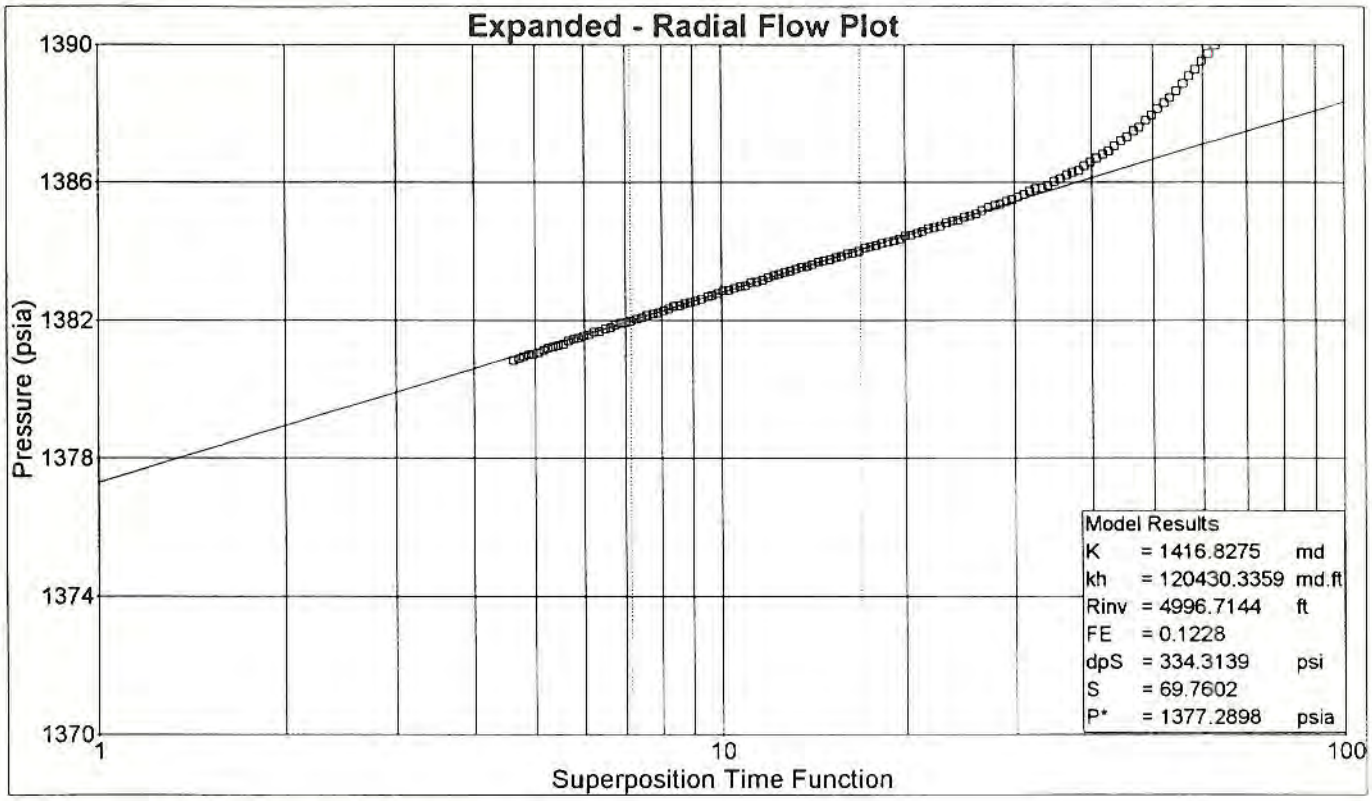
Semi-Log analysis utilizing Superposition Time Function.

Radial Flow Plot Line details

Line type : Radial flow
Slope : 5.51737
Intercept : 1377.29
Coefficient of Determination : 0.999402

PanSystem - Copyright (C) 1993 Edinburgh Petroleum Services Ltd.

Edinburgh Petroleum Services Ltd.		Report File:	WDW49-#4.PAN
PanSystem Version 2.1		Analysis Date:	4/20/94
Well Test Analysis Report			



HOECHST CELANESE CHEMICAL GROUP, INC.
WDW-49 Well #4
Bay City, Facility, Texas

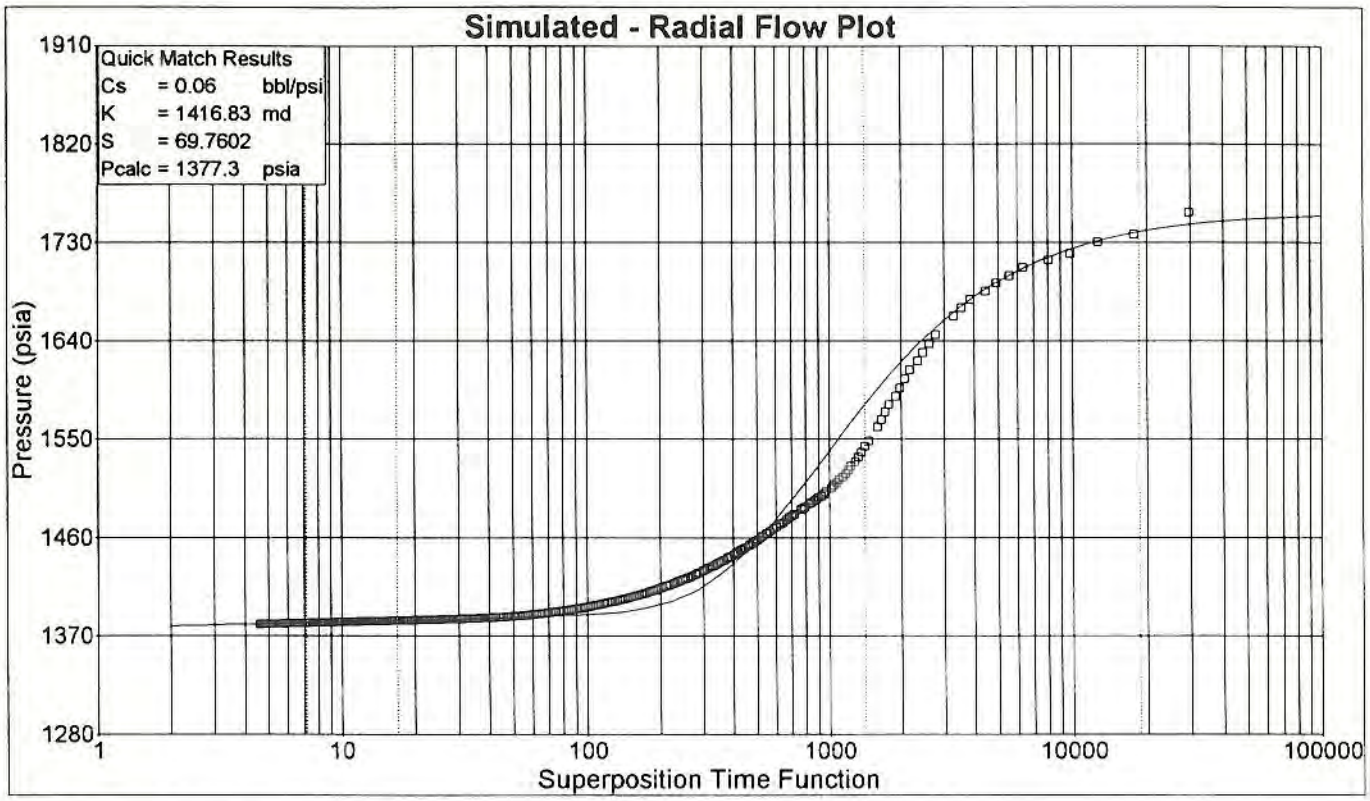
03/15 - 18/1994

Semi-Log analysis utilizing Superposition Time Function.

Expanded - Radial Flow Plot Line details
Line type : Radial flow
Slope : 5.51737
Intercept : 1377.29
Coefficient of Determination : 0.999402

PanSystem - Copyright (C) 1993 Edinburgh Petroleum Services Ltd.

Edinburgh Petroleum Services Ltd.		Report File:	WDW49-#4.PAN
PanSystem Version 2.1		Analysis Date:	4/20/94
Well Test Analysis Report			



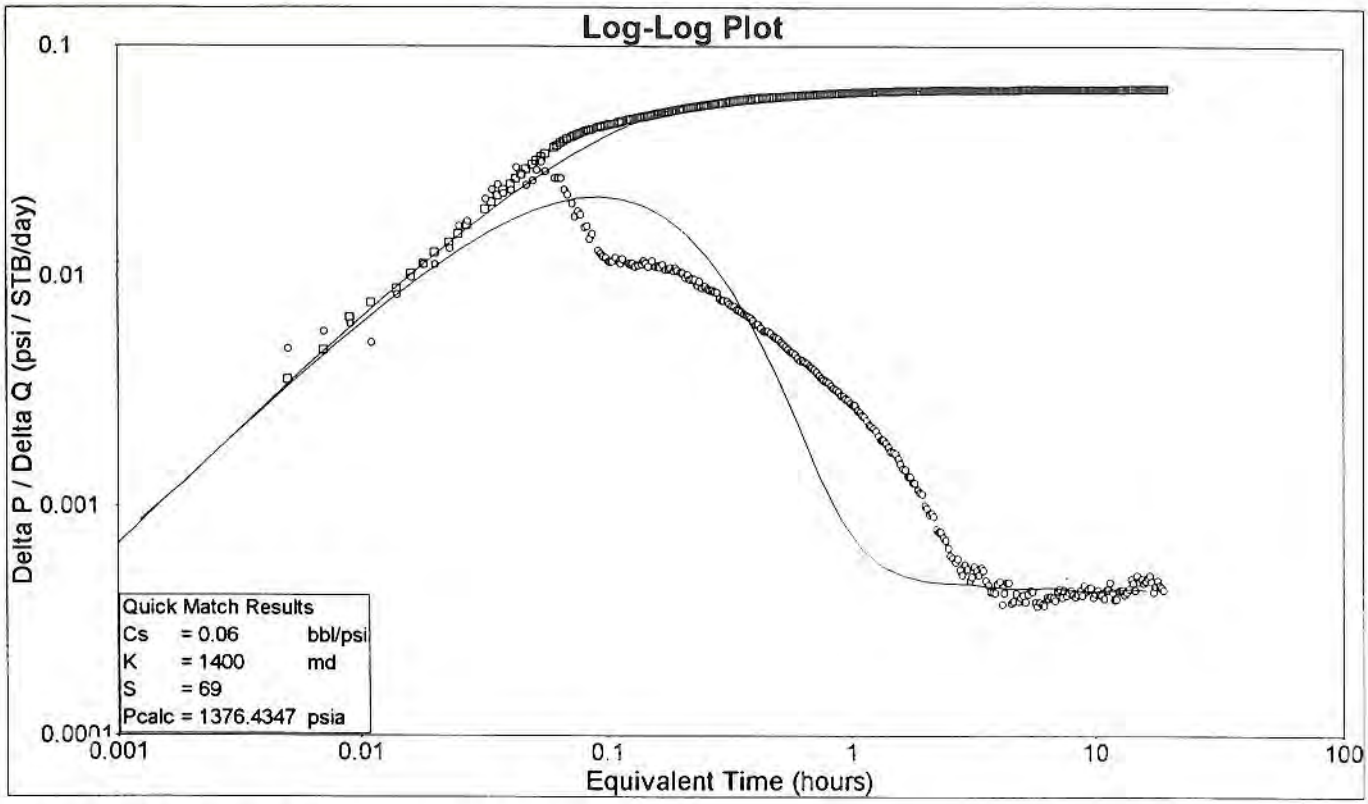
HOECHST CELANESE CHEMICAL GROUP, INC.
WDW-49 Well #4
Bay City, Facility, Texas

03/15 - 18/1994

Semi-Log analysis utilizing Superposition Time Function.

PanSystem - Copyright (C) 1993 Edinburgh Petroleum Services Ltd.

Edinburgh Petroleum Services Ltd.		Report File:	WDW49-#4.PAN
PanSystem Version 2.1		Analysis Date:	4/20/94
Well Test Analysis Report			



HOECHST CELANESE CHEMICAL GROUP, INC.
WDW-49 Well #4
Bay City Facility, Texas

03/15 - 18/1994

Log-Log analysis utilizing Equivalent time function.

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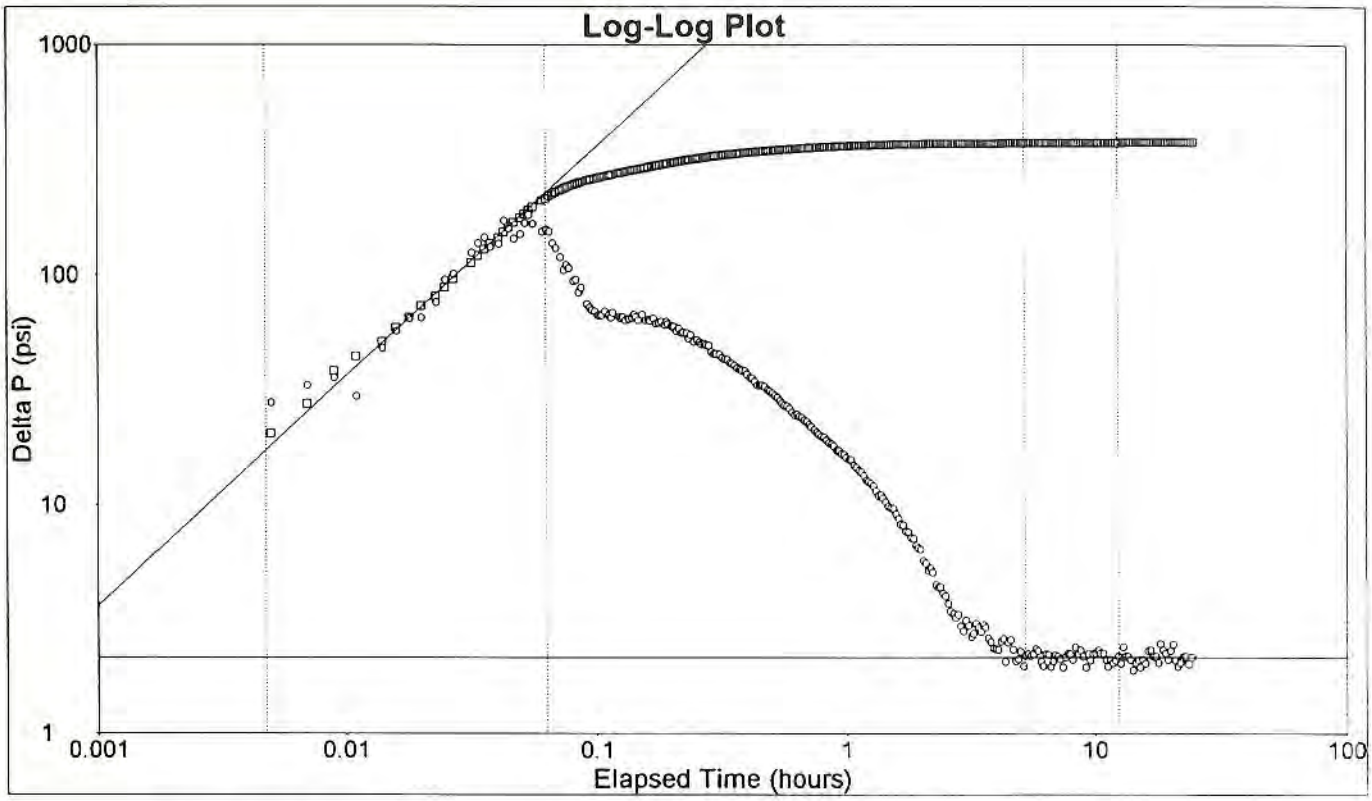
Edinburgh Petroleum Services Ltd.		Report File:	WDW49-#4.PAN
PanSystem Version 2.1		Analysis Date:	4/20/94
Well Test Analysis Report			



HOECHST CELANESE CHEMICAL GROUP, INC.
WDW-49 Well #4
Bay City Facility, Texas

03/15 - 18/1994

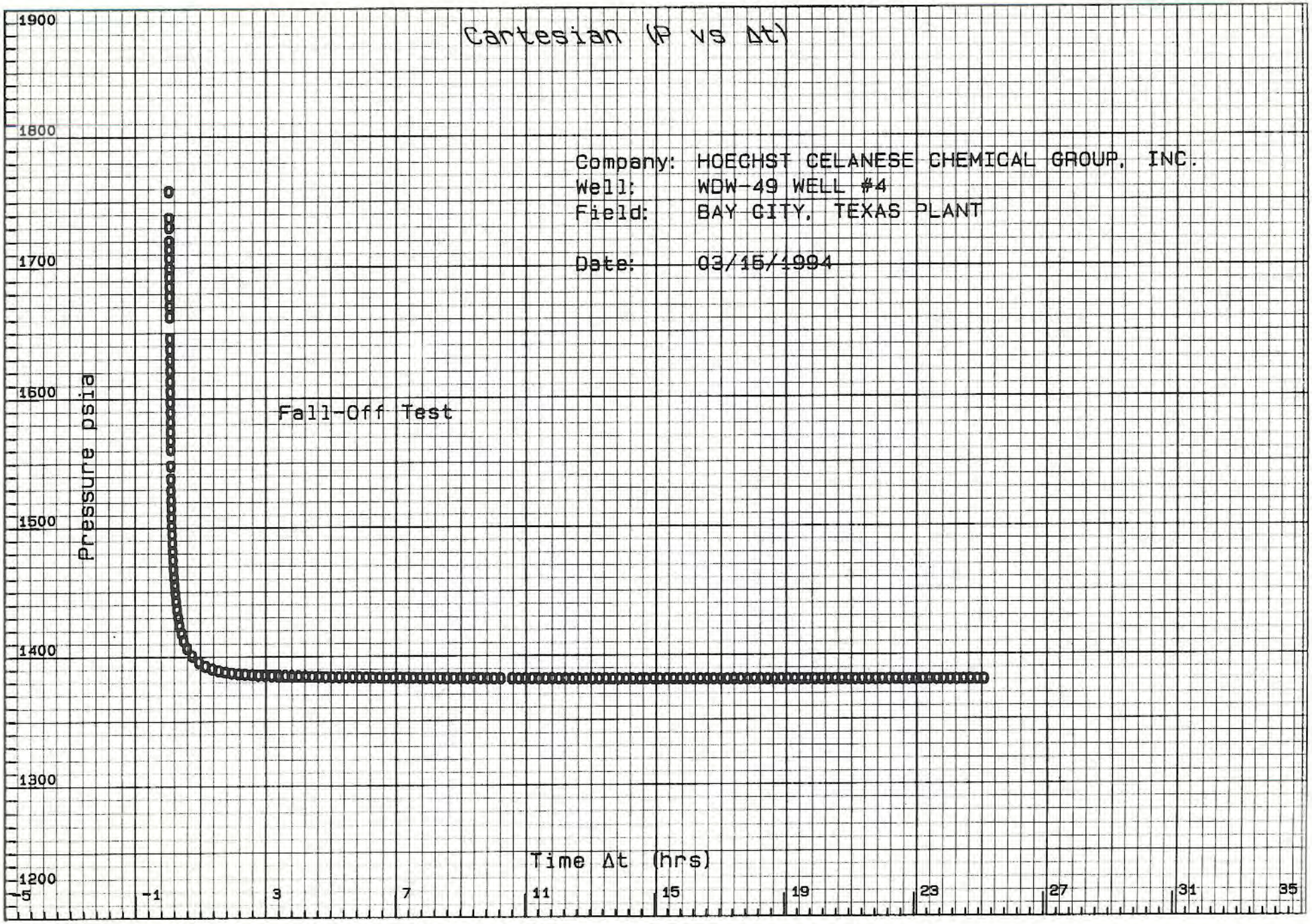
Log-Log plot used to identify flow regimes.

End of unit slope:	Approximately	0.063 hours
Start of infinite acting flow period:	Approximately	5.3 hours
Time to exit waste front:	Approximately	2.1 hours

PanSystem - Copyright (C) 1993 Edinburgh Petroleum Services Ltd.

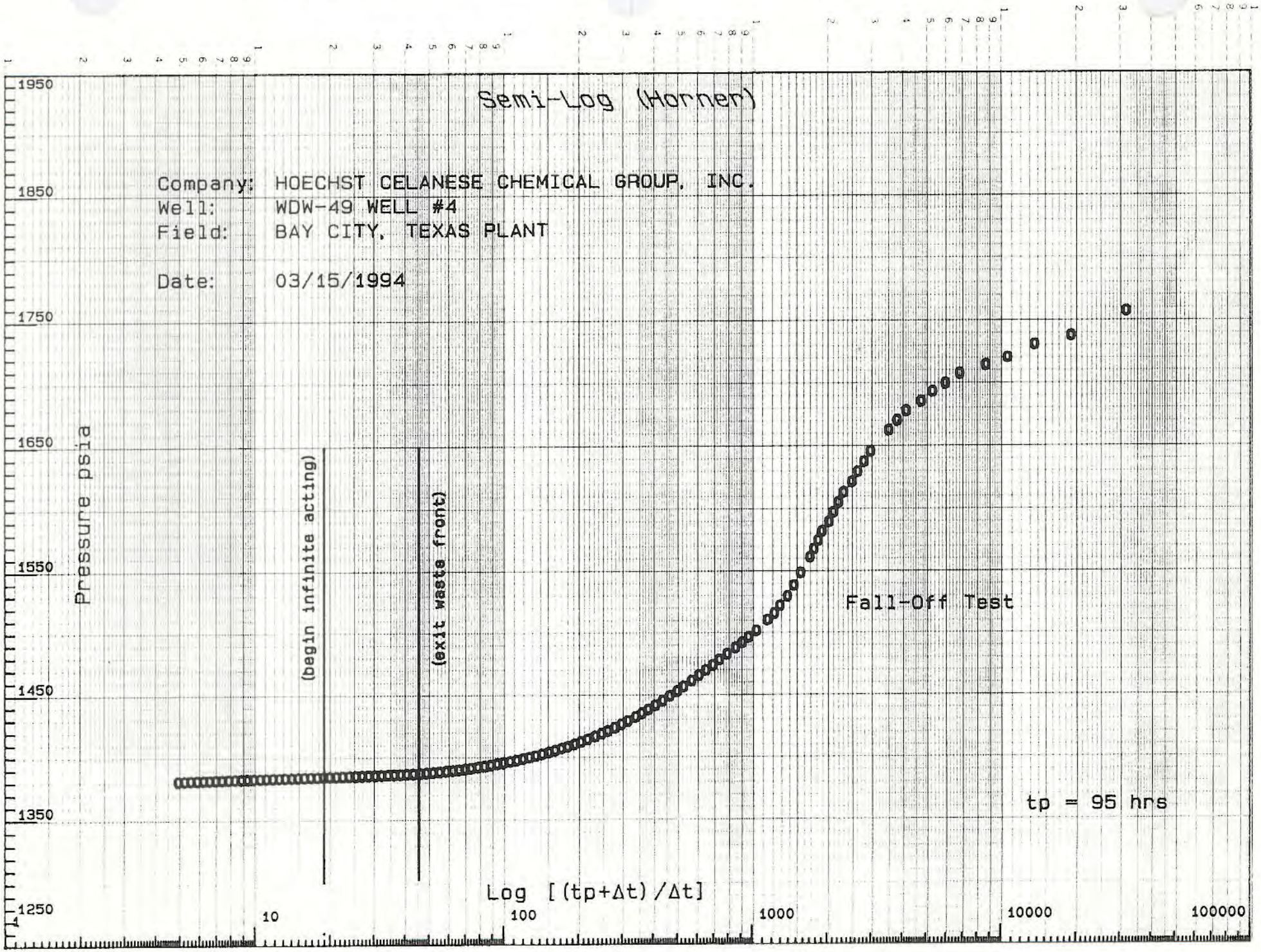
K+E 10 X 10 TO THE INCH • 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.

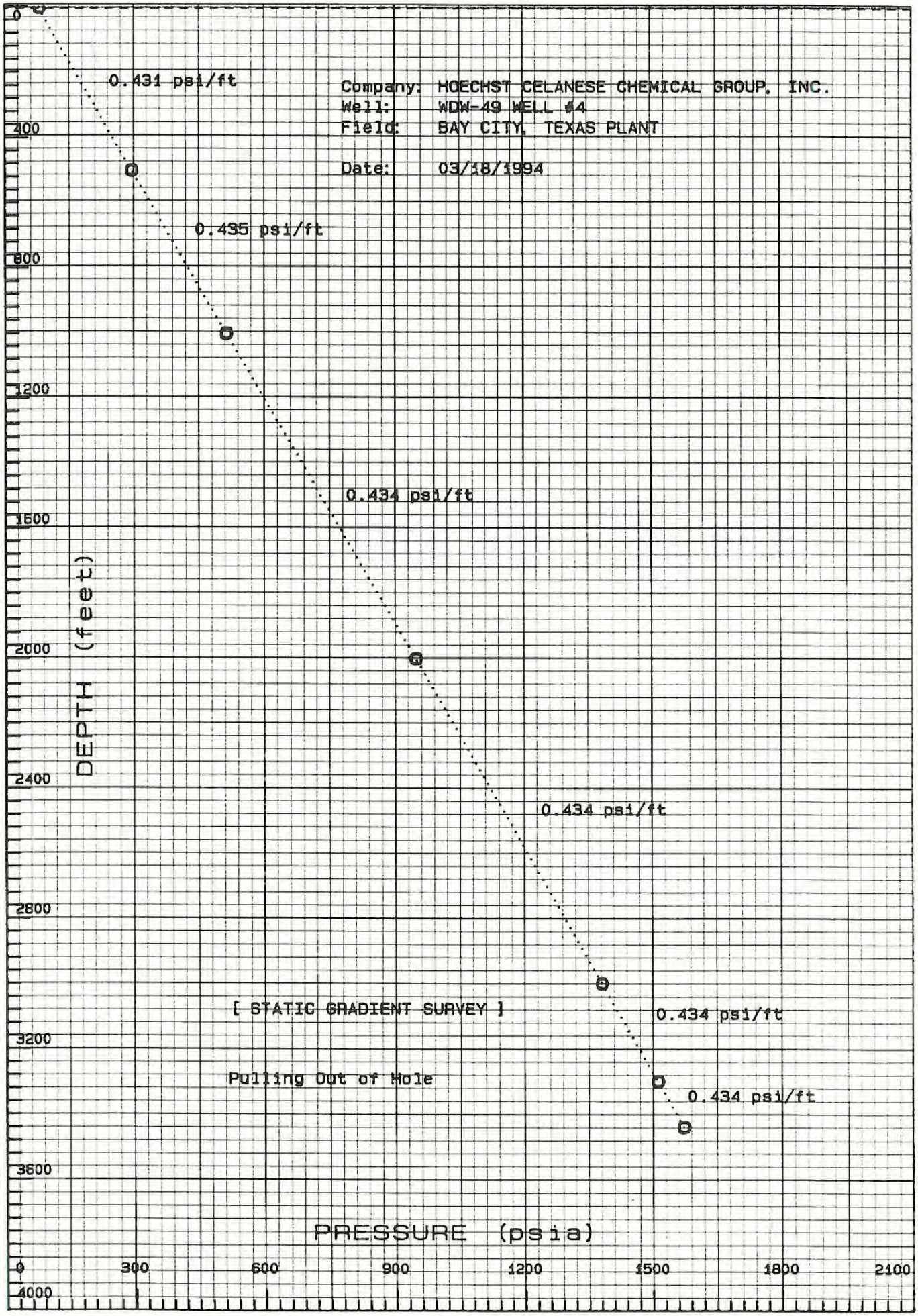
46 0780



K+E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 6210





46 0780

K&E 10 X 10 TO THE INCH • 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.

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d. Semi-Log, M.D.H. - (P vs Log dt).

e. Log-Log, Type Curve. - (Log dP\P' vs Log dt).

f. Gradient, Static. - (Depth vs P).

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CALCULATION FLOW CHART

1. Calculate slope value from Semi-Log Plot.

2 a. Utilize reservoir viscosity for *Initial Calculations*.

b. If required, redo calculations with waste viscosity.

3. Calculate Permeability.

4. Calculate Time to exit waste front.

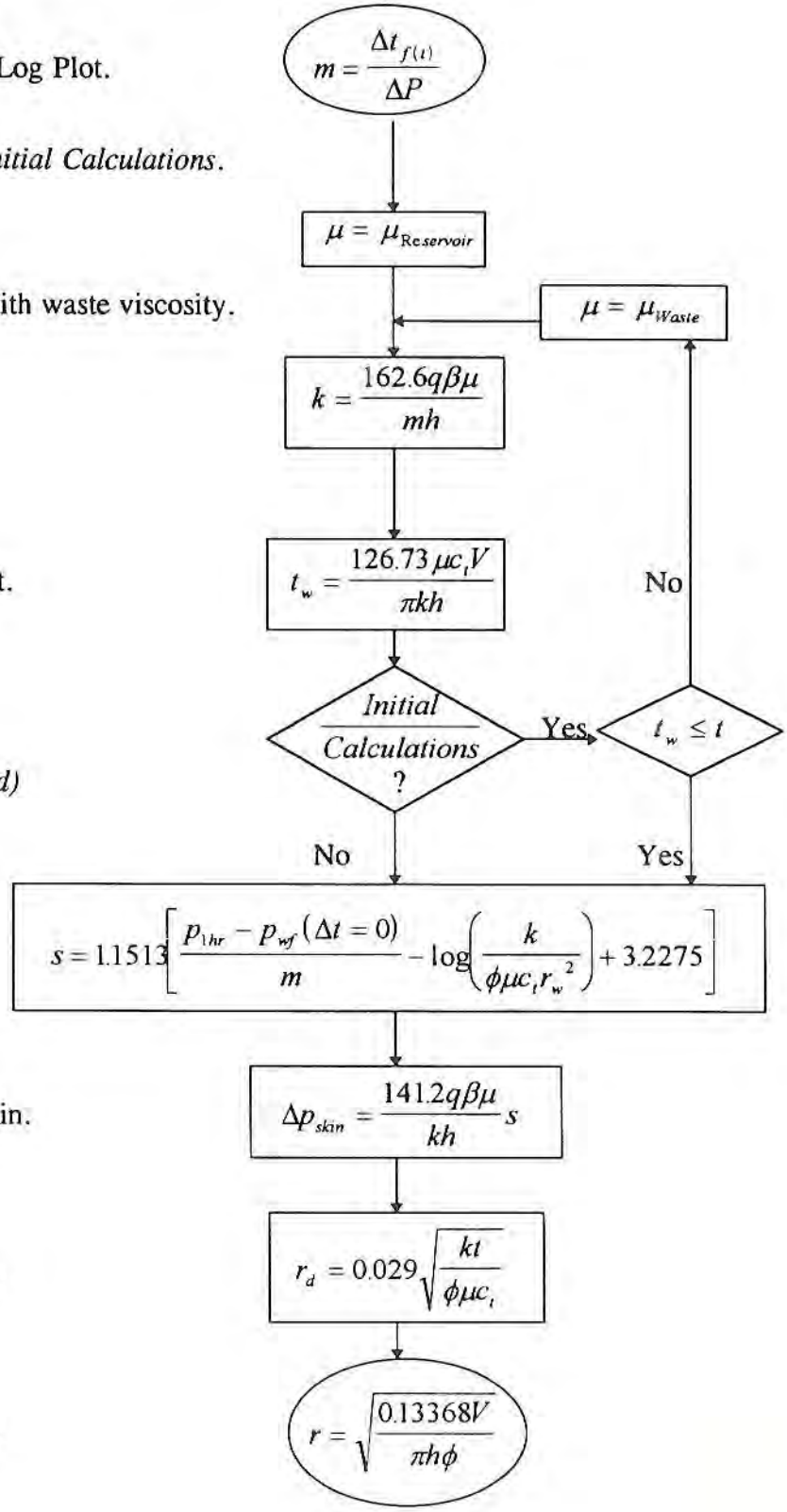
5. Conditional statements.
   (t, beginning of radial flow period)

6. Calculate skin factor.

7. Calculate Pressure drop due to skin.

8. Calculate radius of investigation.

9. Calculate distance to waste front.



Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 County: MATAGORDA
Field: BAY CITY, TEXAS PLANT State: TEXAS

Engineer: DOUG BEALL Date: 03/18/1994
Gauge Type: GRC EPG-520
Serial No.: 69491 Well Type: INJECTION
Gauge Range: 5,000 PSI Test Type: GRADIENT SURVEY
Gauge Depth: 3000 ft Well Status: SHUT-IN

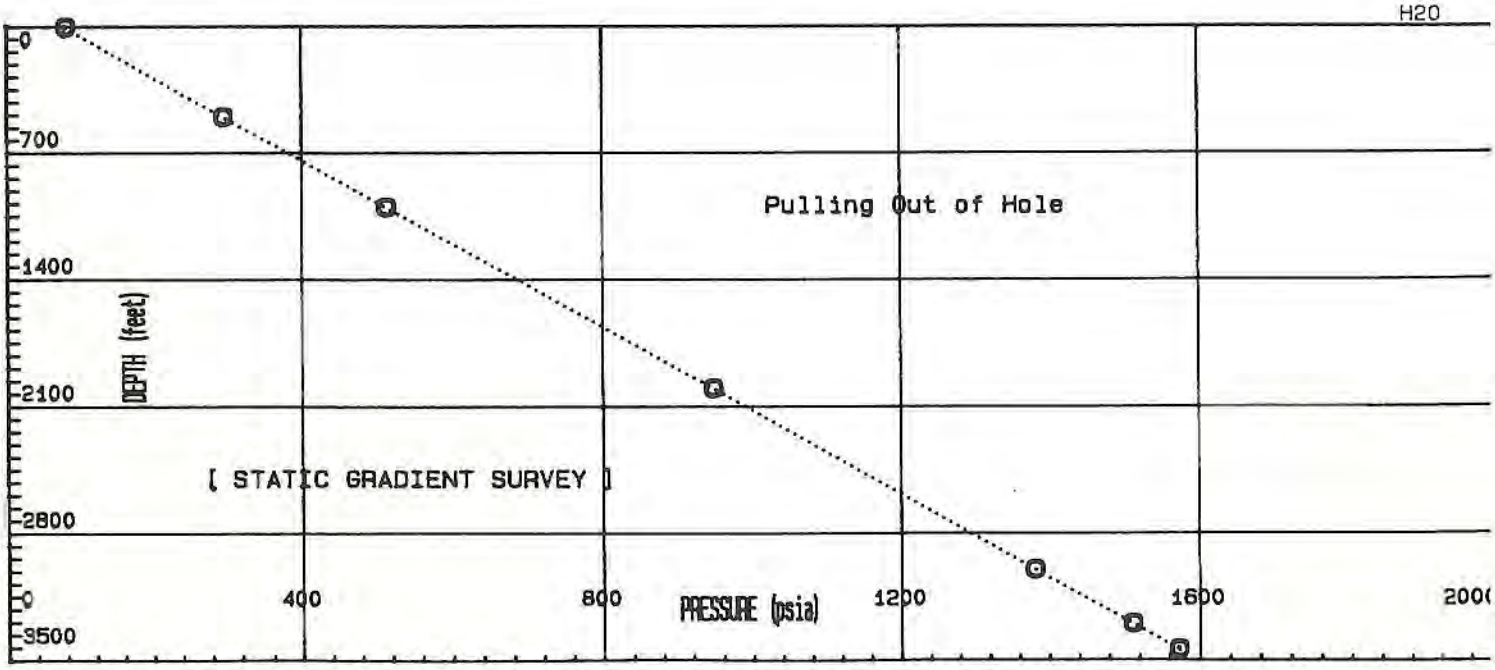
Tubing: 5 1/2" TO 3316' Packer Depth 3316 ft
Tubing: TO PBTD 3630 ft
Casing: 7 5/8" TO 3368' Oil Level None
Perfs.: SCREEN - 3371.5' - 3579' H2O Level ft
Perfs.:
Elevation: 12' Zero: KB

Shut-in BHP	1381	@	3000 ft	Shut-in BHT	98 F	@	3000 ft
Flowing BHP	1758	@	3000 ft	Flowing BHT	82 F	@	3000 ft
Shut-in WHP	80			Shut-in WHT	73 F		
Flowing WHP	475			Flowing WHT	72 F		

[GRADIENT DATA]

#	MD	TVD	PRESSURE	PSI/ft
1	0	0	79.51	
2	500	500	295.01	0.431
3	1000	1000	512.71	0.435
4	2000	2000	946.57	0.434
5	3000	3000	1380.82	0.434
6	3300	3300	1511.02	0.434
7	3440	3440	1571.78	0.434

Remarks: Tagged Fill @ 3423' TVD.
Pressures @ 3300' & 3440' are extrapolated.



COMMENTS FOR DATA PRINTOUT

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
[Tuesday: Mar. 15, 1994]					
		Start Data Acquisition System. GRC EPG-520 S.R.O. Gauge (S/N 69491) @ 3,300 ft.			
1	0	17:22:28	0.0000	1891.50	83.62	133.10
		Pull up hole with gauge to 3,000 feet.			
9	0	17:31: 6	0.1440	1891.45	83.40	133.05
		Gauge @ test depth of 3,000 feet. Plant injecting into well @ approximatly			
17	0	17:38:47	0.2720	1760.46	82.83	2.06
[Wednesday: Mar. 16, 1994]					
		Pressure change due to rate change caused by motor valve fluctuations.			
704	1	13: 4:21	19.6980	1762.04	80.99	3.64
		Still experenicing motor valve fluctuations.			
1200	1	22:58: 3	29.5930	1758.05	81.55	-0.35
[Thursday: Mar. 17, 1994]					
		Shut down Injection, and start fall-off test.			
1479	2	7: 6:52	0.0000	1758.40	81.87	0.00
[Friday: Mar. 18, 1994]					
		Broke pack-off seal.			
3442	3	8: 0:48	24.8990	1380.76	97.52	-377.64
		Drop down hole 10 feet, then pull out of hole making static gradient stops.			
3464	3	8:21:55	25.2510	1380.82	97.59	-377.58
		Leaving 2,000 feet.			
3485	3	8:42: 5	25.5870	946.57	90.43	-811.83
		Leaving 1,000 feet.			
3511	3	9: 7: 3	26.0030	512.71	84.73	-1245.69
		Leaving 500 feet.			
3542	3	9:36:48	26.4990	295.01	81.52	-1463.39
		Bleed off lubricator.			
3566	3	9:59:51	26.8830	79.51	72.57	-1678.89

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Tuesday: Mar. 15, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
		Start Data Acquisition System.				
		GRC EPG-520 S.R.O. Gauge (S/N 69491) @ 3300' TVD.				
		Ran CCL log to correct WLM depth to packer TVD.				
1	0	17:22:28	0.0000	1891.50	83.62	133.10
6	0	17:28:13	0.0960	1891.40	83.41	133.00
		Pull up hole with gauge to 3,000 feet.				
9	0	17:31: 6	0.1440	1891.45	83.40	133.05
12	0	17:33:59	0.1920	1845.08	83.28	86.68
		Gauge @ test depth pf 3,000 feet TVD.				
		Plant injecting into well @ approximatly 168 GPM.				
		Monitoring Bottom-Hole Injection Pressure.				
17	0	17:38:47	0.2720	1760.46	82.83	2.06
18	0	17:39:45	0.2880	1760.49	82.78	2.09
24	0	17:45:30	0.3840	1760.27	82.57	1.87
30	0	17:51:16	0.4800	1760.37	82.37	1.97
36	0	17:57: 1	0.5760	1760.38	82.27	1.98
42	0	18: 2:47	0.6720	1760.36	82.25	1.96
48	0	18: 8:33	0.7680	1760.38	82.21	1.98
54	0	18:14:18	0.8640	1760.34	82.19	1.94
60	0	18:20: 4	0.9600	1760.07	82.17	1.67
66	0	18:25:49	1.0560	1760.01	82.19	1.61
72	0	18:31:35	1.1520	1759.94	82.25	1.54
78	0	18:37:21	1.2480	1760.01	82.24	1.61
84	0	18:43: 6	1.3440	1759.97	82.23	1.57
90	0	18:48:52	1.4400	1759.94	82.23	1.54
96	0	18:54:37	1.5360	1759.99	82.27	1.59
102	0	19: 0:23	1.6320	1759.90	82.25	1.50
108	0	19: 6: 9	1.7280	1759.92	82.21	1.52
114	0	19:11:54	1.8240	1759.92	82.17	1.52
120	0	19:17:40	1.9200	1760.02	82.21	1.62
126	0	19:23:25	2.0160	1759.87	82.20	1.47
132	0	19:29:11	2.1120	1760.02	82.22	1.62
138	0	19:34:57	2.2080	1759.90	82.21	1.50
144	0	19:40:42	2.3040	1759.95	82.15	1.55
150	0	19:46:28	2.4000	1759.89	82.11	1.49
156	0	19:52:13	2.4960	1759.78	82.05	1.38
162	0	19:57:59	2.5920	1760.14	82.06	1.74
165	0	20: 4:13	2.6960	1760.02	82.07	1.62
168	0	20: 9:59	2.7920	1760.07	82.07	1.67
171	0	20:15:45	2.8880	1759.95	82.08	1.55
174	0	20:21:30	2.9840	1759.96	82.06	1.56
177	0	20:27:16	3.0800	1760.02	82.10	1.62
180	0	20:33: 1	3.1760	1759.90	82.09	1.50
183	0	20:38:47	3.2720	1759.86	82.00	1.46
186	0	20:44:33	3.3680	1759.89	81.99	1.49
189	0	20:50:18	3.4640	1759.86	82.00	1.46
192	0	20:56: 4	3.5600	1759.96	82.11	1.56
195	0	21: 1:49	3.6560	1759.90	82.22	1.50
198	0	21: 7:35	3.7520	1759.88	82.37	1.48
201	0	21:13:21	3.8480	1759.92	82.51	1.52

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Tuesday: Mar. 15, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
204	0	21:19: 6	3.9440	1759.88	82.66	1.48
207	0	21:24:52	4.0400	1759.97	82.85	1.57
210	0	21:30:37	4.1360	1759.98	83.04	1.58
213	0	21:36:23	4.2320	1759.87	83.13	1.47
216	0	21:42: 9	4.3280	1759.77	82.94	1.37
219	0	21:47:54	4.4240	1759.88	82.66	1.48
222	0	21:53:40	4.5200	1759.89	82.58	1.49
225	0	21:59:25	4.6160	1759.86	82.62	1.46
228	0	22: 5:11	4.7120	1759.88	82.59	1.48
231	0	22:10:57	4.8080	1759.93	82.53	1.53
234	0	22:16:42	4.9040	1759.87	82.48	1.47
237	0	22:22:28	5.0000	1759.67	82.36	1.27
240	0	22:28:13	5.0960	1759.76	82.19	1.36
243	0	22:33:59	5.1920	1759.76	82.03	1.36
246	0	22:39:45	5.2880	1759.88	81.86	1.48
249	0	22:45:30	5.3840	1759.94	81.64	1.54
252	0	22:51:16	5.4800	1759.97	81.44	1.57
255	0	22:57: 1	5.5760	1759.87	81.30	1.47
258	0	23: 2:47	5.6720	1759.86	81.15	1.46
261	0	23: 8:33	5.7680	1759.91	81.07	1.51
264	0	23:14:18	5.8640	1759.77	80.97	1.37
267	0	23:20: 4	5.9600	1759.85	80.85	1.45
270	0	23:25:49	6.0560	1759.87	80.79	1.47
273	0	23:31:35	6.1520	1759.87	80.70	1.47
276	0	23:37:21	6.2480	1759.91	80.56	1.51
279	0	23:43: 6	6.3440	1759.89	80.46	1.49
282	0	23:48:52	6.4400	1759.86	80.39	1.46
285	0	23:54:37	6.5360	1759.91	80.33	1.51
[Wednesday: Mar. 16, 1994]						
288	1	0: 0:23	6.6320	1759.80	80.28	1.40
291	1	0: 6: 9	6.7280	1759.99	80.23	1.59
294	1	0:11:54	6.8240	1759.90	80.15	1.50
297	1	0:17:40	6.9200	1759.91	80.08	1.51
300	1	0:23:25	7.0160	1759.97	79.98	1.57
303	1	0:29:11	7.1120	1759.97	79.93	1.57
306	1	0:34:57	7.2080	1759.91	79.90	1.51
309	1	0:40:42	7.3040	1759.91	79.85	1.51
312	1	0:46:28	7.4000	1760.00	79.76	1.60
315	1	0:52:13	7.4960	1760.05	79.63	1.65
318	1	0:57:59	7.5920	1759.91	79.53	1.51
321	1	1: 3:45	7.6880	1760.04	79.39	1.64
324	1	1: 9:30	7.7840	1760.09	79.24	1.69
327	1	1:15:16	7.8800	1759.79	79.09	1.39
330	1	1:21: 1	7.9760	1759.89	78.99	1.49
333	1	1:26:47	8.0720	1760.02	78.90	1.62
336	1	1:32:33	8.1680	1759.97	78.83	1.57
339	1	1:38:18	8.2640	1759.76	78.79	1.36
342	1	1:44: 4	8.3600	1759.91	78.78	1.51
345	1	1:49:49	8.4560	1759.99	78.81	1.59
348	1	1:55:35	8.5520	1760.10	78.90	1.70

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Wednesday: Mar. 16, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
351	1	2: 1:21	8.6480	1760.07	79.01	1.67
354	1	2: 7: 6	8.7440	1760.05	79.07	1.65
357	1	2:12:52	8.8400	1760.05	79.07	1.65
360	1	2:18:37	8.9360	1760.03	78.97	1.63
363	1	2:24:23	9.0320	1760.09	78.78	1.69
366	1	2:30: 9	9.1280	1760.12	78.60	1.72
369	1	2:35:54	9.2240	1760.09	78.50	1.69
372	1	2:41:40	9.3200	1760.16	78.42	1.76
375	1	2:47:25	9.4160	1760.16	78.43	1.76
378	1	2:53:11	9.5120	1760.19	78.47	1.79
381	1	2:58:57	9.6080	1760.19	78.61	1.79
384	1	3: 4:42	9.7040	1760.22	78.79	1.82
387	1	3:10:28	9.8000	1760.22	78.95	1.82
390	1	3:16:13	9.8960	1760.15	79.08	1.75
393	1	3:21:59	9.9920	1760.21	79.19	1.81
396	1	3:27:45	10.0880	1760.06	79.26	1.66
399	1	3:33:30	10.1840	1760.10	79.29	1.70
402	1	3:39:16	10.2800	1760.01	79.28	1.61
405	1	3:45: 1	10.3760	1760.16	79.29	1.76
408	1	3:50:47	10.4720	1759.89	79.30	1.49
411	1	3:56:33	10.5680	1760.01	79.35	1.61
414	1	4: 2:18	10.6640	1760.02	79.43	1.62
417	1	4: 8: 4	10.7600	1759.98	79.52	1.58
420	1	4:13:49	10.8560	1759.88	79.61	1.48
423	1	4:19:35	10.9520	1759.78	79.70	1.38
426	1	4:25:21	11.0480	1759.75	79.79	1.35
429	1	4:31: 6	11.1440	1759.84	79.83	1.44
432	1	4:36:52	11.2400	1759.89	79.86	1.49
435	1	4:42:37	11.3360	1759.85	79.77	1.45
438	1	4:48:23	11.4320	1759.89	79.49	1.49
441	1	4:54: 9	11.5280	1759.83	79.16	1.43
444	1	4:59:54	11.6240	1759.84	78.93	1.44
447	1	5: 5:40	11.7200	1759.85	78.79	1.45
450	1	5:11:25	11.8160	1759.91	78.74	1.51
453	1	5:17:11	11.9120	1760.10	78.79	1.70
456	1	5:22:57	12.0080	1759.98	78.85	1.58
459	1	5:28:42	12.1040	1760.03	78.91	1.63
462	1	5:34:28	12.2000	1759.97	78.98	1.57
465	1	5:40:13	12.2960	1759.81	79.09	1.41
468	1	5:45:59	12.3920	1759.46	79.19	1.06
471	1	5:51:45	12.4880	1759.67	79.30	1.27
474	1	5:57:30	12.5840	1759.62	79.40	1.22
477	1	6: 3:16	12.6800	1759.65	79.44	1.25
480	1	6: 9: 1	12.7760	1759.77	79.51	1.37
483	1	6:14:47	12.8720	1759.85	79.55	1.45
486	1	6:20:33	12.9680	1759.80	79.56	1.40
489	1	6:26:18	13.0640	1759.82	79.57	1.42
492	1	6:32: 4	13.1600	1759.86	79.50	1.46
495	1	6:37:49	13.2560	1759.81	79.29	1.41
498	1	6:43:35	13.3520	1759.84	79.04	1.44

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Wednesday: Mar. 16, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
501	1	6:49:21	13.4480	1759.81	78.82	1.41
504	1	6:55: 6	13.5440	1759.90	78.67	1.50
507	1	7: 0:52	13.6400	1759.69	78.60	1.29
510	1	7: 6:37	13.7360	1759.72	78.59	1.32
513	1	7:12:23	13.8320	1759.80	78.59	1.40
516	1	7:18: 9	13.9280	1759.83	78.71	1.43
517	1	7:32:15	14.1630	1759.85	79.06	1.45
520	1	7:38: 0	14.2590	1759.85	79.15	1.45
523	1	7:43:46	14.3550	1759.92	79.14	1.52
526	1	7:49:31	14.4510	1759.98	79.06	1.58
529	1	7:55:17	14.5470	1759.99	78.98	1.59
532	1	8: 1: 3	14.6430	1760.03	78.94	1.63
		Continuing to monitor Bottom-Hole Injection press.				
533	1	8: 2:58	14.6750	1760.00	78.94	1.60
535	1	8: 6:48	14.7390	1760.03	78.92	1.63
538	1	8:12:34	14.8350	1759.95	78.86	1.55
541	1	8:18:19	14.9310	1759.99	78.84	1.59
544	1	8:24: 5	15.0270	1759.99	78.89	1.59
547	1	8:29:51	15.1230	1759.99	78.98	1.59
550	1	8:35:36	15.2190	1760.00	79.12	1.60
553	1	8:41:22	15.3150	1759.79	79.29	1.39
556	1	8:47: 7	15.4110	1759.97	79.39	1.57
559	1	8:52:53	15.5070	1759.93	79.49	1.53
562	1	8:58:39	15.6030	1759.89	79.59	1.49
565	1	9: 4:24	15.6990	1759.87	79.67	1.47
568	1	9:10:10	15.7950	1759.87	79.74	1.47
571	1	9:15:55	15.8910	1759.93	79.79	1.53
574	1	9:21:41	15.9870	1759.84	79.82	1.44
577	1	9:27:27	16.0830	1759.84	79.83	1.44
580	1	9:33:12	16.1790	1759.72	79.86	1.32
583	1	9:38:58	16.2750	1759.81	79.89	1.41
586	1	9:44:43	16.3710	1759.88	79.91	1.48
589	1	9:50:29	16.4670	1760.14	79.91	1.74
592	1	9:56:15	16.5630	1760.42	79.95	2.02
595	1	10: 2: 0	16.6590	1760.59	80.03	2.19
598	1	10: 7:46	16.7550	1760.80	80.14	2.40
601	1	10:13:31	16.8510	1760.86	80.24	2.46
604	1	10:19:17	16.9470	1760.97	80.32	2.57
607	1	10:25: 3	17.0430	1761.05	80.41	2.65
610	1	10:30:48	17.1390	1761.04	80.47	2.64
613	1	10:36:34	17.2350	1761.25	80.53	2.85
616	1	10:42:19	17.3310	1761.52	80.60	3.12
619	1	10:48: 5	17.4270	1761.61	80.69	3.21
622	1	10:53:51	17.5230	1761.69	80.79	3.29
625	1	10:59:36	17.6190	1761.87	80.87	3.47
628	1	11: 5:22	17.7150	1761.93	80.96	3.53
631	1	11:11: 7	17.8110	1761.98	81.00	3.58
634	1	11:16:53	17.9070	1761.96	81.01	3.56
637	1	11:22:39	18.0030	1761.98	81.02	3.58
640	1	11:28:24	18.0990	1762.04	81.08	3.64

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Wednesday: Mar. 16, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
643	1	11:34:10	18.1950	1762.01	81.15	3.61
646	1	11:39:55	18.2910	1761.98	81.18	3.58
649	1	11:45:41	18.3870	1761.97	81.18	3.57
652	1	11:51:27	18.4830	1761.94	81.17	3.54
655	1	11:57:12	18.5790	1762.02	81.16	3.62
658	1	12: 2:58	18.6750	1762.00	81.16	3.60
661	1	12: 8:43	18.7710	1761.97	81.11	3.57
664	1	12:14:29	18.8670	1762.07	81.10	3.67
667	1	12:20:15	18.9630	1762.02	81.10	3.62
670	1	12:26: 0	19.0590	1762.08	81.08	3.68
673	1	12:31:46	19.1550	1761.93	81.07	3.53
676	1	12:37:31	19.2510	1761.86	81.04	3.46
679	1	12:43:17	19.3470	1761.90	80.99	3.50
682	1	12:49: 3	19.4430	1761.95	80.95	3.55
685	1	12:54:48	19.5390	1762.20	80.95	3.80
688	1	13: 1: 3	19.6430	1762.43	80.99	4.03
		Pressure change due to rate change caused by motor valve fluctuation.				
704	1	13: 4:21	19.6980	1762.04	80.99	3.64
717	1	13: 6:12	19.7290	1756.70	80.98	-1.70
752	1	13:11:15	19.8130	1754.81	81.03	-3.59
785	1	13:16:17	19.8970	1754.86	81.08	-3.54
817	1	13:21:27	19.9830	1754.37	81.15	-4.03
838	1	13:26:51	20.0730	1754.47	81.22	-3.93
844	1	13:32:33	20.1680	1754.65	81.29	-3.75
850	1	13:38:18	20.2640	1757.84	81.28	-0.56
856	1	13:44: 4	20.3600	1758.08	81.25	-0.32
862	1	13:49:49	20.4560	1758.18	81.25	-0.22
868	1	13:55:39	20.5530	1758.18	81.31	-0.22
874	1	14: 1:21	20.6480	1758.25	81.36	-0.15
880	1	14: 7: 6	20.7440	1758.20	81.44	-0.20
886	1	14:12:52	20.8400	1758.26	81.50	-0.14
892	1	14:18:37	20.9360	1758.31	81.53	-0.09
898	1	14:24:27	21.0330	1758.37	81.56	-0.03
904	1	14:30: 9	21.1280	1758.41	81.60	0.01
910	1	14:35:54	21.2240	1758.37	81.64	-0.03
916	1	14:41:40	21.3200	1758.43	81.67	0.03
922	1	14:47:25	21.4160	1758.42	81.65	0.02
928	1	14:53:15	21.5130	1758.49	81.57	0.09
934	1	14:58:57	21.6080	1758.46	81.53	0.06
940	1	15: 4:42	21.7040	1758.44	81.47	0.04
946	1	15:10:28	21.8000	1758.48	81.39	0.08
952	1	15:16:13	21.8960	1758.45	81.33	0.05
958	1	15:22: 3	21.9930	1758.38	81.33	-0.02
964	1	15:27:45	22.0880	1758.36	81.32	-0.04
969	1	15:34:28	22.2000	1758.21	81.31	-0.19
972	1	15:40:13	22.2960	1761.83	81.30	3.43
975	1	15:46: 3	22.3930	1761.88	81.26	3.48
978	1	15:51:45	22.4880	1755.77	81.26	-2.63
981	1	15:57:34	22.5850	1755.95	81.27	-2.45

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Wednesday: Mar. 16, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
984	1	16: 3:16	22.6800	1755.70	81.30	-2.70
987	1	16: 9: 1	22.7760	1755.74	81.27	-2.66
990	1	16:14:51	22.8730	1755.65	81.24	-2.75
993	1	16:20:33	22.9680	1760.51	81.24	2.11
996	1	16:26:22	23.0650	1758.72	81.17	0.32
999	1	16:32: 4	23.1600	1761.71	81.16	3.31
1002	1	16:37:49	23.2560	1762.21	81.18	3.81
1005	1	16:43:39	23.3530	1762.42	81.15	4.02
1008	1	16:49:21	23.4480	1762.49	81.13	4.09
1011	1	16:55:10	23.5450	1762.63	81.14	4.23
1014	1	17: 0:52	23.6400	1762.67	81.18	4.27
1017	1	17: 6:37	23.7360	1762.68	81.20	4.28
1020	1	17:12:27	23.8330	1762.73	81.17	4.33
1023	1	17:18: 9	23.9280	1762.66	81.08	4.26
1026	1	17:23:58	24.0250	1762.76	81.05	4.36
1029	1	17:29:40	24.1200	1762.84	81.07	4.44
1032	1	17:35:25	24.2160	1762.77	81.07	4.37
1035	1	17:41:15	24.3130	1762.80	81.07	4.40
1038	1	17:46:57	24.4080	1762.90	81.06	4.50
1041	1	17:52:46	24.5050	1762.87	81.05	4.47
1044	1	17:58:28	24.6000	1762.95	81.05	4.55
1047	1	18: 4:13	24.6960	1762.81	81.06	4.41
1050	1	18:10: 3	24.7930	1762.88	81.05	4.48
1053	1	18:15:45	24.8880	1762.90	81.05	4.50
1056	1	18:21:34	24.9850	1762.88	81.07	4.48
1059	1	18:27:16	25.0800	1762.90	81.07	4.50
1062	1	18:33: 1	25.1760	1762.95	81.08	4.55
1065	1	18:38:51	25.2730	1763.01	81.12	4.61
1068	1	18:44:33	25.3680	1762.75	81.15	4.35
1071	1	18:50:18	25.4640	1762.79	81.15	4.39
1074	1	18:56: 4	25.5600	1762.86	81.14	4.46
1077	1	19: 1:49	25.6560	1762.91	81.14	4.51
1080	1	19: 7:39	25.7530	1762.97	81.15	4.57
1083	1	19:13:21	25.8480	1762.97	81.20	4.57
1086	1	19:19: 6	25.9440	1762.82	81.21	4.42
1089	1	19:24:52	26.0400	1762.89	81.23	4.49
1092	1	19:30:37	26.1360	1762.87	81.26	4.47
1095	1	19:36:27	26.2330	1762.85	81.27	4.45
1098	1	19:42: 9	26.3280	1762.84	81.28	4.44
1101	1	19:47:54	26.4240	1762.75	81.30	4.35
1104	1	19:53:40	26.5200	1762.56	81.32	4.16
1107	1	19:59:25	26.6160	1762.64	81.33	4.24
1110	1	20: 5:15	26.7130	1762.54	81.38	4.14
1113	1	20:10:57	26.8080	1762.48	81.42	4.08
1116	1	20:16:42	26.9040	1762.45	81.42	4.05
1119	1	20:22:28	27.0000	1762.36	81.46	3.96
1122	1	20:28:13	27.0960	1762.35	81.49	3.95
1125	1	20:34: 3	27.1930	1762.28	81.52	3.88
1128	1	20:39:45	27.2880	1762.20	81.54	3.80
1131	1	20:45:30	27.3840	1762.10	81.58	3.70

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Wednesday: Mar. 16, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1134	1	20:51:16	27.4800	1762.02	81.59	3.62
1137	1	20:57: 1	27.5760	1761.99	81.61	3.59
1140	1	21: 2:51	27.6730	1761.93	81.65	3.53
1143	1	21: 8:33	27.7680	1761.81	81.68	3.41
1146	1	21:14:22	27.8650	1761.75	81.71	3.35
1149	1	21:20: 4	27.9600	1761.66	81.74	3.26
1152	1	21:25:49	28.0560	1761.54	81.75	3.14
1155	1	21:31:39	28.1530	1761.42	81.70	3.02
1158	1	21:37:21	28.2480	1761.35	81.65	2.95
1161	1	21:43: 6	28.3440	1761.26	81.62	2.86
1164	1	21:48:52	28.4400	1761.23	81.58	2.83
1167	1	21:54:37	28.5360	1761.06	81.55	2.66
1170	1	22: 0:27	28.6330	1760.88	81.53	2.48
1173	1	22: 6: 9	28.7280	1760.84	81.49	2.44
1176	1	22:11:58	28.8250	1760.68	81.45	2.28
1179	1	22:17:40	28.9200	1760.60	81.43	2.20
1182	1	22:23:25	29.0160	1760.54	81.44	2.14
1185	1	22:29:15	29.1130	1760.39	81.47	1.99
1188	1	22:34:57	29.2080	1760.27	81.52	1.87
1191	1	22:40:42	29.3040	1760.02	81.59	1.62
1194	1	22:46:28	29.4000	1759.80	81.62	1.40
1197	1	22:52:13	29.4960	1761.04	81.60	2.64
		Still experencing motor valve fluctuation.				
1200	1	22:58: 3	29.5930	1758.05	81.55	-0.35
1203	1	23: 3:45	29.6880	1755.43	81.57	-2.97
1206	1	23: 9:34	29.7850	1755.75	81.62	-2.65
1209	1	23:15:16	29.8800	1755.97	81.69	-2.43
1212	1	23:21: 1	29.9760	1756.12	81.70	-2.28
1215	1	23:26:51	30.0730	1756.23	81.72	-2.17
1218	1	23:32:33	30.1680	1756.25	81.74	-2.15
1221	1	23:38:18	30.2640	1756.29	81.71	-2.11
1224	1	23:44: 4	30.3600	1756.46	81.68	-1.94
1227	1	23:49:49	30.4560	1756.56	81.76	-1.84
1230	1	23:55:39	30.5530	1756.48	81.82	-1.92
[Thursday: Mar. 17, 1994]						
1233	2	0: 1:21	30.6480	1756.58	81.84	-1.82
1236	2	0: 7:10	30.7450	1756.64	81.87	-1.76
1239	2	0:12:52	30.8400	1756.70	81.88	-1.70
1242	2	0:18:37	30.9360	1756.76	81.90	-1.64
1245	2	0:24:27	31.0330	1756.73	81.93	-1.67
1248	2	0:30: 9	31.1280	1756.85	81.96	-1.55
1251	2	0:35:54	31.2240	1756.87	82.00	-1.53
1254	2	0:41:40	31.3200	1756.81	81.99	-1.59
1257	2	0:47:25	31.4160	1756.81	81.97	-1.59
1260	2	0:53:15	31.5130	1756.92	81.98	-1.48
1263	2	0:58:57	31.6080	1756.89	81.98	-1.51
1266	2	1: 4:46	31.7050	1756.99	81.89	-1.41
1269	2	1:10:28	31.8000	1757.14	81.81	-1.26
1272	2	1:16:13	31.8960	1757.44	81.77	-0.96
1275	2	1:22: 3	31.9930	1757.50	81.76	-0.90

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Thursday: Mar. 17, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1278	2	1:27:45	32.0880	1757.50	81.70	-0.90
1281	2	1:33:30	32.1840	1757.55	81.60	-0.85
1284	2	1:39:16	32.2800	1757.57	81.52	-0.83
1287	2	1:45: 1	32.3760	1757.63	81.48	-0.77
1290	2	1:50:51	32.4730	1757.69	81.45	-0.71
1293	2	1:56:33	32.5680	1757.69	81.40	-0.71
1296	2	2: 2:22	32.6650	1757.70	81.36	-0.70
1299	2	2: 8: 4	32.7600	1757.72	81.35	-0.68
1302	2	2:13:49	32.8560	1757.73	81.33	-0.67
1305	2	2:19:39	32.9530	1757.78	81.32	-0.62
1308	2	2:25:21	33.0480	1757.81	81.31	-0.59
1311	2	2:31:10	33.1450	1757.82	81.32	-0.58
1314	2	2:36:52	33.2400	1757.51	81.33	-0.89
1317	2	2:42:37	33.3360	1757.41	81.35	-0.99
1320	2	2:48:27	33.4330	1757.50	81.39	-0.90
1323	2	2:54: 9	33.5280	1757.55	81.43	-0.85
1326	2	2:59:58	33.6250	1757.51	81.44	-0.89
1329	2	3: 5:40	33.7200	1757.59	81.42	-0.81
1332	2	3:11:25	33.8160	1757.57	81.41	-0.83
1335	2	3:17:15	33.9130	1757.63	81.41	-0.77
1338	2	3:22:57	34.0080	1757.42	81.38	-0.98
1341	2	3:28:46	34.1050	1757.42	81.37	-0.98
1344	2	3:34:28	34.2000	1757.47	81.37	-0.93
1347	2	3:40:13	34.2960	1757.43	81.37	-0.97
1350	2	3:46: 3	34.3930	1757.53	81.35	-0.87
1353	2	3:51:45	34.4880	1757.31	81.32	-1.09
1356	2	3:57:34	34.5850	1757.41	81.26	-0.99
1359	2	4: 3:16	34.6800	1757.41	81.22	-0.99
1362	2	4: 9: 1	34.7760	1757.55	81.20	-0.85
1365	2	4:14:51	34.8730	1757.47	81.17	-0.93
1368	2	4:20:33	34.9680	1757.52	81.15	-0.88
1371	2	4:26:22	35.0650	1757.45	81.10	-0.95
1374	2	4:32: 4	35.1600	1757.54	81.06	-0.86
1377	2	4:37:49	35.2560	1757.59	81.01	-0.81
1380	2	4:43:39	35.3530	1757.67	80.99	-0.73
1383	2	4:49:21	35.4480	1757.50	81.00	-0.90
1386	2	4:55:10	35.5450	1757.69	81.00	-0.71
1389	2	5: 0:52	35.6400	1757.73	81.01	-0.67
1392	2	5: 6:37	35.7360	1757.65	81.04	-0.75
1395	2	5:12:27	35.8330	1757.73	81.09	-0.67
1398	2	5:18: 9	35.9280	1757.36	81.16	-1.04
1401	2	5:23:58	36.0250	1757.54	81.24	-0.86
1404	2	5:29:40	36.1200	1757.58	81.33	-0.82
1407	2	5:35:25	36.2160	1757.56	81.38	-0.84
1410	2	5:41:15	36.3130	1757.42	81.43	-0.98
1413	2	5:46:57	36.4080	1757.58	81.47	-0.82
1416	2	5:52:46	36.5050	1757.63	81.51	-0.77
1419	2	5:58:28	36.6000	1757.64	81.54	-0.76
		Continuing to monitor Bottom-Hole Injection press.				
1421	2	6: 2:22	36.6650	1757.59	81.54	-0.81
1423	2	6: 3:34	36.6850	1757.80	81.54	-0.60

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1428	2	6: 9:45	36.7880	1757.70	81.58	-0.70
1431	2	6:15:27	36.8830	1757.74	81.65	-0.66
1434	2	6:21:12	36.9790	1757.64	81.71	-0.76
1437	2	6:26:58	37.0750	1757.65	81.82	-0.75
1440	2	6:32:43	37.1710	1757.66	81.96	-0.74
1443	2	6:38:33	37.2680	1757.73	82.00	-0.67
1446	2	6:44:15	37.3630	1757.76	82.03	-0.64
1449	2	6:50: 0	37.4590	1757.79	82.09	-0.61
1450	2	6:51:55	37.4910	1757.83	82.10	-0.57
1451	2	6:53:51	37.5230	1757.82	82.12	-0.58
1452	2	6:55:46	37.5550	1757.82	82.11	-0.58
1453	2	6:57:45	37.5880	1757.81	82.08	-0.59
1454	2	6:59:36	37.6190	1757.79	82.04	-0.61
1455	2	7: 1:31	37.6510	1758.00	81.99	-0.40
1456	2	7: 3:34	37.6850	1757.99	81.95	-0.41
1457	2	7: 3:41	37.6870	1758.17	81.92	-0.23
1458	2	7: 3:48	37.6890	1758.12	81.92	-0.28
1459	2	7: 3:55	37.6910	1757.99	81.92	-0.41
1460	2	7: 4: 3	37.6930	1758.09	81.92	-0.31
1461	2	7: 4:13	37.6960	1758.21	81.91	-0.19
1462	2	7: 4:21	37.6980	1758.21	81.91	-0.19
1463	2	7: 4:31	37.7010	1758.08	81.91	-0.32
1464	2	7: 4:39	37.7030	1758.22	81.91	-0.18
1465	2	7: 4:46	37.7050	1758.30	81.91	-0.10
1466	2	7: 4:53	37.7070	1758.25	81.90	-0.15
1467	2	7: 5:11	37.7120	1758.28	81.90	-0.12
1468	2	7: 5:18	37.7140	1758.37	81.89	-0.03
1469	2	7: 5:25	37.7160	1758.27	81.89	-0.13
1470	2	7: 5:36	37.7190	1758.30	81.89	-0.10
1471	2	7: 5:43	37.7210	1758.28	81.89	-0.12
1472	2	7: 5:51	37.7230	1758.35	81.89	-0.05
1473	2	7: 5:58	37.7250	1758.24	81.89	-0.16
1474	2	7: 6: 9	37.7280	1758.35	81.88	-0.05
1475	2	7: 6:16	37.7300	1758.28	81.88	-0.12
1476	2	7: 6:23	37.7320	1758.47	81.88	0.07
1477	2	7: 6:30	37.7340	1758.38	81.87	-0.02
1478	2	7: 6:37	37.7360	1758.32	81.87	-0.08
		Shut down Injection, and start fall-off test.				
1479	2	7: 6:52	0.0000	1758.40	81.87	0.00
1480	2	7: 7: 3	0.0030	1757.49	81.86	-0.91
1481	2	7: 7:10	0.0050	1738.01	81.86	-20.39
1482	2	7: 7:17	0.0070	1730.98	81.86	-27.42
1483	2	7: 7:24	0.0090	1720.47	81.86	-37.93
1484	2	7: 7:31	0.0110	1714.29	81.86	-44.11
1485	2	7: 7:42	0.0140	1707.50	81.86	-50.90
1486	2	7: 7:49	0.0160	1699.63	81.86	-58.77
1487	2	7: 7:57	0.0180	1693.10	81.86	-65.30
1488	2	7: 8: 4	0.0200	1685.39	81.86	-73.01
1489	2	7: 8:15	0.0230	1677.84	81,86	-80.56
1490	2	7: 8:22	0.0250	1670.41	81.86	-87.99

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1491	2	7: 8:29	0.0270	1662.63	81.87	-95.77
1492	2	7: 8:47	0.0320	1645.68	81.87	-112.72
1493	2	7: 8:54	0.0340	1637.58	81.87	-120.82
1494	2	7: 9: 1	0.0360	1629.55	81.87	-128.85
1495	2	7: 9: 9	0.0380	1621.46	81.88	-136.94
1496	2	7: 9:19	0.0410	1613.30	81.88	-145.10
1497	2	7: 9:27	0.0430	1605.22	81.88	-153.18
1498	2	7: 9:34	0.0450	1597.31	81.89	-161.09
1499	2	7: 9:41	0.0470	1589.61	81.89	-168.79
1500	2	7: 9:52	0.0500	1582.06	81.89	-176.34
1501	2	7: 9:59	0.0520	1574.70	81.89	-183.70
1502	2	7:10: 6	0.0540	1567.73	81.90	-190.67
1503	2	7:10:13	0.0560	1561.17	81.90	-197.23
1504	2	7:10:31	0.0610	1548.56	81.90	-209.84
1505	2	7:10:39	0.0630	1543.51	81.91	-214.89
1506	2	7:10:46	0.0650	1538.44	81.92	-219.96
1507	2	7:10:53	0.0670	1533.82	81.92	-224.58
1508	2	7:11: 0	0.0690	1529.54	81.93	-228.86
1509	2	7:11:11	0.0720	1525.56	81.93	-232.84
1510	2	7:11:18	0.0740	1521.91	81.94	-236.49
1511	2	7:11:25	0.0760	1518.62	81.94	-239.78
1512	2	7:11:33	0.0780	1515.65	81.94	-242.75
1513	2	7:11:43	0.0810	1512.94	81.95	-245.46
1514	2	7:11:51	0.0830	1510.37	81.95	-248.03
1515	2	7:11:58	0.0850	1508.00	81.96	-250.40
1516	2	7:12: 5	0.0870	1505.83	81.96	-252.57
1517	2	7:12:23	0.0920	1501.75	81.97	-256.65
1518	2	7:12:30	0.0940	1499.93	81.98	-258.47
1519	2	7:12:37	0.0960	1498.19	81.99	-260.21
1520	2	7:12:48	0.0990	1496.56	82.00	-261.84
1521	2	7:12:55	0.1010	1495.04	82.00	-263.36
1522	2	7:13: 3	0.1030	1493.59	82.01	-264.81
1523	2	7:13:10	0.1050	1492.11	82.02	-266.29
1524	2	7:13:21	0.1080	1490.64	82.03	-267.76
1525	2	7:13:28	0.1100	1489.25	82.04	-269.15
1526	2	7:13:35	0.1120	1487.92	82.04	-270.48
1527	2	7:13:42	0.1140	1486.67	82.05	-271.73
1528	2	7:13:49	0.1160	1485.38	82.05	-273.02
1529	2	7:14: 7	0.1210	1482.87	82.06	-275.53
1530	2	7:14:15	0.1230	1481.75	82.07	-276.65
1531	2	7:14:22	0.1250	1480.62	82.08	-277.78
1532	2	7:14:29	0.1270	1479.50	82.08	-278.90
1533	2	7:14:40	0.1300	1478.31	82.09	-280.09
1534	2	7:14:47	0.1320	1477.14	82.10	-281.26
1535	2	7:14:54	0.1340	1476.02	82.10	-282.38
1536	2	7:15: 1	0.1360	1475.00	82.11	-283.40
1537	2	7:15: 9	0.1380	1474.02	82.12	-284.38
1538	2	7:15:19	0.1410	1472.98	82.13	-285.42
1539	2	7:15:27	0.1430	1471.94	82.13	-286.46
1540	2	7:15:34	0.1450	1470.90	82.14	-287.50

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1541	2	7:15:41	0.1470	1469.93	82.15	-288.47
1542	2	7:15:59	0.1520	1467.80	82.16	-290.60
1543	2	7:16:10	0.1550	1466.81	82.17	-291.59
1544	2	7:16:17	0.1570	1465.83	82.17	-292.57
1545	2	7:16:24	0.1590	1464.92	82.18	-293.48
1546	2	7:16:31	0.1610	1464.06	82.18	-294.34
1547	2	7:16:39	0.1630	1463.19	82.19	-295.21
1548	2	7:16:49	0.1660	1462.30	82.20	-296.10
1549	2	7:16:57	0.1680	1461.43	82.20	-296.97
1550	2	7:17: 4	0.1700	1460.60	82.21	-297.80
1551	2	7:17:11	0.1720	1459.85	82.21	-298.55
1552	2	7:17:22	0.1750	1459.08	82.22	-299.32
1553	2	7:17:29	0.1770	1458.29	82.23	-300.11
1554	2	7:17:43	0.1810	1456.64	82.23	-301.76
1555	2	7:17:51	0.1830	1455.93	82.25	-302.47
1556	2	7:18: 1	0.1860	1455.22	82.26	-303.18
1557	2	7:18: 9	0.1880	1454.50	82.26	-303.90
1558	2	7:18:16	0.1900	1453.75	82.27	-304.65
1559	2	7:18:23	0.1920	1453.00	82.28	-305.40
1560	2	7:18:34	0.1950	1452.29	82.28	-306.11
1561	2	7:18:41	0.1970	1451.67	82.29	-306.73
1562	2	7:18:48	0.1990	1451.03	82.30	-307.37
1563	2	7:18:55	0.2010	1450.38	82.31	-308.02
1564	2	7:19: 3	0.2030	1449.70	82.31	-308.70
1565	2	7:19:13	0.2060	1449.04	82.32	-309.36
1566	2	7:19:21	0.2080	1448.41	82.32	-309.99
1567	2	7:19:39	0.2130	1447.11	82.34	-311.29
1568	2	7:19:46	0.2150	1446.49	82.35	-311.91
1569	2	7:19:53	0.2170	1445.86	82.35	-312.54
1570	2	7:20: 4	0.2200	1445.25	82.36	-313.15
1571	2	7:20:11	0.2220	1444.73	82.37	-313.67
1572	2	7:20:18	0.2240	1444.20	82.38	-314.20
1573	2	7:20:25	0.2260	1443.66	82.38	-314.74
1574	2	7:20:33	0.2280	1443.07	82.39	-315.33
1575	2	7:20:43	0.2310	1442.52	82.40	-315.88
1576	2	7:20:51	0.2330	1442.02	82.41	-316.38
1577	2	7:20:58	0.2350	1441.54	82.42	-316.86
1578	2	7:21: 5	0.2370	1441.08	82.43	-317.32
1579	2	7:21:23	0.2420	1439.93	82.43	-318.47
1580	2	7:21:30	0.2440	1439.52	82.45	-318.88
1581	2	7:21:37	0.2460	1439.04	82.45	-319.36
1582	2	7:21:45	0.2480	1438.63	82.46	-319.77
1583	2	7:21:55	0.2510	1438.19	82.47	-320.21
1584	2	7:22: 3	0.2530	1437.73	82.47	-320.67
1585	2	7:22:10	0.2550	1437.24	82.48	-321.16
1586	2	7:22:17	0.2570	1436.75	82.49	-321.65
1587	2	7:22:24	0.2590	1436.35	82.49	-322.05
1588	2	7:22:35	0.2620	1435.96	82.50	-322.44
1589	2	7:22:42	0.2640	1435.55	82.50	-322.85
1590	2	7:22:49	0.2660	1435.12	82.51	-323.28

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1591	2	7:22:57	0.2680	1434.65	82.51	-323.75
1592	2	7:23:15	0.2730	1433.78	82.53	-324.62
1593	2	7:23:25	0.2760	1433.43	82.54	-324.97
1594	2	7:23:33	0.2780	1433.01	82.54	-325.39
1595	2	7:23:40	0.2800	1432.66	82.55	-325.74
1596	2	7:23:47	0.2820	1432.24	82.55	-326.16
1597	2	7:23:58	0.2850	1431.89	82.56	-326.51
1598	2	7:24: 5	0.2870	1431.52	82.57	-326.88
1599	2	7:24:12	0.2890	1431.15	82.57	-327.25
1600	2	7:24:19	0.2910	1430.76	82.58	-327.64
1601	2	7:24:30	0.2940	1430.32	82.58	-328.08
1602	2	7:24:37	0.2960	1429.96	82.59	-328.44
1603	2	7:24:45	0.2980	1429.64	82.60	-328.76
1604	2	7:25: 3	0.3030	1428.93	82.60	-329.47
1605	2	7:25:10	0.3050	1428.62	82.61	-329.78
1606	2	7:25:21	0.3080	1428.26	82.61	-330.14
1607	2	7:25:28	0.3100	1427.91	82.62	-330.49
1608	2	7:25:35	0.3120	1427.65	82.62	-330.75
1609	2	7:25:46	0.3150	1427.30	82.63	-331.10
1610	2	7:25:53	0.3170	1426.92	82.64	-331.48
1611	2	7:26: 4	0.3200	1426.60	82.65	-331.80
1612	2	7:26:11	0.3220	1426.30	82.65	-332.10
1613	2	7:26:18	0.3240	1426.03	82.66	-332.37
1614	2	7:26:25	0.3260	1425.72	82.67	-332.68
1615	2	7:26:36	0.3290	1425.40	82.67	-333.00
1616	2	7:26:43	0.3310	1425.12	82.68	-333.28
1617	2	7:27: 1	0.3360	1424.52	82.69	-333.88
1618	2	7:27: 9	0.3380	1424.24	82.69	-334.16
1619	2	7:27:16	0.3400	1423.97	82.70	-334.43
1620	2	7:27:27	0.3430	1423.64	82.71	-334.76
1621	2	7:27:34	0.3450	1423.36	82.72	-335.04
1622	2	7:27:41	0.3470	1423.09	82.72	-335.31
1623	2	7:27:52	0.3500	1422.92	82.73	-335.48
1624	2	7:27:59	0.3520	1422.60	82.74	-335.80
1625	2	7:28: 6	0.3540	1422.32	82.74	-336.08
1626	2	7:28:17	0.3570	1422.08	82.75	-336.32
1627	2	7:28:24	0.3590	1421.80	82.76	-336.60
1628	2	7:28:35	0.3620	1421.55	82.77	-336.85
1629	2	7:28:49	0.3660	1420.99	82.77	-337.41
1630	2	7:28:57	0.3680	1420.73	82.78	-337.67
1631	2	7:29: 7	0.3710	1420.51	82.79	-337.89
1632	2	7:29:15	0.3730	1420.24	82.80	-338.16
1633	2	7:29:25	0.3760	1420.01	82.80	-338.39
1634	2	7:29:33	0.3780	1419.76	82.81	-338.64
1635	2	7:29:43	0.3810	1419.48	82.82	-338.92
1636	2	7:29:51	0.3830	1419.26	82.82	-339.14
1637	2	7:30: 1	0.3860	1419.08	82.83	-339.32
1638	2	7:30: 9	0.3880	1418.82	82.83	-339.58
1639	2	7:30:16	0.3900	1418.59	82.83	-339.81
1640	2	7:30:27	0.3930	1418.31	82.84	-340.09

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1641	2	7:30:34	0.3950	1418.10	82.85	-340.30
1642	2	7:30:52	0.4000	1417.72	82.86	-340.68
1643	2	7:30:59	0.4020	1417.49	82.86	-340.91
1644	2	7:31:10	0.4050	1417.24	82.87	-341.16
1645	2	7:31:17	0.4070	1416.99	82.88	-341.41
1646	2	7:31:28	0.4100	1416.78	82.89	-341.62
1647	2	7:31:35	0.4120	1416.62	82.89	-341.78
1648	2	7:31:42	0.4140	1416.45	82.90	-341.95
1649	2	7:31:53	0.4170	1416.19	82.91	-342.21
1650	2	7:32: 0	0.4190	1415.96	82.91	-342.44
1651	2	7:32:11	0.4220	1415.76	82.92	-342.64
1652	2	7:32:22	0.4250	1415.57	82.93	-342.83
1653	2	7:32:29	0.4270	1415.47	82.94	-342.93
1654	2	7:32:43	0.4310	1415.01	82.94	-343.39
1655	2	7:32:51	0.4330	1414.84	82.95	-343.56
1656	2	7:33: 1	0.4360	1414.67	82.96	-343.73
1657	2	7:33:23	0.4420	1414.24	82.97	-344.16
1658	2	7:33:37	0.4460	1413.90	82.98	-344.50
1659	2	7:33:52	0.4500	1413.57	82.99	-344.83
1660	2	7:34: 6	0.4540	1413.33	83.00	-345.07
1661	2	7:34:21	0.4580	1413.04	83.01	-345.36
1662	2	7:34:35	0.4620	1412.74	83.03	-345.66
1663	2	7:34:49	0.4660	1412.52	83.04	-345.88
1664	2	7:35: 4	0.4700	1412.22	83.06	-346.18
1665	2	7:35:18	0.4740	1411.94	83.07	-346.46
1666	2	7:35:33	0.4780	1411.69	83.08	-346.71
1667	2	7:35:51	0.4830	1411.31	83.10	-347.09
1668	2	7:36: 9	0.4880	1411.01	83.11	-347.39
1669	2	7:36:19	0.4910	1410.79	83.12	-347.61
1670	2	7:36:34	0.4950	1410.57	83.13	-347.83
1671	2	7:36:48	0.4990	1410.29	83.13	-348.11
1672	2	7:37: 3	0.5030	1410.09	83.14	-348.31
1673	2	7:37:21	0.5080	1409.88	83.16	-348.52
1674	2	7:37:31	0.5110	1409.62	83.17	-348.78
1675	2	7:37:46	0.5150	1409.38	83.18	-349.02
1676	2	7:38: 0	0.5190	1409.16	83.20	-349.24
1677	2	7:38:15	0.5230	1408.93	83.21	-349.47
1678	2	7:38:33	0.5280	1408.68	83.22	-349.72
1679	2	7:38:47	0.5320	1408.39	83.23	-350.01
1680	2	7:39: 1	0.5360	1408.26	83.24	-350.14
1681	2	7:39:16	0.5400	1408.02	83.25	-350.38
1682	2	7:39:30	0.5440	1407.81	83.26	-350.59
1683	2	7:39:45	0.5480	1407.64	83.27	-350.76
1684	2	7:39:59	0.5520	1407.41	83.27	-350.99
1685	2	7:40:13	0.5560	1407.19	83.28	-351.21
1686	2	7:40:28	0.5600	1407.00	83.29	-351.40
1687	2	7:40:42	0.5640	1406.83	83.30	-351.57
1688	2	7:40:57	0.5680	1406.61	83.31	-351.79
1689	2	7:41:11	0.5720	1406.43	83.31	-351.97
1690	2	7:41:25	0.5760	1406.29	83.32	-352.11

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1691	2	7:41:40	0.5800	1406.09	83.34	-352.31
1692	2	7:42: 1	0.5860	1405.84	83.36	-352.56
1693	2	7:42:16	0.5900	1405.69	83.37	-352.71
1694	2	7:42:30	0.5940	1405.51	83.38	-352.89
1695	2	7:42:45	0.5980	1405.32	83.40	-353.08
1696	2	7:42:59	0.6020	1405.15	83.42	-353.25
1697	2	7:43:13	0.6060	1404.99	83.43	-353.41
1698	2	7:43:28	0.6100	1404.81	83.44	-353.59
1699	2	7:43:42	0.6140	1404.64	83.45	-353.76
1700	2	7:43:57	0.6180	1404.52	83.45	-353.88
1701	2	7:44:11	0.6220	1404.33	83.46	-354.07
1702	2	7:44:25	0.6260	1404.14	83.47	-354.26
1703	2	7:44:40	0.6300	1404.00	83.48	-354.40
1704	2	7:44:58	0.6350	1403.76	83.49	-354.64
1705	2	7:45:12	0.6390	1403.63	83.50	-354.77
1706	2	7:45:27	0.6430	1403.52	83.51	-354.88
1707	2	7:45:41	0.6470	1403.39	83.52	-355.01
1708	2	7:45:55	0.6510	1403.22	83.53	-355.18
1709	2	7:46:10	0.6550	1403.08	83.54	-355.32
1710	2	7:46:24	0.6590	1402.95	83.54	-355.45
1711	2	7:46:39	0.6630	1402.76	83.55	-355.64
1712	2	7:46:53	0.6670	1402.61	83.56	-355.79
1713	2	7:47: 7	0.6710	1402.49	83.57	-355.91
1714	2	7:47:22	0.6750	1402.35	83.58	-356.05
1715	2	7:47:36	0.6790	1402.19	83.58	-356.21
1716	2	7:47:51	0.6830	1402.10	83.59	-356.30
1717	2	7:48: 9	0.6880	1401.91	83.60	-356.49
1718	2	7:48:27	0.6930	1401.75	83.61	-356.65
1719	2	7:48:37	0.6960	1401.64	83.62	-356.76
1720	2	7:48:52	0.7000	1401.51	83.63	-356.89
1721	2	7:49:10	0.7050	1401.33	83.64	-357.07
1722	2	7:49:21	0.7080	1401.22	83.65	-357.18
1723	2	7:49:39	0.7130	1401.14	83.66	-357.26
1724	2	7:49:49	0.7160	1401.00	83.67	-357.40
1725	2	7:50: 4	0.7200	1400.88	83.68	-357.52
1726	2	7:50:22	0.7250	1400.80	83.69	-357.60
1727	2	7:50:33	0.7280	1400.68	83.71	-357.72
1728	2	7:50:51	0.7330	1400.54	83.72	-357.86
1729	2	7:51: 9	0.7380	1400.41	83.73	-357.99
1730	2	7:51:19	0.7410	1400.28	83.74	-358.12
1731	2	7:51:37	0.7460	1400.13	83.75	-358.27
1732	2	7:51:52	0.7500	1400.04	83.76	-358.36
1733	2	7:52: 6	0.7540	1399.96	83.78	-358.44
1734	2	7:52:21	0.7580	1399.84	83.78	-358.56
1735	2	7:52:31	0.7610	1399.72	83.79	-358.68
1736	2	7:52:49	0.7660	1399.64	83.80	-358.76
1737	2	7:53: 4	0.7700	1399.53	83.81	-358.87
1738	2	7:53:18	0.7740	1399.38	83.81	-359.02
1739	2	7:53:33	0.7780	1399.28	83.82	-359.12
1740	2	7:53:43	0.7810	1399.21	83.83	-359.19

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1741	2	7:54: 1	0.7860	1399.08	83.84	-359.32
1742	2	7:54:19	0.7910	1398.94	83.85	-359.46
1743	2	7:54:34	0.7950	1398.86	83.86	-359.54
1744	2	7:54:48	0.7990	1398.74	83.86	-359.66
1745	2	7:55: 3	0.8030	1398.63	83.87	-359.77
1746	2	7:55:17	0.8070	1398.57	83.88	-359.83
1747	2	7:55:31	0.8110	1398.44	83.89	-359.96
1748	2	7:55:46	0.8150	1398.32	83.90	-360.08
1749	2	7:56: 0	0.8190	1398.24	83.91	-360.16
1750	2	7:56:15	0.8230	1398.18	83.93	-360.22
1751	2	7:56:29	0.8270	1398.07	83.94	-360.33
1752	2	7:56:43	0.8310	1397.98	83.94	-360.42
1753	2	7:56:58	0.8350	1397.91	83.95	-360.49
1754	2	7:57:19	0.8410	1397.65	83.97	-360.75
1755	2	7:57:30	0.8440	1397.65	83.98	-360.75
1756	2	7:57:48	0.8490	1397.58	83.99	-360.82
1757	2	7:58: 3	0.8530	1397.49	84.00	-360.91
1758	2	7:58:17	0.8570	1397.38	84.00	-361.02
1759	2	7:58:31	0.8610	1397.31	84.01	-361.09
1760	2	7:58:46	0.8650	1397.26	84.02	-361.14
1761	2	7:59: 0	0.8690	1397.15	84.03	-361.25
1762	2	7:59:15	0.8730	1397.07	84.04	-361.33
1763	2	7:59:29	0.8770	1397.02	84.05	-361.38
1764	2	7:59:43	0.8810	1396.92	84.06	-361.48
1765	2	7:59:54	0.8840	1396.79	84.07	-361.61
1766	2	8: 0:12	0.8890	1396.73	84.07	-361.67
1767	2	8: 0:30	0.8940	1396.61	84.08	-361.79
1768	2	8: 0:48	0.8990	1396.51	84.09	-361.89
1769	2	8: 1: 3	0.9030	1396.47	84.10	-361.93
1770	2	8: 1:13	0.9060	1396.42	84.11	-361.98
1771	2	8: 1:31	0.9110	1396.31	84.12	-362.09
1772	2	8: 1:46	0.9150	1396.23	84.13	-362.17
1773	2	8: 2: 0	0.9190	1396.17	84.14	-362.23
1774	2	8: 2:15	0.9230	1396.07	84.15	-362.33
1775	2	8: 2:25	0.9260	1395.97	84.16	-362.43
1776	2	8: 2:43	0.9310	1395.91	84.16	-362.49
1777	2	8: 2:58	0.9350	1395.86	84.17	-362.54
1778	2	8: 3:12	0.9390	1395.77	84.18	-362.63
1779	2	8: 3:30	0.9440	1395.69	84.19	-362.71
1780	2	8: 3:45	0.9480	1395.65	84.19	-362.75
1781	2	8: 3:59	0.9520	1395.54	84.20	-362.86
1782	2	8: 4:13	0.9560	1395.45	84.21	-362.95
1783	2	8: 4:28	0.9600	1395.41	84.22	-362.99
1784	2	8: 4:42	0.9640	1395.34	84.23	-363.06
1785	2	8: 4:57	0.9680	1395.24	84.24	-363.16
1786	2	8: 5:11	0.9720	1395.20	84.25	-363.20
1787	2	8: 5:25	0.9760	1395.17	84.26	-363.23
1788	2	8: 5:54	0.9840	1395.01	84.28	-363.39
1789	2	8: 6:16	0.9900	1394.92	84.29	-363.48
1790	2	8: 6:37	0.9960	1394.80	84.30	-363.60

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1791	2	8: 6:59	1.0020	1394.70	84.32	-363.70
1792	2	8: 7:24	1.0090	1394.58	84.34	-363.82
1793	2	8: 7:46	1.0150	1394.52	84.35	-363.88
1794	2	8: 8: 7	1.0210	1394.42	84.37	-363.98
1795	2	8: 8:29	1.0270	1394.33	84.38	-364.07
1796	2	8: 8:51	1.0330	1394.23	84.39	-364.17
1797	2	8: 9:12	1.0390	1394.11	84.40	-364.29
1798	2	8: 9:34	1.0450	1394.04	84.41	-364.36
1799	2	8: 9:55	1.0510	1393.95	84.42	-364.45
1800	2	8:10:17	1.0570	1393.88	84.43	-364.52
1801	2	8:10:39	1.0630	1393.81	84.45	-364.59
1802	2	8:11: 0	1.0690	1393.70	84.46	-364.70
1803	2	8:11:22	1.0750	1393.62	84.47	-364.78
1804	2	8:11:43	1.0810	1393.53	84.49	-364.87
1805	2	8:12: 5	1.0870	1393.46	84.50	-364.94
1806	2	8:12:27	1.0930	1393.37	84.51	-365.03
1807	2	8:12:48	1.0990	1393.32	84.52	-365.08
1808	2	8:13:10	1.1050	1393.22	84.54	-365.18
1809	2	8:13:31	1.1110	1393.13	84.55	-365.27
1810	2	8:13:53	1.1170	1393.05	84.56	-365.35
1811	2	8:14:15	1.1230	1392.99	84.58	-365.41
1812	2	8:14:36	1.1290	1392.94	84.59	-365.46
1813	2	8:14:58	1.1350	1392.87	84.61	-365.53
1814	2	8:15:19	1.1410	1392.80	84.62	-365.60
1815	2	8:15:41	1.1470	1392.70	84.63	-365.70
1816	2	8:16: 3	1.1530	1392.62	84.65	-365.78
1817	2	8:16:28	1.1600	1392.53	84.66	-365.87
1818	2	8:16:49	1.1660	1392.47	84.67	-365.93
1819	2	8:17:11	1.1720	1392.41	84.68	-365.99
1820	2	8:17:33	1.1780	1392.33	84.70	-366.07
1821	2	8:17:54	1.1840	1392.25	84.71	-366.15
1822	2	8:18:16	1.1900	1392.18	84.72	-366.22
1823	2	8:18:37	1.1960	1392.12	84.74	-366.28
1824	2	8:18:59	1.2020	1392.07	84.75	-366.33
1825	2	8:19:21	1.2080	1392.02	84.76	-366.38
1826	2	8:19:42	1.2140	1391.95	84.77	-366.45
1827	2	8:20: 4	1.2200	1391.88	84.79	-366.52
1828	2	8:20:25	1.2260	1391.79	84.80	-366.61
1829	2	8:20:51	1.2330	1391.80	84.81	-366.60
1830	2	8:21:12	1.2390	1391.68	84.82	-366.72
1831	2	8:21:34	1.2450	1391.65	84.84	-366.75
1832	2	8:21:55	1.2510	1391.59	84.85	-366.81
1833	2	8:22:13	1.2560	1391.51	84.87	-366.89
1834	2	8:22:39	1.2630	1391.45	84.87	-366.95
1835	2	8:23: 0	1.2690	1391.37	84.88	-367.03
1836	2	8:23:18	1.2740	1391.34	84.89	-367.06
1837	2	8:23:43	1.2810	1391.29	84.90	-367.11
1838	2	8:24: 1	1.2860	1391.24	84.92	-367.16
1839	2	8:24:27	1.2930	1391.17	84.93	-367.23
1840	2	8:24:48	1.2990	1391.09	84.94	-367.31

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1841	2	8:25: 6	1.3040	1391.05	84.94	-367.35
1842	2	8:25:31	1.3110	1390.98	84.96	-367.42
1843	2	8:25:53	1.3170	1390.96	84.97	-367.44
1844	2	8:26:15	1.3230	1390.89	84.98	-367.51
1845	2	8:26:36	1.3290	1390.84	84.99	-367.56
1846	2	8:26:58	1.3350	1390.76	85.00	-367.64
1847	2	8:27:19	1.3410	1390.72	85.01	-367.68
1848	2	8:27:41	1.3470	1390.68	85.02	-367.72
1849	2	8:28: 3	1.3530	1390.63	85.03	-367.77
1850	2	8:28:24	1.3590	1390.60	85.05	-367.80
1851	2	8:28:46	1.3650	1390.53	85.06	-367.87
1852	2	8:29: 7	1.3710	1390.49	85.07	-367.91
1853	2	8:29:29	1.3770	1390.43	85.09	-367.97
1854	2	8:29:51	1.3830	1390.40	85.10	-368.00
1855	2	8:30:16	1.3900	1390.36	85.11	-368.04
1856	2	8:30:34	1.3950	1390.31	85.13	-368.09
1857	2	8:30:55	1.4010	1390.28	85.14	-368.12
1858	2	8:31:17	1.4070	1390.21	85.15	-368.19
1859	2	8:31:39	1.4130	1390.18	85.17	-368.22
1860	2	8:32: 4	1.4200	1390.12	85.18	-368.28
1861	2	8:32:22	1.4250	1390.07	85.19	-368.33
1862	2	8:32:43	1.4310	1390.04	85.21	-368.36
1863	2	8:33: 5	1.4370	1390.00	85.22	-368.40
1864	2	8:33:27	1.4430	1389.98	85.24	-368.42
1865	2	8:33:52	1.4500	1389.91	85.25	-368.49
1866	2	8:34:10	1.4550	1389.88	85.25	-368.52
1867	2	8:34:35	1.4620	1389.80	85.26	-368.60
1868	2	8:34:57	1.4680	1389.77	85.27	-368.63
1869	2	8:35:18	1.4740	1389.73	85.28	-368.67
1870	2	8:35:40	1.4800	1389.70	85.29	-368.70
1871	2	8:36: 1	1.4860	1389.68	85.30	-368.72
1872	2	8:36:23	1.4920	1389.62	85.31	-368.78
1873	2	8:36:45	1.4980	1389.59	85.32	-368.81
1874	2	8:37: 6	1.5040	1389.52	85.33	-368.88
1875	2	8:37:28	1.5100	1389.50	85.34	-368.90
1876	2	8:37:49	1.5160	1389.47	85.35	-368.93
1877	2	8:38:11	1.5220	1389.45	85.36	-368.95
1878	2	8:38:33	1.5280	1389.41	85.38	-368.99
1879	2	8:38:54	1.5340	1389.35	85.39	-369.05
1880	2	8:39:16	1.5400	1389.30	85.40	-369.10
1881	2	8:39:37	1.5460	1389.26	85.41	-369.14
1882	2	8:39:59	1.5520	1389.26	85.42	-369.14
1883	2	8:40:21	1.5580	1389.22	85.43	-369.18
1884	2	8:40:42	1.5640	1389.19	85.44	-369.21
1885	2	8:41: 4	1.5700	1389.15	85.45	-369.25
1886	2	8:41:25	1.5760	1389.09	85.47	-369.31
1887	2	8:41:47	1.5820	1389.07	85.48	-369.33
1888	2	8:42: 9	1.5880	1389.03	85.49	-369.37
1889	2	8:42:30	1.5940	1389.03	85.50	-369.37
1890	2	8:42:52	1.6000	1388.99	85.52	-369.41

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1891	2	8:43:13	1.6060	1388.94	85.53	-369.46
1892	2	8:43:35	1.6120	1388.90	85.54	-369.50
1893	2	8:43:57	1.6180	1388.85	85.56	-369.55
1894	2	8:44:18	1.6240	1388.85	85.56	-369.55
1895	2	8:44:40	1.6300	1388.82	85.58	-369.58
1896	2	8:45:16	1.6400	1388.76	85.59	-369.64
1897	2	8:45:45	1.6480	1388.69	85.61	-369.71
1898	2	8:46:13	1.6560	1388.65	85.63	-369.75
1899	2	8:46:42	1.6640	1388.63	85.64	-369.77
1900	2	8:47:11	1.6720	1388.59	85.65	-369.81
1901	2	8:47:40	1.6800	1388.54	85.66	-369.86
1902	2	8:48: 9	1.6880	1388.48	85.67	-369.92
1903	2	8:48:37	1.6960	1388.45	85.68	-369.95
1904	2	8:49: 6	1.7040	1388.46	85.70	-369.94
1905	2	8:49:35	1.7120	1388.41	85.72	-369.99
1906	2	8:50: 4	1.7200	1388.35	85.74	-370.05
1907	2	8:50:33	1.7280	1388.30	85.75	-370.10
1908	2	8:51: 1	1.7360	1388.29	85.77	-370.11
1909	2	8:51:30	1.7440	1388.27	85.79	-370.13
1910	2	8:51:59	1.7520	1388.21	85.80	-370.19
1911	2	8:52:28	1.7600	1388.14	85.81	-370.26
1912	2	8:52:57	1.7680	1388.11	85.82	-370.29
1913	2	8:53:25	1.7760	1388.12	85.84	-370.28
1914	2	8:53:54	1.7840	1388.08	85.85	-370.32
1915	2	8:54:23	1.7920	1388.05	85.87	-370.35
1916	2	8:54:52	1.8000	1388.00	85.88	-370.40
1917	2	8:55:21	1.8080	1387.97	85.90	-370.43
1918	2	8:55:49	1.8160	1387.94	85.91	-370.46
1919	2	8:56:18	1.8240	1387.91	85.92	-370.49
1920	2	8:56:47	1.8320	1387.85	85.94	-370.55
1921	2	8:57:16	1.8400	1387.82	85.95	-370.58
1922	2	8:57:45	1.8480	1387.83	85.96	-370.57
1923	2	8:58:13	1.8560	1387.80	85.97	-370.60
1924	2	8:58:42	1.8640	1387.76	85.99	-370.64
1925	2	8:59:11	1.8720	1387.70	86.01	-370.70
1926	2	8:59:40	1.8800	1387.67	86.02	-370.73
1927	2	9: 0: 9	1.8880	1387.66	86.03	-370.74
1928	2	9: 0:37	1.8960	1387.65	86.04	-370.75
1929	2	9: 1: 6	1.9040	1387.59	86.05	-370.81
1930	2	9: 1:35	1.9120	1387.56	86.06	-370.84
1931	2	9: 2: 4	1.9200	1387.54	86.08	-370.86
1932	2	9: 2:33	1.9280	1387.55	86.10	-370.85
1933	2	9: 3: 1	1.9360	1387.51	86.11	-370.89
1934	2	9: 3:30	1.9440	1387.47	86.13	-370.93
1935	2	9: 3:59	1.9520	1387.43	86.14	-370.97
1936	2	9: 4:28	1.9600	1387.42	86.15	-370.98
1937	2	9: 4:57	1.9680	1387.42	86.16	-370.98
1938	2	9: 5:25	1.9760	1387.36	86.18	-371.04
1939	2	9: 5:54	1.9840	1387.34	86.19	-371.06
1940	2	9: 6:23	1.9920	1387.31	86.21	-371.09

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1941	2	9: 6:52	2.0000	1387.31	86.22	-371.09
1942	2	9: 7:21	2.0080	1387.29	86.24	-371.11
1943	2	9: 7:49	2.0160	1387.24	86.25	-371.16
1944	2	9: 8:18	2.0240	1387.22	86.26	-371.18
1945	2	9: 8:47	2.0320	1387.20	86.28	-371.20
1946	2	9: 9:16	2.0400	1387.20	86.29	-371.20
1947	2	9: 9:45	2.0480	1387.15	86.30	-371.25
1948	2	9:10:13	2.0560	1387.12	86.31	-371.28
1949	2	9:10:42	2.0640	1387.11	86.33	-371.29
1950	2	9:11:11	2.0720	1387.10	86.35	-371.30
1951	2	9:11:40	2.0800	1387.09	86.37	-371.31
1952	2	9:12: 9	2.0880	1387.04	86.38	-371.36
1953	2	9:12:37	2.0960	1387.01	86.39	-371.39
1954	2	9:13: 6	2.1040	1387.00	86.40	-371.40
1955	2	9:13:35	2.1120	1387.00	86.41	-371.40
1956	2	9:14: 4	2.1200	1386.98	86.43	-371.42
1957	2	9:14:33	2.1280	1386.92	86.44	-371.48
1958	2	9:15: 1	2.1360	1386.90	86.45	-371.50
1959	2	9:15:30	2.1440	1386.90	86.46	-371.50
1960	2	9:15:59	2.1520	1386.90	86.48	-371.50
1961	2	9:16:28	2.1600	1386.86	86.49	-371.54
1962	2	9:16:57	2.1680	1386.82	86.50	-371.58
1963	2	9:17:25	2.1760	1386.82	86.51	-371.58
1964	2	9:17:54	2.1840	1386.81	86.53	-371.59
1965	2	9:18:23	2.1920	1386.80	86.54	-371.60
1966	2	9:18:52	2.2000	1386.76	86.55	-371.64
1967	2	9:19:21	2.2080	1386.73	86.57	-371.67
1968	2	9:19:49	2.2160	1386.74	86.58	-371.66
1969	2	9:20:18	2.2240	1386.74	86.59	-371.66
1970	2	9:20:47	2.2320	1386.70	86.61	-371.70
1971	2	9:21:16	2.2400	1386.66	86.62	-371.74
1972	2	9:21:45	2.2480	1386.65	86.63	-371.75
1973	2	9:22:13	2.2560	1386.66	86.64	-371.74
1974	2	9:22:42	2.2640	1386.64	86.65	-371.76
1975	2	9:23:11	2.2720	1386.62	86.66	-371.78
1976	2	9:23:40	2.2800	1386.58	86.68	-371.82
1977	2	9:24: 9	2.2880	1386.59	86.69	-371.81
1978	2	9:24:37	2.2960	1386.58	86.71	-371.82
1979	2	9:25: 6	2.3040	1386.53	86.72	-371.87
1980	2	9:25:35	2.3120	1386.53	86.73	-371.87
1981	2	9:26: 4	2.3200	1386.50	86.75	-371.90
1982	2	9:26:33	2.3280	1386.52	86.76	-371.88
1983	2	9:27: 1	2.3360	1386.50	86.77	-371.90
1984	2	9:27:30	2.3440	1386.47	86.79	-371.93
1985	2	9:27:59	2.3520	1386.43	86.80	-371.97
1986	2	9:28:28	2.3600	1386.42	86.81	-371.98
1987	2	9:28:57	2.3680	1386.44	86.82	-371.96
1988	2	9:29:25	2.3760	1386.41	86.83	-371.99
1989	2	9:29:54	2.3840	1386.40	86.85	-372.00
1990	2	9:30:23	2.3920	1386.35	86.86	-372.05

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1991	2	9:30:52	2.4000	1386.36	86.87	-372.04
1992	2	9:31:21	2.4080	1386.38	86.89	-372.02
1993	2	9:31:49	2.4160	1386.33	86.89	-372.07
1994	2	9:32:18	2.4240	1386.31	86.90	-372.09
1995	2	9:32:47	2.4320	1386.30	86.92	-372.10
1996	2	9:33:16	2.4400	1386.32	86.92	-372.08
1997	2	9:33:45	2.4480	1386.29	86.94	-372.11
1998	2	9:34:13	2.4560	1386.26	86.95	-372.14
1999	2	9:34:42	2.4640	1386.24	86.97	-372.16
2000	2	9:35:11	2.4720	1386.24	86.98	-372.16
2001	2	9:35:40	2.4800	1386.25	86.99	-372.15
2002	2	9:36: 9	2.4880	1386.21	87.01	-372.19
2003	2	9:36:37	2.4960	1386.19	87.01	-372.21
2004	2	9:37: 6	2.5040	1386.21	87.02	-372.19
2005	2	9:37:35	2.5120	1386.18	87.04	-372.22
2006	2	9:38: 4	2.5200	1386.19	87.05	-372.21
2007	2	9:38:33	2.5280	1386.16	87.06	-372.24
2008	2	9:39: 1	2.5360	1386.13	87.08	-372.27
2009	2	9:39:30	2.5440	1386.12	87.08	-372.28
2010	2	9:39:59	2.5520	1386.12	87.09	-372.28
2011	2	9:40:28	2.5600	1386.11	87.10	-372.29
2012	2	9:40:57	2.5680	1386.09	87.11	-372.31
2013	2	9:41:25	2.5760	1386.06	87.13	-372.34
2014	2	9:41:54	2.5840	1386.07	87.14	-372.33
2015	2	9:42:23	2.5920	1386.07	87.15	-372.33
2016	2	9:42:52	2.6000	1386.04	87.16	-372.36
2017	2	9:43:21	2.6080	1386.02	87.17	-372.38
2018	2	9:43:49	2.6160	1386.01	87.18	-372.39
2019	2	9:44:18	2.6240	1386.03	87.20	-372.37
2020	2	9:44:47	2.6320	1386.04	87.21	-372.36
2021	2	9:45:16	2.6400	1386.00	87.23	-372.40
2022	2	9:45:45	2.6480	1385.97	87.24	-372.43
2023	2	9:46:13	2.6560	1385.97	87.25	-372.43
2024	2	9:46:42	2.6640	1385.98	87.27	-372.42
2025	2	9:47:11	2.6720	1385.96	87.28	-372.44
2026	2	9:47:40	2.6800	1385.93	87.29	-372.47
2027	2	9:48: 9	2.6880	1385.92	87.30	-372.48
2028	2	9:48:37	2.6960	1385.92	87.31	-372.48
2029	2	9:49: 6	2.7040	1385.91	87.32	-372.49
2030	2	9:49:35	2.7120	1385.89	87.33	-372.51
2031	2	9:50: 4	2.7200	1385.87	87.34	-372.53
2032	2	9:50:33	2.7280	1385.88	87.35	-372.52
2033	2	9:51: 1	2.7360	1385.89	87.36	-372.51
2034	2	9:51:30	2.7440	1385.86	87.37	-372.54
2035	2	9:51:59	2.7520	1385.83	87.38	-372.57
2036	2	9:52:28	2.7600	1385.84	87.39	-372.56
2037	2	9:52:57	2.7680	1385.85	87.40	-372.55
2038	2	9:53:25	2.7760	1385.83	87.41	-372.57
2039	2	9:53:54	2.7840	1385.82	87.43	-372.58
2040	2	9:54:23	2.7920	1385.79	87.44	-372.61

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2041	2	9:54:52	2.8000	1385.79	87.45	-372.61
2042	2	9:55:21	2.8080	1385.82	87.47	-372.58
2043	2	9:55:49	2.8160	1385.81	87.47	-372.59
2044	2	9:56:18	2.8240	1385.77	87.49	-372.63
2045	2	9:56:47	2.8320	1385.75	87.51	-372.65
2046	2	9:57:16	2.8400	1385.77	87.51	-372.63
2047	2	9:57:45	2.8480	1385.78	87.53	-372.62
2048	2	9:58:13	2.8560	1385.74	87.54	-372.66
2049	2	9:58:42	2.8640	1385.71	87.55	-372.69
2050	2	9:59:11	2.8720	1385.72	87.56	-372.68
2051	2	9:59:40	2.8800	1385.74	87.58	-372.66
2052	2	10: 0: 9	2.8880	1385.71	87.59	-372.69
2053	2	10: 0:37	2.8960	1385.68	87.61	-372.72
2054	2	10: 1: 6	2.9040	1385.72	87.61	-372.68
2055	2	10: 1:35	2.9120	1385.69	87.62	-372.71
2056	2	10: 2: 4	2.9200	1385.68	87.64	-372.72
2057	2	10: 2:33	2.9280	1385.65	87.65	-372.75
2058	2	10: 3: 1	2.9360	1385.63	87.66	-372.77
2059	2	10: 3:30	2.9440	1385.65	87.67	-372.75
2060	2	10: 3:59	2.9520	1385.64	87.68	-372.76
2061	2	10: 4:28	2.9600	1385.63	87.69	-372.77
2062	2	10: 4:57	2.9680	1385.61	87.70	-372.79
2063	2	10: 5:25	2.9760	1385.60	87.71	-372.80
2064	2	10: 5:54	2.9840	1385.63	87.72	-372.77
2065	2	10: 6:23	2.9920	1385.60	87.73	-372.80
2066	2	10: 6:52	3.0000	1385.58	87.74	-372.82
2067	2	10: 7:21	3.0080	1385.56	87.76	-372.84
2068	2	10: 7:49	3.0160	1385.57	87.77	-372.83
2069	2	10: 8:18	3.0240	1385.58	87.77	-372.82
2070	2	10: 8:47	3.0320	1385.55	87.78	-372.85
2071	2	10: 9:16	3.0400	1385.54	87.79	-372.86
2072	2	10: 9:45	3.0480	1385.53	87.80	-372.87
2073	2	10:10:13	3.0560	1385.55	87.81	-372.85
2074	2	10:10:42	3.0640	1385.55	87.83	-372.85
2075	2	10:11:11	3.0720	1385.51	87.84	-372.89
2076	2	10:11:40	3.0800	1385.51	87.85	-372.89
2077	2	10:12: 9	3.0880	1385.51	87.86	-372.89
2078	2	10:12:37	3.0960	1385.51	87.88	-372.89
2079	2	10:13: 6	3.1040	1385.48	87.88	-372.92
2080	2	10:13:35	3.1120	1385.46	87.90	-372.94
2081	2	10:14: 4	3.1200	1385.47	87.91	-372.93
2082	2	10:14:33	3.1280	1385.49	87.92	-372.91
2083	2	10:15: 1	3.1360	1385.47	87.93	-372.93
2084	2	10:15:30	3.1440	1385.45	87.95	-372.95
2085	2	10:15:59	3.1520	1385.43	87.96	-372.97
2086	2	10:16:28	3.1600	1385.44	87.96	-372.96
2087	2	10:16:57	3.1680	1385.46	87.97	-372.94
2088	2	10:17:25	3.1760	1385.42	87.98	-372.98
2089	2	10:17:54	3.1840	1385.40	87.99	-373.00
2090	2	10:18:23	3.1920	1385.41	88.00	-372.99

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2091	2	10:18:52	3.2000	1385.43	88.00	-372.97
2092	2	10:19:21	3.2080	1385.42	88.01	-372.98
2093	2	10:19:49	3.2160	1385.38	88.03	-373.02
2094	2	10:20:18	3.2240	1385.38	88.04	-373.02
2095	2	10:20:47	3.2320	1385.38	88.05	-373.02
2096	2	10:21:16	3.2400	1385.40	88.06	-373.00
2097	2	10:21:45	3.2480	1385.38	88.07	-373.02
2098	2	10:22:13	3.2560	1385.35	88.08	-373.05
2099	2	10:22:42	3.2640	1385.35	88.09	-373.05
2100	2	10:23:11	3.2720	1385.36	88.10	-373.04
2101	2	10:23:40	3.2800	1385.36	88.10	-373.04
2102	2	10:24: 9	3.2880	1385.32	88.12	-373.08
2103	2	10:24:37	3.2960	1385.32	88.12	-373.08
2104	2	10:25: 6	3.3040	1385.33	88.13	-373.07
2105	2	10:25:35	3.3120	1385.34	88.15	-373.06
2106	2	10:26: 4	3.3200	1385.31	88.16	-373.09
2107	2	10:26:33	3.3280	1385.29	88.17	-373.11
2108	2	10:27: 1	3.3360	1385.29	88.19	-373.11
2109	2	10:27:30	3.3440	1385.30	88.19	-373.10
2110	2	10:27:59	3.3520	1385.29	88.21	-373.11
2111	2	10:28:28	3.3600	1385.27	88.22	-373.13
2112	2	10:28:57	3.3680	1385.25	88.22	-373.15
2113	2	10:29:25	3.3760	1385.27	88.23	-373.13
2114	2	10:29:54	3.3840	1385.28	88.24	-373.12
2115	2	10:30:23	3.3920	1385.26	88.25	-373.14
2116	2	10:30:52	3.4000	1385.23	88.26	-373.17
2117	2	10:31:21	3.4080	1385.23	88.28	-373.17
2118	2	10:31:49	3.4160	1385.25	88.28	-373.15
2119	2	10:32:18	3.4240	1385.23	88.29	-373.17
2120	2	10:32:47	3.4320	1385.22	88.31	-373.18
2121	2	10:33:16	3.4400	1385.21	88.32	-373.19
2122	2	10:33:45	3.4480	1385.22	88.33	-373.18
2123	2	10:34:13	3.4560	1385.22	88.34	-373.18
2124	2	10:34:42	3.4640	1385.19	88.35	-373.21
2125	2	10:35:11	3.4720	1385.17	88.35	-373.23
2126	2	10:35:40	3.4800	1385.18	88.36	-373.22
2127	2	10:36:37	3.4960	1385.16	88.37	-373.24
2128	2	10:37:35	3.5120	1385.11	88.39	-373.29
2129	2	10:38:33	3.5280	1385.13	88.41	-373.27
2130	2	10:39:30	3.5440	1385.09	88.43	-373.31
2131	2	10:40:28	3.5600	1385.11	88.45	-373.29
2132	2	10:41:25	3.5760	1385.06	88.46	-373.34
2133	2	10:42:23	3.5920	1385.06	88.48	-373.34
2134	2	10:43:21	3.6080	1385.05	88.49	-373.35
2135	2	10:44:18	3.6240	1385.04	88.51	-373.36
2136	2	10:45:16	3.6400	1385.03	88.54	-373.37
2137	2	10:46:13	3.6560	1385.01	88.55	-373.39
2138	2	10:47:11	3.6720	1385.02	88.57	-373.38
2139	2	10:48: 9	3.6880	1384.98	88.59	-373.42
2140	2	10:49: 6	3.7040	1385.00	88.61	-373.40

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2141	2	10:50: 4	3.7200	1384.96	88.63	-373.44
2142	2	10:51: 1	3.7360	1384.98	88.65	-373.42
2143	2	10:51:59	3.7520	1384.94	88.66	-373.46
2144	2	10:52:57	3.7680	1384.96	88.68	-373.44
2145	2	10:53:54	3.7840	1384.93	88.70	-373.47
2146	2	10:54:52	3.8000	1384.91	88.71	-373.49
2147	2	10:55:49	3.8160	1384.91	88.73	-373.49
2148	2	10:56:47	3.8320	1384.89	88.75	-373.51
2149	2	10:57:45	3.8480	1384.90	88.77	-373.50
2150	2	10:58:42	3.8640	1384.85	88.78	-373.55
2151	2	10:59:40	3.8800	1384.88	88.79	-373.52
2152	2	11: 0:37	3.8960	1384.84	88.81	-373.56
2153	2	11: 1:35	3.9120	1384.86	88.83	-373.54
2154	2	11: 2:33	3.9280	1384.83	88.84	-373.57
2155	2	11: 3:30	3.9440	1384.84	88.86	-373.56
2156	2	11: 4:28	3.9600	1384.84	88.88	-373.56
2157	2	11: 5:25	3.9760	1384.83	88.90	-373.57
2158	2	11: 6:23	3.9920	1384.81	88.93	-373.59
2159	2	11: 7:21	4.0080	1384.77	88.94	-373.63
2160	2	11: 8:18	4.0240	1384.80	88.95	-373.60
2161	2	11: 9:16	4.0400	1384.75	88.97	-373.65
2162	2	11:10:13	4.0560	1384.77	88.98	-373.63
2163	2	11:11:11	4.0720	1384.74	89.00	-373.66
2164	2	11:12: 9	4.0880	1384.76	89.02	-373.64
2165	2	11:13: 6	4.1040	1384.73	89.04	-373.67
2166	2	11:14: 4	4.1200	1384.73	89.06	-373.67
2167	2	11:15: 1	4.1360	1384.73	89.08	-373.67
2168	2	11:15:59	4.1520	1384.70	89.11	-373.70
2169	2	11:16:57	4.1680	1384.71	89.13	-373.69
2170	2	11:17:54	4.1840	1384.68	89.14	-373.72
2171	2	11:18:52	4.2000	1384.68	89.16	-373.72
2172	2	11:19:49	4.2160	1384.65	89.17	-373.75
2173	2	11:20:47	4.2320	1384.68	89.18	-373.72
2174	2	11:21:45	4.2480	1384.65	89.20	-373.75
2175	2	11:22:42	4.2640	1384.67	89.22	-373.73
2176	2	11:23:40	4.2800	1384.64	89.24	-373.76
2177	2	11:24:37	4.2960	1384.63	89.26	-373.77
2178	2	11:25:35	4.3120	1384.63	89.27	-373.77
2179	2	11:26:33	4.3280	1384.61	89.30	-373.79
2180	2	11:27:30	4.3440	1384.62	89.32	-373.78
2181	2	11:28:28	4.3600	1384.59	89.34	-373.81
2182	2	11:29:25	4.3760	1384.61	89.36	-373.79
2183	2	11:30:23	4.3920	1384.57	89.38	-373.83
2184	2	11:31:21	4.4080	1384.58	89.39	-373.82
2185	2	11:32:18	4.4240	1384.55	89.41	-373.85
2186	2	11:33:16	4.4400	1384.55	89.43	-373.85
2187	2	11:34:13	4.4560	1384.53	89.44	-373.87
2188	2	11:35:11	4.4720	1384.52	89.45	-373.88
2189	2	11:36: 9	4.4880	1384.53	89.47	-373.87
2190	2	11:37: 6	4.5040	1384.50	89.48	-373.90

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Thursday: Mar. 17, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2191	2	11:38: 4	4.5200	1384.52	89.49	-373.88
2192	2	11:39: 1	4.5360	1384.48	89.50	-373.92
2193	2	11:39:59	4.5520	1384.50	89.51	-373.90
2194	2	11:40:57	4.5680	1384.47	89.52	-373.93
2195	2	11:41:54	4.5840	1384.49	89.54	-373.91
2196	2	11:42:52	4.6000	1384.47	89.56	-373.93
2197	2	11:43:49	4.6160	1384.47	89.57	-373.93
2198	2	11:44:47	4.6320	1384.45	89.59	-373.95
2199	2	11:45:45	4.6480	1384.44	89.60	-373.96
2200	2	11:46:42	4.6640	1384.46	89.61	-373.94
2201	2	11:47:40	4.6800	1384.42	89.64	-373.98
2202	2	11:48:37	4.6960	1384.44	89.65	-373.96
2203	2	11:49:35	4.7120	1384.39	89.66	-374.01
2204	2	11:50:33	4.7280	1384.41	89.67	-373.99
2205	2	11:51:30	4.7440	1384.38	89.68	-374.02
2206	2	11:52:28	4.7600	1384.39	89.70	-374.01
2207	2	11:53:25	4.7760	1384.37	89.71	-374.03
2208	2	11:54:23	4.7920	1384.36	89.73	-374.04
2209	2	11:55:21	4.8080	1384.37	89.74	-374.03
2210	2	11:56:18	4.8240	1384.35	89.75	-374.05
2211	2	11:57:16	4.8400	1384.37	89.77	-374.03
2212	2	11:58:13	4.8560	1384.33	89.78	-374.07
2213	2	11:59:11	4.8720	1384.35	89.80	-374.05
2214	2	12: 0: 9	4.8880	1384.32	89.81	-374.08
2215	2	12: 1: 6	4.9040	1384.34	89.83	-374.06
2216	2	12: 2: 4	4.9200	1384.31	89.84	-374.09
2217	2	12: 3: 1	4.9360	1384.32	89.86	-374.08
2218	2	12: 3:59	4.9520	1384.31	89.87	-374.09
2219	2	12: 4:57	4.9680	1384.30	89.89	-374.10
2220	2	12: 5:54	4.9840	1384.30	89.90	-374.10
2221	2	12: 6:52	5.0000	1384.27	89.92	-374.13
2222	2	12: 7:49	5.0160	1384.29	89.94	-374.11
2223	2	12: 8:47	5.0320	1384.26	89.95	-374.14
2224	2	12: 9:45	5.0480	1384.30	89.97	-374.10
2225	2	12:10:42	5.0640	1384.26	89.99	-374.14
2226	2	12:11:40	5.0800	1384.28	90.01	-374.12
2227	2	12:12:37	5.0960	1384.24	90.03	-374.16
2228	2	12:13:35	5.1120	1384.25	90.04	-374.15
2229	2	12:14:33	5.1280	1384.24	90.05	-374.16
2230	2	12:15:30	5.1440	1384.22	90.07	-374.18
2231	2	12:16:28	5.1600	1384.23	90.08	-374.17
2232	2	12:17:25	5.1760	1384.21	90.10	-374.19
2233	2	12:18:23	5.1920	1384.22	90.12	-374.18
2234	2	12:19:21	5.2080	1384.19	90.13	-374.21
2235	2	12:20:18	5.2240	1384.19	90.14	-374.21
2236	2	12:21:16	5.2400	1384.18	90.15	-374.22
2237	2	12:22:13	5.2560	1384.18	90.16	-374.22
2238	2	12:23:11	5.2720	1384.17	90.18	-374.23
2239	2	12:24: 9	5.2880	1384.15	90.19	-374.25
2240	2	12:25: 6	5.3040	1384.17	90.19	-374.23

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Thursday: Mar. 17, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2241	2	12:26: 4	5.3200	1384.14	90.21	-374.26
2242	2	12:27: 1	5.3360	1384.16	90.23	-374.24
2243	2	12:27:59	5.3520	1384.13	90.24	-374.27
2244	2	12:28:57	5.3680	1384.14	90.26	-374.26
2245	2	12:29:54	5.3840	1384.13	90.27	-374.27
2246	2	12:30:52	5.4000	1384.14	90.29	-374.26
2247	2	12:31:49	5.4160	1384.12	90.30	-374.28
2248	2	12:32:47	5.4320	1384.11	90.32	-374.29
2249	2	12:33:45	5.4480	1384.10	90.33	-374.30
2250	2	12:34:42	5.4640	1384.08	90.34	-374.32
2251	2	12:35:40	5.4800	1384.10	90.35	-374.30
2252	2	12:36:37	5.4960	1384.06	90.37	-374.34
2253	2	12:37:35	5.5120	1384.08	90.38	-374.32
2254	2	12:38:33	5.5280	1384.05	90.39	-374.35
2255	2	12:39:30	5.5440	1384.08	90.40	-374.32
2256	2	12:40:28	5.5600	1384.06	90.41	-374.34
2257	2	12:41:25	5.5760	1384.06	90.43	-374.34
2258	2	12:42:23	5.5920	1384.04	90.44	-374.36
2259	2	12:43:21	5.6080	1384.02	90.45	-374.38
2260	2	12:44:18	5.6240	1384.04	90.46	-374.36
2261	2	12:45:16	5.6400	1384.01	90.48	-374.39
2262	2	12:46:13	5.6560	1384.03	90.49	-374.37
2263	2	12:47:11	5.6720	1384.00	90.50	-374.40
2264	2	12:48: 9	5.6880	1384.00	90.51	-374.40
2265	2	12:49: 6	5.7040	1384.00	90.52	-374.40
2266	2	12:50: 4	5.7200	1383.98	90.54	-374.42
2267	2	12:51: 1	5.7360	1383.98	90.55	-374.42
2268	2	12:51:59	5.7520	1383.96	90.55	-374.44
2269	2	12:52:57	5.7680	1383.98	90.57	-374.42
2270	2	12:53:54	5.7840	1383.95	90.58	-374.45
2271	2	12:54:52	5.8000	1383.97	90.59	-374.43
2272	2	12:55:49	5.8160	1383.94	90.60	-374.46
2273	2	12:56:47	5.8320	1383.95	90.61	-374.45
2274	2	12:57:45	5.8480	1383.95	90.62	-374.45
2275	2	12:58:42	5.8640	1383.95	90.64	-374.45
2276	2	12:59:40	5.8800	1383.94	90.66	-374.46
2277	2	13: 0:37	5.8960	1383.92	90.67	-374.48
2278	2	13: 1:35	5.9120	1383.93	90.68	-374.47
2279	2	13: 2:33	5.9280	1383.90	90.69	-374.50
2280	2	13: 3:30	5.9440	1383.92	90.70	-374.48
2281	2	13: 4:28	5.9600	1383.89	90.71	-374.51
2282	2	13: 5:25	5.9760	1383.90	90.73	-374.50
2283	2	13: 6:23	5.9920	1383.87	90.73	-374.53
2284	2	13: 7:21	6.0080	1383.88	90.75	-374.52
2285	2	13: 8:18	6.0240	1383.87	90.75	-374.53
2286	2	13: 9:16	6.0400	1383.86	90.77	-374.54
2287	2	13:10:13	6.0560	1383.87	90.78	-374.53
2288	2	13:11:11	6.0720	1383.84	90.79	-374.56
2289	2	13:12: 9	6.0880	1383.87	90.80	-374.53
2290	2	13:13: 6	6.1040	1383.83	90.81	-374.57

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2291	2	13:14: 4	6.1200	1383.85	90.83	-374.55
2292	2	13:15: 1	6.1360	1383.82	90.84	-374.58
2293	2	13:15:59	6.1520	1383.82	90.85	-374.58
2294	2	13:16:57	6.1680	1383.82	90.85	-374.58
2295	2	13:17:54	6.1840	1383.81	90.87	-374.59
2296	2	13:18:52	6.2000	1383.81	90.88	-374.59
2297	2	13:19:49	6.2160	1383.80	90.89	-374.60
2298	2	13:20:47	6.2320	1383.82	90.91	-374.58
2299	2	13:21:45	6.2480	1383.80	90.93	-374.60
2300	2	13:22:42	6.2640	1383.80	90.94	-374.60
2301	2	13:23:40	6.2800	1383.79	90.95	-374.61
2302	2	13:24:37	6.2960	1383.78	90.97	-374.62
2303	2	13:25:35	6.3120	1383.78	90.99	-374.62
2304	2	13:26:33	6.3280	1383.75	91.00	-374.65
2305	2	13:27:30	6.3440	1383.78	91.01	-374.62
2306	2	13:28:28	6.3600	1383.74	91.03	-374.66
2307	2	13:29:25	6.3760	1383.76	91.03	-374.64
2308	2	13:30:23	6.3920	1383.74	91.04	-374.66
2309	2	13:31:21	6.4080	1383.75	91.06	-374.65
2310	2	13:32:18	6.4240	1383.73	91.07	-374.67
2311	2	13:33:16	6.4400	1383.72	91.08	-374.68
2312	2	13:34:13	6.4560	1383.73	91.09	-374.67
2313	2	13:35:11	6.4720	1383.72	91.10	-374.68
2314	2	13:36: 9	6.4880	1383.73	91.12	-374.67
2315	2	13:37: 6	6.5040	1383.70	91.13	-374.70
2316	2	13:38: 4	6.5200	1383.72	91.14	-374.68
2317	2	13:39: 1	6.5360	1383.69	91.15	-374.71
2318	2	13:39:59	6.5520	1383.71	91.16	-374.69
2319	2	13:40:57	6.5680	1383.68	91.17	-374.72
2320	2	13:41:54	6.5840	1383.68	91.18	-374.72
2321	2	13:42:52	6.6000	1383.69	91.20	-374.71
2322	2	13:43:49	6.6160	1383.67	91.21	-374.73
2323	2	13:44:47	6.6320	1383.68	91.23	-374.72
2324	2	13:45:45	6.6480	1383.66	91.23	-374.74
2325	2	13:46:42	6.6640	1383.68	91.24	-374.72
2326	2	13:47:40	6.6800	1383.64	91.25	-374.76
2327	2	13:48:37	6.6960	1383.66	91.27	-374.74
2328	2	13:49:35	6.7120	1383.64	91.27	-374.76
2329	2	13:50:33	6.7280	1383.65	91.28	-374.75
2330	2	13:51:30	6.7440	1383.64	91.29	-374.76
2331	2	13:52:28	6.7600	1383.63	91.31	-374.77
2332	2	13:53:25	6.7760	1383.63	91.32	-374.77
2333	2	13:54:23	6.7920	1383.61	91.32	-374.79
2334	2	13:55:21	6.8080	1383.63	91.34	-374.77
2335	2	13:56:18	6.8240	1383.59	91.35	-374.81
2336	2	13:57:16	6.8400	1383.61	91.36	-374.79
2337	2	13:58:13	6.8560	1383.59	91.37	-374.81
2338	2	13:59:11	6.8720	1383.58	91.38	-374.82
2339	2	14: 0: 9	6.8880	1383.59	91.39	-374.81
2340	2	14: 1: 6	6.9040	1383.57	91.40	-374.83

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2341	2	14: 2: 4	6.9200	1383.59	91.41	-374.81
2342	2	14: 3: 1	6.9360	1383.56	91.42	-374.84
2343	2	14: 3:59	6.9520	1383.58	91.44	-374.82
2344	2	14: 4:57	6.9680	1383.55	91.45	-374.85
2345	2	14: 5:54	6.9840	1383.56	91.46	-374.84
2346	2	14: 6:52	7.0000	1383.55	91.47	-374.85
2347	2	14: 7:49	7.0160	1383.54	91.48	-374.86
2348	2	14: 8:47	7.0320	1383.54	91.49	-374.86
2349	2	14: 9:45	7.0480	1383.53	91.50	-374.87
2350	2	14:10:42	7.0640	1383.55	91.51	-374.85
2351	2	14:11:40	7.0800	1383.51	91.52	-374.89
2352	2	14:12:37	7.0960	1383.54	91.52	-374.86
2353	2	14:13:35	7.1120	1383.51	91.53	-374.89
2354	2	14:14:33	7.1280	1383.52	91.55	-374.88
2355	2	14:15:30	7.1440	1383.51	91.56	-374.89
2356	2	14:16:28	7.1600	1383.51	91.58	-374.89
2357	2	14:17:25	7.1760	1383.50	91.59	-374.90
2358	2	14:18:23	7.1920	1383.48	91.60	-374.92
2359	2	14:19:21	7.2080	1383.50	91.60	-374.90
2360	2	14:20:18	7.2240	1383.47	91.61	-374.93
2361	2	14:21:16	7.2400	1383.49	91.63	-374.91
2362	2	14:22:13	7.2560	1383.46	91.63	-374.94
2363	2	14:23:11	7.2720	1383.48	91.65	-374.92
2364	2	14:24: 9	7.2880	1383.46	91.66	-374.94
2365	2	14:25: 6	7.3040	1383.46	91.68	-374.94
2366	2	14:26: 4	7.3200	1383.46	91.69	-374.94
2367	2	14:27: 1	7.3360	1383.44	91.70	-374.96
2368	2	14:27:59	7.3520	1383.46	91.71	-374.94
2369	2	14:28:57	7.3680	1383.42	91.72	-374.98
2370	2	14:29:54	7.3840	1383.45	91.73	-374.95
2371	2	14:30:52	7.4000	1383.43	91.75	-374.97
2372	2	14:31:49	7.4160	1383.43	91.76	-374.97
2373	2	14:32:47	7.4320	1383.42	91.77	-374.98
2374	2	14:33:45	7.4480	1383.41	91.78	-374.99
2375	2	14:34:42	7.4640	1383.42	91.79	-374.98
2376	2	14:35:40	7.4800	1383.40	91.80	-375.00
2377	2	14:36:37	7.4960	1383.42	91.82	-374.98
2378	2	14:37:35	7.5120	1383.39	91.82	-375.01
2379	2	14:38:33	7.5280	1383.42	91.84	-374.98
2380	2	14:39:30	7.5440	1383.39	91.85	-375.01
2381	2	14:40:28	7.5600	1383.39	91.86	-375.01
2382	2	14:41:25	7.5760	1383.39	91.87	-375.01
2383	2	14:42:23	7.5920	1383.37	91.88	-375.03
2384	2	14:43:21	7.6080	1383.38	91.89	-375.02
2385	2	14:44:18	7.6240	1383.35	91.89	-375.05
2386	2	14:45:16	7.6400	1383.38	91.90	-375.02
2387	2	14:46:13	7.6560	1383.36	91.92	-375.04
2388	2	14:47:11	7.6720	1383.37	91.93	-375.03
2389	2	14:48: 9	7.6880	1383.35	91.94	-375.05
2390	2	14:49: 6	7.7040	1383.34	91.95	-375.06

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2391	2	14:50: 4	7.7200	1383.34	91.96	-375.06
2392	2	14:51: 1	7.7360	1383.33	91.96	-375.07
2393	2	14:51:59	7.7520	1383.34	91.98	-375.06
2394	2	14:52:57	7.7680	1383.31	91.99	-375.09
2395	2	14:53:54	7.7840	1383.35	92.01	-375.05
2396	2	14:54:52	7.8000	1383.31	92.02	-375.09
2397	2	14:55:49	7.8160	1383.32	92.03	-375.08
2398	2	14:56:47	7.8320	1383.30	92.04	-375.10
2399	2	14:57:45	7.8480	1383.30	92.05	-375.10
2400	2	14:58:42	7.8640	1383.31	92.05	-375.09
2401	2	14:59:40	7.8800	1383.29	92.06	-375.11
2402	2	15: 0:37	7.8960	1383.31	92.07	-375.09
2403	2	15: 1:35	7.9120	1383.28	92.08	-375.12
2404	2	15: 2:33	7.9280	1383.30	92.09	-375.10
2405	2	15: 3:30	7.9440	1383.28	92.11	-375.12
2406	2	15: 4:28	7.9600	1383.28	92.11	-375.12
2407	2	15: 5:25	7.9760	1383.28	92.13	-375.12
2408	2	15: 6:23	7.9920	1383.26	92.14	-375.14
2409	2	15: 7:21	8.0080	1383.28	92.15	-375.12
2410	2	15: 8:18	8.0240	1383.25	92.16	-375.15
2411	2	15: 9:16	8.0400	1383.27	92.16	-375.13
2412	2	15:10:13	8.0560	1383.24	92.17	-375.16
2413	2	15:11:11	8.0720	1383.25	92.18	-375.15
2414	2	15:12: 9	8.0880	1383.24	92.19	-375.16
2415	2	15:13: 6	8.1040	1383.23	92.20	-375.17
2416	2	15:14: 4	8.1200	1383.25	92.20	-375.15
2417	2	15:15: 1	8.1360	1383.22	92.22	-375.18
2418	2	15:15:59	8.1520	1383.24	92.23	-375.16
2419	2	15:16:57	8.1680	1383.21	92.24	-375.19
2420	2	15:17:54	8.1840	1383.22	92.25	-375.18
2421	2	15:18:52	8.2000	1383.21	92.26	-375.19
2422	2	15:19:49	8.2160	1383.21	92.28	-375.19
2423	2	15:20:47	8.2320	1383.21	92.28	-375.19
2424	2	15:21:45	8.2480	1383.19	92.29	-375.21
2425	2	15:22:42	8.2640	1383.20	92.30	-375.20
2426	2	15:23:40	8.2800	1383.17	92.31	-375.23
2427	2	15:24:37	8.2960	1383.20	92.31	-375.20
2428	2	15:25:35	8.3120	1383.18	92.32	-375.22
2429	2	15:26:33	8.3280	1383.19	92.33	-375.21
2430	2	15:27:30	8.3440	1383.17	92.34	-375.23
2431	2	15:28:28	8.3600	1383.16	92.35	-375.24
2432	2	15:29:25	8.3760	1383.18	92.36	-375.22
2433	2	15:30:23	8.3920	1383.15	92.37	-375.25
2434	2	15:31:21	8.4080	1383.16	92.38	-375.24
2435	2	15:32:18	8.4240	1383.13	92.38	-375.27
2436	2	15:33:16	8.4400	1383.15	92.39	-375.25
2437	2	15:34:13	8.4560	1383.13	92.40	-375.27
2438	2	15:35:11	8.4720	1383.14	92.41	-375.26
2439	2	15:36: 9	8.4880	1383.14	92.42	-375.26
2440	2	15:37: 6	8.5040	1383.12	92.43	-375.28

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2441	2	15:38: 4	8.5200	1383.14	92.44	-375.26
2442	2	15:39: 1	8.5360	1383.11	92.45	-375.29
2443	2	15:39:59	8.5520	1383.13	92.46	-375.27
2444	2	15:40:57	8.5680	1383.10	92.47	-375.30
2445	2	15:41:54	8.5840	1383.12	92.48	-375.28
2446	2	15:42:52	8.6000	1383.11	92.49	-375.29
2447	2	15:43:49	8.6160	1383.10	92.50	-375.30
2448	2	15:44:47	8.6320	1383.11	92.51	-375.29
2449	2	15:45:45	8.6480	1383.08	92.51	-375.32
2450	2	15:46:42	8.6640	1383.10	92.53	-375.30
2451	2	15:47:40	8.6800	1383.07	92.53	-375.33
2452	2	15:48:37	8.6960	1383.10	92.54	-375.30
2453	2	15:49:35	8.7120	1383.07	92.56	-375.33
2454	2	15:50:33	8.7280	1383.08	92.56	-375.32
2455	2	15:51:30	8.7440	1383.07	92.57	-375.33
2456	2	15:52:28	8.7600	1383.06	92.58	-375.34
2457	2	15:53:25	8.7760	1383.08	92.59	-375.32
2458	2	15:54:23	8.7920	1383.05	92.60	-375.35
2459	2	15:55:21	8.8080	1383.07	92.61	-375.33
2460	2	15:56:18	8.8240	1383.03	92.61	-375.37
2461	2	15:57:16	8.8400	1383.04	92.62	-375.36
2462	2	15:58:13	8.8560	1383.04	92.63	-375.36
2463	2	15:59:11	8.8720	1383.03	92.65	-375.37
2464	2	16: 0: 9	8.8880	1383.05	92.66	-375.35
2465	2	16: 1: 6	8.9040	1383.01	92.67	-375.39
2466	2	16: 2: 4	8.9200	1383.04	92.67	-375.36
2467	2	16: 3: 1	8.9360	1383.01	92.68	-375.39
2468	2	16: 3:59	8.9520	1383.03	92.69	-375.37
2469	2	16: 4:57	8.9680	1383.02	92.71	-375.38
2470	2	16: 5:54	8.9840	1383.01	92.72	-375.39
2471	2	16: 6:52	9.0000	1383.02	92.72	-375.38
2472	2	16: 7:49	9.0160	1383.00	92.73	-375.40
2473	2	16: 8:47	9.0320	1383.01	92.74	-375.39
2474	2	16: 9:45	9.0480	1382.98	92.74	-375.42
2475	2	16:10:42	9.0640	1383.00	92.75	-375.40
2476	2	16:11:40	9.0800	1382.98	92.77	-375.42
2477	2	16:12:37	9.0960	1382.98	92.78	-375.42
2478	2	16:13:35	9.1120	1382.99	92.78	-375.41
2479	2	16:14:33	9.1280	1382.97	92.79	-375.43
2480	2	16:15:30	9.1440	1382.99	92.80	-375.41
2481	2	16:16:28	9.1600	1382.96	92.81	-375.44
2482	2	16:17:25	9.1760	1382.97	92.82	-375.43
2483	2	16:18:23	9.1920	1382.96	92.83	-375.44
2484	2	16:19:21	9.2080	1382.96	92.84	-375.44
2485	2	16:20:18	9.2240	1382.96	92.85	-375.44
2486	2	16:21:16	9.2400	1382.94	92.85	-375.46
2487	2	16:22:13	9.2560	1382.95	92.87	-375.45
2488	2	16:23:11	9.2720	1382.92	92.87	-375.48
2489	2	16:24: 9	9.2880	1382.95	92.88	-375.45
2490	2	16:25: 6	9.3040	1382.93	92.89	-375.47

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2491	2	16:26: 4	9.3200	1382.93	92.90	-375.47
2492	2	16:27: 1	9.3360	1382.92	92.91	-375.48
2493	2	16:27:59	9.3520	1382.91	92.91	-375.49
2494	2	16:28:57	9.3680	1382.93	92.92	-375.47
2495	2	16:29:54	9.3840	1382.91	92.93	-375.49
2496	2	16:30:52	9.4000	1382.92	92.94	-375.48
2497	2	16:31:49	9.4160	1382.90	92.94	-375.50
2498	2	16:32:47	9.4320	1382.91	92.95	-375.49
2499	2	16:33:45	9.4480	1382.91	92.97	-375.49
2500	2	16:34:42	9.4640	1382.89	92.98	-375.51
2501	2	16:35:40	9.4800	1382.90	92.99	-375.50
2502	2	16:36:37	9.4960	1382.87	93.00	-375.53
2503	2	16:37:35	9.5120	1382.90	93.00	-375.50
2504	2	16:38:33	9.5280	1382.87	93.01	-375.53
2505	2	16:39:30	9.5440	1382.88	93.02	-375.52
2506	2	16:40:28	9.5600	1382.87	93.03	-375.53
2507	2	16:41:25	9.5760	1382.86	93.04	-375.54
2508	2	16:42:23	9.5920	1382.87	93.04	-375.53
2509	2	16:43:21	9.6080	1382.85	93.05	-375.55
2510	2	16:44:18	9.6240	1382.87	93.05	-375.53
2511	2	16:45:16	9.6400	1382.85	93.06	-375.55
2512	2	16:46:13	9.6560	1382.87	93.07	-375.53
2513	2	16:47:11	9.6720	1382.85	93.09	-375.55
2514	2	16:48: 9	9.6880	1382.84	93.09	-375.56
2515	2	16:49: 6	9.7040	1382.85	93.09	-375.55
2516	2	16:50: 4	9.7200	1382.82	93.10	-375.58
2517	2	16:51: 1	9.7360	1382.85	93.11	-375.55
2518	2	16:51:59	9.7520	1382.82	93.12	-375.58
2519	2	16:52:57	9.7680	1382.85	93.12	-375.55
2520	2	16:53:54	9.7840	1382.82	93.13	-375.58
2521	2	16:54:52	9.8000	1382.83	93.14	-375.57
2522	2	16:55:49	9.8160	1382.82	93.15	-375.58
2523	2	16:56:47	9.8320	1382.81	93.16	-375.59
2524	2	16:57:45	9.8480	1382.82	93.16	-375.58
2525	2	16:58:42	9.8640	1382.80	93.17	-375.60
2526	2	16:59:40	9.8800	1382.83	93.18	-375.57
2527	2	17: 0:37	9.8960	1382.80	93.19	-375.60
2528	2	17: 1:35	9.9120	1382.81	93.20	-375.59
2529	2	17: 2:33	9.9280	1382.79	93.20	-375.61
2530	2	17: 3:30	9.9440	1382.79	93.21	-375.61
2531	2	17: 4:28	9.9600	1382.80	93.22	-375.60
2532	2	17: 5:25	9.9760	1382.77	93.23	-375.63
2533	2	17: 6:23	9.9920	1382.79	93.24	-375.61
2534	2	17: 7:21	10.0080	1382.76	93.25	-375.64
2535	2	17: 8:18	10.0240	1382.78	93.26	-375.62
2536	2	17: 9:16	10.0400	1382.77	93.26	-375.63
2537	2	17:10:13	10.0560	1382.76	93.27	-375.64
2538	2	17:11:11	10.0720	1382.76	93.28	-375.64
2539	2	17:12: 9	10.0880	1382.75	93.29	-375.65
2540	2	17:13: 6	10.1040	1382.76	93.30	-375.64

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2541	2	17:14: 4	10.1200	1382.74	93.31	-375.66
2542	2	17:15: 1	10.1360	1382.76	93.32	-375.64
2543	2	17:15:59	10.1520	1382.73	93.32	-375.67
2544	2	17:16:57	10.1680	1382.75	93.33	-375.65
2545	2	17:17:54	10.1840	1382.74	93.33	-375.66
2546	2	17:18:52	10.2000	1382.72	93.34	-375.68
2547	2	17:19:49	10.2160	1382.74	93.35	-375.66
2548	2	17:20:47	10.2320	1382.72	93.36	-375.68
2549	2	17:21:45	10.2480	1382.74	93.38	-375.66
2550	2	17:22:42	10.2640	1382.71	93.38	-375.69
2551	2	17:23:40	10.2800	1382.73	93.40	-375.67
2552	2	17:24:37	10.2960	1382.71	93.40	-375.69
2553	2	17:25:35	10.3120	1382.70	93.41	-375.70
2554	2	17:26:33	10.3280	1382.70	93.42	-375.70
2555	2	17:27:30	10.3440	1382.69	93.42	-375.71
2556	2	17:28:28	10.3600	1382.72	93.43	-375.68
2557	2	17:29:25	10.3760	1382.68	93.44	-375.72
2558	2	17:30:23	10.3920	1382.70	93.44	-375.70
2559	2	17:41:25	10.5760	1382.66	93.54	-375.74
2560	2	17:42:23	10.5920	1382.64	93.55	-375.76
2561	2	17:43:21	10.6080	1382.65	93.56	-375.75
2562	2	17:44:18	10.6240	1382.64	93.56	-375.76
2563	2	17:45:16	10.6400	1382.64	93.57	-375.76
2564	2	17:46:13	10.6560	1382.65	93.58	-375.75
2565	2	17:47:11	10.6720	1382.62	93.58	-375.78
2566	2	17:48: 9	10.6880	1382.65	93.58	-375.75
2567	2	17:49: 6	10.7040	1382.62	93.59	-375.78
2568	2	17:50: 4	10.7200	1382.63	93.60	-375.77
2569	2	17:51: 1	10.7360	1382.61	93.61	-375.79
2570	2	17:51:59	10.7520	1382.61	93.61	-375.79
2571	2	17:52:57	10.7680	1382.62	93.62	-375.78
2572	2	17:53:54	10.7840	1382.60	93.63	-375.80
2573	2	17:54:52	10.8000	1382.63	93.64	-375.77
2574	2	17:55:49	10.8160	1382.60	93.65	-375.80
2575	2	17:56:47	10.8320	1382.61	93.66	-375.79
2576	2	17:57:45	10.8480	1382.59	93.67	-375.81
2577	2	17:58:42	10.8640	1382.60	93.67	-375.80
2578	2	17:59:40	10.8800	1382.59	93.68	-375.81
2579	2	18: 0:37	10.8960	1382.58	93.69	-375.82
2580	2	18: 1:35	10.9120	1382.59	93.69	-375.81
2581	2	18: 2:33	10.9280	1382.57	93.70	-375.83
2582	2	18: 3:30	10.9440	1382.60	93.71	-375.80
2583	2	18: 4:28	10.9600	1382.56	93.72	-375.84
2584	2	18: 5:25	10.9760	1382.56	93.72	-375.84
2585	2	18: 6:23	10.9920	1382.58	93.73	-375.82
2586	2	18: 7:21	11.0080	1382.55	93.74	-375.85
2587	2	18: 8:18	11.0240	1382.59	93.75	-375.81
2588	2	18: 9:16	11.0400	1382.55	93.76	-375.85
2589	2	18:10:13	11.0560	1382.57	93.76	-375.83
2590	2	18:11:11	11.0720	1382.54	93.77	-375.86

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2591	2	18:12: 9	11.0880	1382.55	93.78	-375.85
2592	2	18:13: 6	11.1040	1382.54	93.78	-375.86
2593	2	18:14: 4	11.1200	1382.53	93.79	-375.87
2594	2	18:15: 1	11.1360	1382.55	93.80	-375.85
2595	2	18:15:59	11.1520	1382.52	93.81	-375.88
2596	2	18:16:57	11.1680	1382.54	93.81	-375.86
2597	2	18:17:54	11.1840	1382.52	93.82	-375.88
2598	2	18:18:52	11.2000	1382.54	93.82	-375.86
2599	2	18:19:49	11.2160	1382.52	93.83	-375.88
2600	2	18:20:47	11.2320	1382.52	93.84	-375.88
2601	2	18:21:45	11.2480	1382.52	93.84	-375.88
2602	2	18:22:42	11.2640	1382.50	93.85	-375.90
2603	2	18:23:40	11.2800	1382.53	93.86	-375.87
2604	2	18:24:37	11.2960	1382.49	93.86	-375.91
2605	2	18:25:35	11.3120	1382.51	93.86	-375.89
2606	2	18:26:33	11.3280	1382.50	93.87	-375.90
2607	2	18:27:30	11.3440	1382.51	93.88	-375.89
2608	2	18:28:28	11.3600	1382.50	93.89	-375.90
2609	2	18:29:25	11.3760	1382.48	93.89	-375.92
2610	2	18:30:23	11.3920	1382.51	93.90	-375.89
2611	2	18:31:21	11.4080	1382.47	93.90	-375.93
2612	2	18:32:18	11.4240	1382.49	93.91	-375.91
2613	2	18:33:16	11.4400	1382.47	93.92	-375.93
2614	2	18:34:13	11.4560	1382.49	93.93	-375.91
2615	2	18:35:11	11.4720	1382.48	93.94	-375.92
2616	2	18:36: 9	11.4880	1382.47	93.94	-375.93
2617	2	18:37: 6	11.5040	1382.49	93.95	-375.91
2618	2	18:38: 4	11.5200	1382.46	93.96	-375.94
2619	2	18:39: 1	11.5360	1382.48	93.97	-375.92
2620	2	18:39:59	11.5520	1382.46	93.98	-375.94
2621	2	18:40:57	11.5680	1382.47	94.00	-375.93
2622	2	18:41:54	11.5840	1382.46	94.00	-375.94
2623	2	18:42:52	11.6000	1382.46	94.00	-375.94
2624	2	18:43:49	11.6160	1382.47	94.01	-375.93
2625	2	18:44:47	11.6320	1382.44	94.01	-375.96
2626	2	18:45:45	11.6480	1382.46	94.02	-375.94
2627	2	18:46:42	11.6640	1382.43	94.02	-375.97
2628	2	18:47:40	11.6800	1382.45	94.03	-375.95
2629	2	18:48:37	11.6960	1382.43	94.04	-375.97
2630	2	18:49:35	11.7120	1382.44	94.05	-375.96
2631	2	18:50:33	11.7280	1382.45	94.06	-375.95
2632	2	18:51:30	11.7440	1382.43	94.07	-375.97
2633	2	18:52:28	11.7600	1382.44	94.08	-375.96
2634	2	18:53:25	11.7760	1382.41	94.08	-375.99
2635	2	18:54:23	11.7920	1382.44	94.09	-375.96
2636	2	18:55:21	11.8080	1382.41	94.09	-375.99
2637	2	18:56:18	11.8240	1382.43	94.10	-375.97
2638	2	18:57:16	11.8400	1382.42	94.10	-375.98
2639	2	18:58:13	11.8560	1382.40	94.11	-376.00
2640	2	18:59:11	11.8720	1382.42	94.11	-375.98

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2641	2	19: 0: 9	11.8880	1382.40	94.12	-376.00
2642	2	19: 1: 6	11.9040	1382.42	94.13	-375.98
2643	2	19: 2: 4	11.9200	1382.39	94.13	-376.01
2644	2	19: 3: 1	11.9360	1382.41	94.14	-375.99
2645	2	19: 3:59	11.9520	1382.40	94.14	-376.00
2646	2	19: 4:57	11.9680	1382.40	94.15	-376.00
2647	2	19: 5:54	11.9840	1382.40	94.16	-376.00
2648	2	19: 6:52	12.0000	1382.37	94.16	-376.03
2649	2	19: 7:49	12.0160	1382.41	94.17	-375.99
2650	2	19: 8:47	12.0320	1382.38	94.18	-376.02
2651	2	19: 9:45	12.0480	1382.39	94.19	-376.01
2652	2	19:10:42	12.0640	1382.38	94.19	-376.02
2653	2	19:11:40	12.0800	1382.38	94.20	-376.02
2654	2	19:12:37	12.0960	1382.37	94.20	-376.03
2655	2	19:13:35	12.1120	1382.36	94.21	-376.04
2656	2	19:14:33	12.1280	1382.38	94.22	-376.02
2657	2	19:15:30	12.1440	1382.36	94.22	-376.04
2658	2	19:16:28	12.1600	1382.38	94.23	-376.02
2659	2	19:17:25	12.1760	1382.35	94.24	-376.05
2660	2	19:18:23	12.1920	1382.36	94.25	-376.04
2661	2	19:19:21	12.2080	1382.35	94.26	-376.05
2662	2	19:20:18	12.2240	1382.35	94.26	-376.05
2663	2	19:21:16	12.2400	1382.35	94.27	-376.05
2664	2	19:22:13	12.2560	1382.33	94.27	-376.07
2665	2	19:23:11	12.2720	1382.36	94.27	-376.04
2666	2	19:24: 9	12.2880	1382.33	94.28	-376.07
2667	2	19:25: 6	12.3040	1382.35	94.29	-376.05
2668	2	19:26: 4	12.3200	1382.33	94.30	-376.07
2669	2	19:27: 1	12.3360	1382.34	94.30	-376.06
2670	2	19:27:59	12.3520	1382.33	94.31	-376.07
2671	2	19:28:57	12.3680	1382.31	94.31	-376.09
2672	2	19:29:54	12.3840	1382.33	94.31	-376.07
2673	2	19:30:52	12.4000	1382.30	94.32	-376.10
2674	2	19:31:49	12.4160	1382.33	94.33	-376.07
2675	2	19:32:47	12.4320	1382.30	94.33	-376.10
2676	2	19:33:45	12.4480	1382.32	94.34	-376.08
2677	2	19:34:42	12.4640	1382.31	94.34	-376.09
2678	2	19:35:40	12.4800	1382.31	94.35	-376.09
2679	2	19:36:37	12.4960	1382.31	94.36	-376.09
2680	2	19:37:35	12.5120	1382.29	94.37	-376.11
2681	2	19:38:33	12.5280	1382.31	94.37	-376.09
2682	2	19:39:30	12.5440	1382.28	94.38	-376.12
2683	2	19:40:28	12.5600	1382.30	94.39	-376.10
2684	2	19:41:25	12.5760	1382.28	94.39	-376.12
2685	2	19:42:23	12.5920	1382.29	94.40	-376.11
2686	2	19:43:21	12.6080	1382.29	94.41	-376.11
2687	2	19:44:18	12.6240	1382.28	94.41	-376.12
2688	2	19:45:16	12.6400	1382.29	94.41	-376.11
2689	2	19:46:13	12.6560	1382.27	94.42	-376.13
2690	2	19:47:11	12.6720	1382.29	94.43	-376.11

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2691	2	19:48: 9	12.6880	1382.26	94.43	-376.14
2692	2	19:49: 6	12.7040	1382.27	94.43	-376.13
2693	2	19:50: 4	12.7200	1382.26	94.44	-376.14
2694	2	19:51: 1	12.7360	1382.25	94.45	-376.15
2695	2	19:51:59	12.7520	1382.26	94.45	-376.14
2696	2	19:52:57	12.7680	1382.23	94.45	-376.17
2697	2	19:53:54	12.7840	1382.27	94.46	-376.13
2698	2	19:54:52	12.8000	1382.24	94.46	-376.16
2699	2	19:55:49	12.8160	1382.26	94.47	-376.14
2700	2	19:56:47	12.8320	1382.24	94.48	-376.16
2701	2	19:57:45	12.8480	1382.23	94.48	-376.17
2702	2	19:58:42	12.8640	1382.25	94.48	-376.15
2703	2	19:59:40	12.8800	1382.23	94.49	-376.17
2704	2	20: 0:37	12.8960	1382.25	94.49	-376.15
2705	2	20: 1:35	12.9120	1382.22	94.50	-376.18
2706	2	20: 2:33	12.9280	1382.24	94.51	-376.16
2707	2	20: 3:30	12.9440	1382.23	94.52	-376.17
2708	2	20: 4:28	12.9600	1382.24	94.53	-376.16
2709	2	20: 5:25	12.9760	1382.24	94.53	-376.16
2710	2	20: 6:23	12.9920	1382.21	94.54	-376.19
2711	2	20: 7:21	13.0080	1382.23	94.54	-376.17
2712	2	20: 8:18	13.0240	1382.20	94.55	-376.20
2713	2	20: 9:16	13.0400	1382.23	94.56	-376.17
2714	2	20:10:13	13.0560	1382.21	94.56	-376.19
2715	2	20:11:11	13.0720	1382.22	94.57	-376.18
2716	2	20:12: 9	13.0880	1382.21	94.58	-376.19
2717	2	20:13: 6	13.1040	1382.19	94.58	-376.21
2718	2	20:14: 4	13.1200	1382.22	94.58	-376.18
2719	2	20:15: 1	13.1360	1382.19	94.59	-376.21
2720	2	20:15:59	13.1520	1382.22	94.60	-376.18
2721	2	20:16:57	13.1680	1382.18	94.60	-376.22
2722	2	20:17:54	13.1840	1382.20	94.61	-376.20
2723	2	20:18:52	13.2000	1382.19	94.61	-376.21
2724	2	20:19:49	13.2160	1382.18	94.62	-376.22
2725	2	20:20:47	13.2320	1382.19	94.63	-376.21
2726	2	20:21:45	13.2480	1382.17	94.63	-376.23
2727	2	20:22:42	13.2640	1382.20	94.64	-376.20
2728	2	20:23:40	13.2800	1382.17	94.64	-376.23
2729	2	20:24:37	13.2960	1382.19	94.64	-376.21
2730	2	20:25:35	13.3120	1382.16	94.65	-376.24
2731	2	20:26:33	13.3280	1382.17	94.66	-376.23
2732	2	20:27:30	13.3440	1382.18	94.66	-376.22
2733	2	20:28:28	13.3600	1382.16	94.67	-376.24
2734	2	20:29:25	13.3760	1382.17	94.68	-376.23
2735	2	20:30:23	13.3920	1382.14	94.68	-376.26
2736	2	20:31:21	13.4080	1382.17	94.69	-376.23
2737	2	20:32:18	13.4240	1382.15	94.70	-376.25
2738	2	20:33:16	13.4400	1382.16	94.70	-376.24
2739	2	20:34:13	13.4560	1382.14	94.70	-376.26
2740	2	20:35:11	13.4720	1382.15	94.71	-376.25

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2741	2	20:36: 9	13.4880	1382.15	94.72	-376.25
2742	2	20:37: 6	13.5040	1382.13	94.72	-376.27
2743	2	20:38: 4	13.5200	1382.16	94.72	-376.24
2744	2	20:39: 1	13.5360	1382.13	94.74	-376.27
2745	2	20:39:59	13.5520	1382.15	94.74	-376.25
2746	2	20:40:57	13.5680	1382.13	94.75	-376.27
2747	2	20:41:54	13.5840	1382.12	94.76	-376.28
2748	2	20:42:52	13.6000	1382.12	94.76	-376.28
2749	2	20:43:49	13.6160	1382.10	94.76	-376.30
2750	2	20:44:47	13.6320	1382.13	94.76	-376.27
2751	2	20:45:45	13.6480	1382.11	94.77	-376.29
2752	2	20:46:42	13.6640	1382.14	94.78	-376.26
2753	2	20:47:40	13.6800	1382.11	94.79	-376.29
2754	2	20:48:37	13.6960	1382.12	94.80	-376.28
2755	2	20:49:35	13.7120	1382.11	94.80	-376.29
2756	2	20:50:33	13.7280	1382.11	94.81	-376.29
2757	2	20:51:30	13.7440	1382.12	94.82	-376.28
2758	2	20:52:28	13.7600	1382.09	94.82	-376.31
2759	2	20:53:25	13.7760	1382.11	94.83	-376.29
2760	2	20:54:23	13.7920	1382.08	94.82	-376.32
2761	2	20:55:21	13.8080	1382.11	94.83	-376.29
2762	2	20:56:18	13.8240	1382.09	94.84	-376.31
2763	2	20:57:16	13.8400	1382.10	94.85	-376.30
2764	2	20:58:13	13.8560	1382.07	94.85	-376.33
2765	2	20:59:11	13.8720	1382.08	94.85	-376.32
2766	2	21: 0: 9	13.8880	1382.09	94.86	-376.31
2767	2	21: 1: 6	13.9040	1382.07	94.87	-376.33
2768	2	21: 2: 4	13.9200	1382.09	94.88	-376.31
2769	2	21: 3: 1	13.9360	1382.06	94.88	-376.34
2770	2	21: 3:59	13.9520	1382.08	94.88	-376.32
2771	2	21: 4:57	13.9680	1382.05	94.89	-376.35
2772	2	21: 5:54	13.9840	1382.08	94.90	-376.32
2773	2	21: 6:52	14.0000	1382.07	94.90	-376.33
2774	2	21: 7:49	14.0160	1382.05	94.91	-376.35
2775	2	21: 8:47	14.0320	1382.06	94.91	-376.34
2776	2	21: 9:45	14.0480	1382.04	94.91	-376.36
2777	2	21:10:42	14.0640	1382.07	94.91	-376.33
2778	2	21:11:40	14.0800	1382.04	94.92	-376.36
2779	2	21:12:37	14.0960	1382.06	94.92	-376.34
2780	2	21:13:35	14.1120	1382.03	94.93	-376.37
2781	2	21:14:33	14.1280	1382.04	94.93	-376.36
2782	2	21:15:30	14.1440	1382.04	94.93	-376.36
2783	2	21:16:28	14.1600	1382.03	94.94	-376.37
2784	2	21:17:25	14.1760	1382.05	94.94	-376.35
2785	2	21:18:23	14.1920	1382.02	94.95	-376.38
2786	2	21:19:21	14.2080	1382.05	94.96	-376.35
2787	2	21:20:18	14.2240	1382.03	94.97	-376.37
2788	2	21:21:16	14.2400	1382.04	94.97	-376.36
2789	2	21:22:13	14.2560	1382.02	94.98	-376.38
2790	2	21:23:11	14.2720	1382.03	94.98	-376.37

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2791	2	21:24: 9	14.2880	1382.03	94.99	-376.37
2792	2	21:25: 6	14.3040	1382.01	94.99	-376.39
2793	2	21:26: 4	14.3200	1382.02	94.99	-376.38
2794	2	21:27: 1	14.3360	1382.00	95.00	-376.40
2795	2	21:27:59	14.3520	1382.03	95.01	-376.37
2796	2	21:28:57	14.3680	1381.99	95.01	-376.41
2797	2	21:29:54	14.3840	1382.02	95.01	-376.38
2798	2	21:30:52	14.4000	1382.01	95.02	-376.39
2799	2	21:31:49	14.4160	1382.00	95.03	-376.40
2800	2	21:32:47	14.4320	1382.00	95.03	-376.40
2801	2	21:33:45	14.4480	1381.98	95.04	-376.42
2802	2	21:34:42	14.4640	1382.02	95.04	-376.38
2803	2	21:35:40	14.4800	1381.99	95.05	-376.41
2804	2	21:36:37	14.4960	1382.01	95.06	-376.39
2805	2	21:37:35	14.5120	1381.98	95.07	-376.42
2806	2	21:38:33	14.5280	1381.99	95.07	-376.41
2807	2	21:39:30	14.5440	1381.99	95.08	-376.41
2808	2	21:40:28	14.5600	1381.97	95.09	-376.43
2809	2	21:41:25	14.5760	1382.00	95.09	-376.40
2810	2	21:42:23	14.5920	1381.97	95.09	-376.43
2811	2	21:43:21	14.6080	1382.00	95.10	-376.40
2812	2	21:44:18	14.6240	1381.97	95.11	-376.43
2813	2	21:45:16	14.6400	1381.98	95.11	-376.42
2814	2	21:46:13	14.6560	1381.98	95.12	-376.42
2815	2	21:47:11	14.6720	1381.96	95.12	-376.44
2816	2	21:48: 9	14.6880	1381.97	95.12	-376.43
2817	2	21:49: 6	14.7040	1381.94	95.13	-376.46
2818	2	21:50: 4	14.7200	1381.98	95.14	-376.42
2819	2	21:51: 1	14.7360	1381.95	95.15	-376.45
2820	2	21:51:59	14.7520	1381.96	95.15	-376.44
2821	2	21:52:57	14.7680	1381.95	95.16	-376.45
2822	2	21:53:54	14.7840	1381.94	95.16	-376.46
2823	2	21:54:52	14.8000	1381.95	95.16	-376.45
2824	2	21:55:49	14.8160	1381.92	95.16	-376.48
2825	2	21:56:47	14.8320	1381.96	95.16	-376.44
2826	2	21:57:45	14.8480	1381.92	95.17	-376.48
2827	2	21:58:42	14.8640	1381.95	95.17	-376.45
2828	2	21:59:40	14.8800	1381.93	95.18	-376.47
2829	2	22: 0:37	14.8960	1381.94	95.19	-376.46
2830	2	22: 1:35	14.9120	1381.93	95.19	-376.47
2831	2	22: 2:33	14.9280	1381.92	95.19	-376.48
2832	2	22: 3:30	14.9440	1381.94	95.20	-376.46
2833	2	22: 4:28	14.9600	1381.91	95.21	-376.49
2834	2	22: 5:25	14.9760	1381.94	95.21	-376.46
2835	2	22: 6:23	14.9920	1381.91	95.22	-376.49
2836	2	22: 7:21	15.0080	1381.93	95.22	-376.47
2837	2	22: 8:18	15.0240	1381.91	95.23	-376.49
2838	2	22: 9:16	15.0400	1381.90	95.23	-376.50
2839	2	22:10:13	15.0560	1381.91	95.23	-376.49
2840	2	22:11:11	15.0720	1381.89	95.23	-376.51

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Thursday: Mar. 17, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2841	2	22:12: 9	15.0880	1381.92	95.24	-376.48
2842	2	22:13: 6	15.1040	1381.89	95.25	-376.51
2843	2	22:14: 4	15.1200	1381.92	95.26	-376.48
2844	2	22:15: 1	15.1360	1381.89	95.27	-376.51
2845	2	22:15:59	15.1520	1381.91	95.27	-376.49
2846	2	22:16:57	15.1680	1381.89	95.28	-376.51
2847	2	22:17:54	15.1840	1381.89	95.29	-376.51
2848	2	22:18:52	15.2000	1381.90	95.29	-376.50
2849	2	22:19:49	15.2160	1381.87	95.29	-376.53
2850	2	22:20:47	15.2320	1381.90	95.29	-376.50
2851	2	22:21:45	15.2480	1381.87	95.30	-376.53
2852	2	22:22:42	15.2640	1381.89	95.31	-376.51
2853	2	22:23:40	15.2800	1381.87	95.31	-376.53
2854	2	22:24:37	15.2960	1381.87	95.32	-376.53
2855	2	22:25:35	15.3120	1381.88	95.32	-376.52
2856	2	22:26:33	15.3280	1381.86	95.33	-376.54
2857	2	22:27:30	15.3440	1381.89	95.33	-376.51
2858	2	22:28:28	15.3600	1381.86	95.34	-376.54
2859	2	22:29:25	15.3760	1381.88	95.34	-376.52
2860	2	22:30:23	15.3920	1381.85	95.35	-376.55
2861	2	22:31:21	15.4080	1381.87	95.36	-376.53
2862	2	22:32:18	15.4240	1381.86	95.36	-376.54
2863	2	22:33:16	15.4400	1381.85	95.36	-376.55
2864	2	22:34:13	15.4560	1381.87	95.36	-376.53
2865	2	22:35:11	15.4720	1381.84	95.37	-376.56
2866	2	22:36: 9	15.4880	1381.87	95.38	-376.53
2867	2	22:37: 6	15.5040	1381.83	95.39	-376.57
2868	2	22:38: 4	15.5200	1381.87	95.39	-376.53
2869	2	22:39: 1	15.5360	1381.84	95.40	-376.56
2870	2	22:39:59	15.5520	1381.84	95.40	-376.56
2871	2	22:40:57	15.5680	1381.84	95.41	-376.56
2872	2	22:41:54	15.5840	1381.83	95.41	-376.57
2873	2	22:42:52	15.6000	1381.85	95.42	-376.55
2874	2	22:43:49	15.6160	1381.81	95.42	-376.59
2875	2	22:44:47	15.6320	1381.84	95.43	-376.56
2876	2	22:45:45	15.6480	1381.82	95.43	-376.58
2877	2	22:46:42	15.6640	1381.83	95.43	-376.57
2878	2	22:47:40	15.6800	1381.82	95.43	-376.58
2879	2	22:48:37	15.6960	1381.81	95.44	-376.59
2880	2	22:49:35	15.7120	1381.82	95.44	-376.58
2881	2	22:50:33	15.7280	1381.80	95.45	-376.60
2882	2	22:51:30	15.7440	1381.83	95.46	-376.57
2883	2	22:52:28	15.7600	1381.80	95.46	-376.60
2884	2	22:53:25	15.7760	1381.82	95.46	-376.58
2885	2	22:54:23	15.7920	1381.80	95.47	-376.60
2886	2	22:55:21	15.8080	1381.81	95.47	-376.59
2887	2	22:56:18	15.8240	1381.80	95.48	-376.60
2888	2	22:57:16	15.8400	1381.79	95.48	-376.61
2889	2	22:58:13	15.8560	1381.81	95.49	-376.59
2890	2	22:59:11	15.8720	1381.78	95.50	-376.62

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2891	2	23: 0: 9	15.8880	1381.81	95.50	-376.59
2892	2	23: 1: 6	15.9040	1381.78	95.51	-376.62
2893	2	23: 2: 4	15.9200	1381.80	95.51	-376.60
2894	2	23: 3: 1	15.9360	1381.78	95.52	-376.62
2895	2	23: 3:59	15.9520	1381.77	95.52	-376.63
2896	2	23: 4:57	15.9680	1381.78	95.52	-376.62
2897	2	23: 5:54	15.9840	1381.76	95.52	-376.64
2898	2	23: 6:52	16.0000	1381.79	95.52	-376.61
2899	2	23: 7:49	16.0160	1381.76	95.53	-376.64
2900	2	23: 8:47	16.0320	1381.78	95.54	-376.62
2901	2	23: 9:45	16.0480	1381.76	95.54	-376.64
2902	2	23:10:42	16.0640	1381.78	95.55	-376.62
2903	2	23:11:40	16.0800	1381.77	95.55	-376.63
2904	2	23:12:37	16.0960	1381.75	95.56	-376.65
2905	2	23:13:35	16.1120	1381.77	95.56	-376.63
2906	2	23:14:33	16.1280	1381.75	95.56	-376.65
2907	2	23:15:30	16.1440	1381.77	95.57	-376.63
2908	2	23:16:28	16.1600	1381.74	95.57	-376.66
2909	2	23:17:25	16.1760	1381.77	95.58	-376.63
2910	2	23:18:23	16.1920	1381.74	95.58	-376.66
2911	2	23:19:21	16.2080	1381.76	95.59	-376.64
2912	2	23:20:18	16.2240	1381.76	95.59	-376.64
2913	2	23:21:16	16.2400	1381.73	95.60	-376.67
2914	2	23:22:13	16.2560	1381.74	95.60	-376.66
2915	2	23:23:11	16.2720	1381.72	95.60	-376.68
2916	2	23:24: 9	16.2880	1381.75	95.61	-376.65
2917	2	23:25: 6	16.3040	1381.72	95.61	-376.68
2918	2	23:26: 4	16.3200	1381.75	95.62	-376.65
2919	2	23:27: 1	16.3360	1381.73	95.62	-376.67
2920	2	23:27:59	16.3520	1381.73	95.62	-376.67
2921	2	23:28:57	16.3680	1381.72	95.63	-376.68
2922	2	23:29:54	16.3840	1381.72	95.63	-376.68
2923	2	23:30:52	16.4000	1381.74	95.64	-376.66
2924	2	23:31:49	16.4160	1381.71	95.65	-376.69
2925	2	23:32:47	16.4320	1381.73	95.66	-376.67
2926	2	23:33:45	16.4480	1381.70	95.65	-376.70
2927	2	23:34:42	16.4640	1381.72	95.66	-376.68
2928	2	23:35:40	16.4800	1381.70	95.66	-376.70
2929	2	23:36:37	16.4960	1381.71	95.67	-376.69
2930	2	23:37:35	16.5120	1381.72	95.67	-376.68
2931	2	23:38:33	16.5280	1381.70	95.68	-376.70
2932	2	23:39:30	16.5440	1381.72	95.69	-376.68
2933	2	23:40:28	16.5600	1381.69	95.70	-376.71
2934	2	23:41:25	16.5760	1381.72	95.70	-376.68
2935	2	23:42:23	16.5920	1381.69	95.71	-376.71
2936	2	23:43:21	16.6080	1381.70	95.71	-376.70
2937	2	23:44:18	16.6240	1381.69	95.71	-376.71
2938	2	23:45:16	16.6400	1381.69	95.72	-376.71
2939	2	23:46:13	16.6560	1381.70	95.72	-376.70
2940	2	23:47:11	16.6720	1381.68	95.73	-376.72

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Thursday: Mar. 17, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2941	2	23:48: 9	16.6880	1381.70	95.74	-376.70
2942	2	23:49: 6	16.7040	1381.67	95.74	-376.73
2943	2	23:50: 4	16.7200	1381.70	95.74	-376.70
2944	2	23:51: 1	16.7360	1381.67	95.74	-376.73
2945	2	23:51:59	16.7520	1381.68	95.75	-376.72
2946	2	23:52:57	16.7680	1381.66	95.76	-376.74
2947	2	23:53:54	16.7840	1381.67	95.76	-376.73
2948	2	23:54:52	16.8000	1381.69	95.77	-376.71
2949	2	23:55:49	16.8160	1381.65	95.77	-376.75
2950	2	23:56:47	16.8320	1381.68	95.78	-376.72
2951	2	23:57:45	16.8480	1381.65	95.78	-376.75
2952	2	23:58:42	16.8640	1381.69	95.79	-376.71
2953	2	23:59:40	16.8800	1381.65	95.80	-376.75
[Friday: Mar. 18, 1994]						
2954	3	0: 0:37	16.8960	1381.67	95.81	-376.73
2955	3	0: 1:35	16.9120	1381.65	95.80	-376.75
2956	3	0: 2:33	16.9280	1381.64	95.80	-376.76
2957	3	0: 3:30	16.9440	1381.66	95.81	-376.74
2958	3	0: 4:28	16.9600	1381.63	95.81	-376.77
2959	3	0: 5:25	16.9760	1381.66	95.81	-376.74
2960	3	0: 6:23	16.9920	1381.63	95.82	-376.77
2961	3	0: 7:21	17.0080	1381.66	95.83	-376.74
2962	3	0: 8:18	17.0240	1381.63	95.83	-376.77
2963	3	0: 9:16	17.0400	1381.65	95.84	-376.75
2964	3	0:10:13	17.0560	1381.63	95.85	-376.77
2965	3	0:11:11	17.0720	1381.63	95.85	-376.77
2966	3	0:12: 9	17.0880	1381.65	95.86	-376.75
2967	3	0:13: 6	17.1040	1381.62	95.86	-376.78
2968	3	0:14: 4	17.1200	1381.65	95.87	-376.75
2969	3	0:15: 1	17.1360	1381.61	95.87	-376.79
2970	3	0:15:59	17.1520	1381.64	95.87	-376.76
2971	3	0:16:57	17.1680	1381.60	95.88	-376.80
2972	3	0:17:54	17.1840	1381.63	95.88	-376.77
2973	3	0:18:52	17.2000	1381.62	95.89	-376.78
2974	3	0:19:49	17.2160	1381.61	95.89	-376.79
2975	3	0:20:47	17.2320	1381.62	95.90	-376.78
2976	3	0:21:45	17.2480	1381.60	95.90	-376.80
2977	3	0:22:42	17.2640	1381.63	95.90	-376.77
2978	3	0:23:40	17.2800	1381.59	95.90	-376.81
2979	3	0:24:37	17.2960	1381.62	95.91	-376.78
2980	3	0:25:35	17.3120	1381.59	95.91	-376.81
2981	3	0:26:33	17.3280	1381.61	95.92	-376.79
2982	3	0:27:30	17.3440	1381.61	95.92	-376.79
2983	3	0:28:28	17.3600	1381.60	95.93	-376.80
2984	3	0:29:25	17.3760	1381.60	95.93	-376.80
2985	3	0:30:23	17.3920	1381.58	95.93	-376.82
2986	3	0:31:21	17.4080	1381.61	95.93	-376.79
2987	3	0:32:18	17.4240	1381.58	95.94	-376.82
2988	3	0:33:16	17.4400	1381.60	95.94	-376.80
2989	3	0:34:13	17.4560	1381.57	95.95	-376.83

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2990	3	0:35:11	17.4720	1381.58	95.95	-376.82
2991	3	0:36: 9	17.4880	1381.58	95.96	-376.82
2992	3	0:37: 6	17.5040	1381.58	95.96	-376.82
2993	3	0:38: 4	17.5200	1381.59	95.97	-376.81
2994	3	0:39: 1	17.5360	1381.56	95.97	-376.84
2995	3	0:39:59	17.5520	1381.59	95.98	-376.81
2996	3	0:40:57	17.5680	1381.56	95.98	-376.84
2997	3	0:41:54	17.5840	1381.58	95.98	-376.82
2998	3	0:42:52	17.6000	1381.57	95.99	-376.83
2999	3	0:43:49	17.6160	1381.56	95.99	-376.84
3000	3	0:44:47	17.6320	1381.57	95.99	-376.83
3001	3	0:45:45	17.6480	1381.55	96.00	-376.85
3002	3	0:46:42	17.6640	1381.57	96.00	-376.83
3003	3	0:47:40	17.6800	1381.55	96.01	-376.85
3004	3	0:48:37	17.6960	1381.57	96.02	-376.83
3005	3	0:49:35	17.7120	1381.54	96.02	-376.86
3006	3	0:50:33	17.7280	1381.57	96.03	-376.83
3007	3	0:51:30	17.7440	1381.55	96.03	-376.85
3008	3	0:52:28	17.7600	1381.54	96.03	-376.86
3009	3	0:53:25	17.7760	1381.55	96.03	-376.85
3010	3	0:54:23	17.7920	1381.53	96.03	-376.87
3011	3	0:55:21	17.8080	1381.55	96.04	-376.85
3012	3	0:56:18	17.8240	1381.52	96.04	-376.88
3013	3	0:57:16	17.8400	1381.55	96.04	-376.85
3014	3	0:58:13	17.8560	1381.52	96.04	-376.88
3015	3	0:59:11	17.8720	1381.54	96.05	-376.86
3016	3	1: 0: 9	17.8880	1381.53	96.05	-376.87
3017	3	1: 1: 6	17.9040	1381.53	96.06	-376.87
3018	3	1: 2: 4	17.9200	1381.54	96.06	-376.86
3019	3	1: 3: 1	17.9360	1381.52	96.06	-376.88
3020	3	1: 3:59	17.9520	1381.54	96.07	-376.86
3021	3	1: 4:57	17.9680	1381.51	96.07	-376.89
3022	3	1: 5:54	17.9840	1381.54	96.08	-376.86
3023	3	1: 6:52	18.0000	1381.52	96.08	-376.88
3024	3	1: 7:49	18.0160	1381.53	96.09	-376.87
3025	3	1: 8:47	18.0320	1381.52	96.09	-376.88
3026	3	1: 9:45	18.0480	1381.50	96.10	-376.90
3027	3	1:10:42	18.0640	1381.52	96.10	-376.88
3028	3	1:11:40	18.0800	1381.49	96.10	-376.91
3029	3	1:12:37	18.0960	1381.52	96.11	-376.88
3030	3	1:13:35	18.1120	1381.49	96.11	-376.91
3031	3	1:14:33	18.1280	1381.51	96.11	-376.89
3032	3	1:15:30	18.1440	1381.49	96.12	-376.91
3033	3	1:16:28	18.1600	1381.50	96.12	-376.90
3034	3	1:17:25	18.1760	1381.50	96.13	-376.90
3035	3	1:18:23	18.1920	1381.49	96.14	-376.91
3036	3	1:19:21	18.2080	1381.50	96.14	-376.90
3037	3	1:20:18	18.2240	1381.47	96.15	-376.93
3038	3	1:21:16	18.2400	1381.50	96.15	-376.90
3039	3	1:22:13	18.2560	1381.47	96.15	-376.93

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3040	3	1:23:11	18.2720	1381.50	96.16	-376.90
3041	3	1:24: 9	18.2880	1381.48	96.16	-376.92
3042	3	1:25: 6	18.3040	1381.48	96.16	-376.92
3043	3	1:26: 4	18.3200	1381.48	96.17	-376.92
3044	3	1:27: 1	18.3360	1381.47	96.17	-376.93
3045	3	1:27:59	18.3520	1381.49	96.18	-376.91
3046	3	1:28:57	18.3680	1381.46	96.18	-376.94
3047	3	1:29:54	18.3840	1381.49	96.18	-376.91
3048	3	1:30:52	18.4000	1381.46	96.19	-376.94
3049	3	1:31:49	18.4160	1381.47	96.19	-376.93
3050	3	1:32:47	18.4320	1381.46	96.20	-376.94
3051	3	1:33:45	18.4480	1381.46	96.20	-376.94
3052	3	1:34:42	18.4640	1381.46	96.20	-376.94
3053	3	1:35:40	18.4800	1381.45	96.21	-376.95
3054	3	1:36:37	18.4960	1381.47	96.22	-376.93
3055	3	1:37:35	18.5120	1381.44	96.22	-376.96
3056	3	1:38:33	18.5280	1381.47	96.22	-376.93
3057	3	1:39:30	18.5440	1381.45	96.23	-376.95
3058	3	1:40:28	18.5600	1381.44	96.23	-376.96
3059	3	1:41:25	18.5760	1381.45	96.23	-376.95
3060	3	1:42:23	18.5920	1381.44	96.24	-376.96
3061	3	1:43:21	18.6080	1381.46	96.24	-376.94
3062	3	1:44:18	18.6240	1381.43	96.25	-376.97
3063	3	1:45:16	18.6400	1381.45	96.25	-376.95
3064	3	1:46:13	18.6560	1381.43	96.25	-376.97
3065	3	1:47:11	18.6720	1381.44	96.26	-376.96
3066	3	1:48: 9	18.6880	1381.44	96.26	-376.96
3067	3	1:49: 6	18.7040	1381.43	96.27	-376.97
3068	3	1:50: 4	18.7200	1381.43	96.28	-376.97
3069	3	1:51: 1	18.7360	1381.41	96.28	-376.99
3070	3	1:51:59	18.7520	1381.45	96.29	-376.95
3071	3	1:52:57	18.7680	1381.42	96.29	-376.98
3072	3	1:53:54	18.7840	1381.44	96.30	-376.96
3073	3	1:54:52	18.8000	1381.41	96.30	-376.99
3074	3	1:55:49	18.8160	1381.42	96.30	-376.98
3075	3	1:56:47	18.8320	1381.41	96.30	-376.99
3076	3	1:57:45	18.8480	1381.41	96.30	-376.99
3077	3	1:58:42	18.8640	1381.42	96.31	-376.98
3078	3	1:59:40	18.8800	1381.40	96.31	-377.00
3079	3	2: 0:37	18.8960	1381.42	96.32	-376.98
3080	3	2: 1:35	18.9120	1381.39	96.32	-377.01
3081	3	2: 2:33	18.9280	1381.41	96.32	-376.99
3082	3	2: 3:30	18.9440	1381.40	96.33	-377.00
3083	3	2: 4:28	18.9600	1381.40	96.33	-377.00
3084	3	2: 5:25	18.9760	1381.39	96.33	-377.01
3085	3	2: 6:23	18.9920	1381.39	96.33	-377.01
3086	3	2: 7:21	19.0080	1381.41	96.34	-376.99
3087	3	2: 8:18	19.0240	1381.39	96.35	-377.01
3088	3	2: 9:16	19.0400	1381.41	96.35	-376.99
3089	3	2:10:13	19.0560	1381.38	96.36	-377.02

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Friday: Mar. 18, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3090	3	2:11:11	19.0720	1381.40	96.36	-377.00
3091	3	2:12: 9	19.0880	1381.38	96.36	-377.02
3092	3	2:13: 6	19.1040	1381.39	96.37	-377.01
3093	3	2:14: 4	19.1200	1381.39	96.37	-377.01
3094	3	2:15: 1	19.1360	1381.37	96.37	-377.03
3095	3	2:15:59	19.1520	1381.39	96.38	-377.01
3096	3	2:16:57	19.1680	1381.37	96.39	-377.03
3097	3	2:17:54	19.1840	1381.39	96.39	-377.01
3098	3	2:18:52	19.2000	1381.36	96.40	-377.04
3099	3	2:19:49	19.2160	1381.38	96.40	-377.02
3100	3	2:20:47	19.2320	1381.36	96.41	-377.04
3101	3	2:21:45	19.2480	1381.38	96.41	-377.02
3102	3	2:22:42	19.2640	1381.37	96.41	-377.03
3103	3	2:23:40	19.2800	1381.35	96.41	-377.05
3104	3	2:24:37	19.2960	1381.37	96.42	-377.03
3105	3	2:25:35	19.3120	1381.34	96.42	-377.06
3106	3	2:26:33	19.3280	1381.37	96.42	-377.03
3107	3	2:27:30	19.3440	1381.35	96.43	-377.05
3108	3	2:28:28	19.3600	1381.37	96.43	-377.03
3109	3	2:29:25	19.3760	1381.35	96.43	-377.05
3110	3	2:30:23	19.3920	1381.35	96.44	-377.05
3111	3	2:31:21	19.4080	1381.35	96.45	-377.05
3112	3	2:32:18	19.4240	1381.34	96.45	-377.06
3113	3	2:33:16	19.4400	1381.36	96.45	-377.04
3114	3	2:34:13	19.4560	1381.33	96.46	-377.07
3115	3	2:35:11	19.4720	1381.35	96.46	-377.05
3116	3	2:36: 9	19.4880	1381.32	96.46	-377.08
3117	3	2:37: 6	19.5040	1381.35	96.46	-377.05
3118	3	2:38: 4	19.5200	1381.33	96.47	-377.07
3119	3	2:39: 1	19.5360	1381.33	96.47	-377.07
3120	3	2:39:59	19.5520	1381.33	96.47	-377.07
3121	3	2:40:57	19.5680	1381.32	96.47	-377.08
3122	3	2:41:54	19.5840	1381.34	96.48	-377.06
3123	3	2:42:52	19.6000	1381.31	96.48	-377.09
3124	3	2:43:49	19.6160	1381.35	96.49	-377.05
3125	3	2:44:47	19.6320	1381.31	96.49	-377.09
3126	3	2:45:45	19.6480	1381.33	96.50	-377.07
3127	3	2:46:42	19.6640	1381.31	96.50	-377.09
3128	3	2:47:40	19.6800	1381.32	96.50	-377.08
3129	3	2:48:37	19.6960	1381.32	96.50	-377.08
3130	3	2:49:35	19.7120	1381.31	96.51	-377.09
3131	3	2:50:33	19.7280	1381.32	96.51	-377.08
3132	3	2:51:30	19.7440	1381.29	96.51	-377.11
3133	3	2:52:28	19.7600	1381.33	96.52	-377.07
3134	3	2:53:25	19.7760	1381.30	96.53	-377.10
3135	3	2:54:23	19.7920	1381.32	96.53	-377.08
3136	3	2:55:21	19.8080	1381.29	96.53	-377.11
3137	3	2:56:18	19.8240	1381.30	96.52	-377.10
3138	3	2:57:16	19.8400	1381.30	96.52	-377.10
3139	3	2:58:13	19.8560	1381.29	96.53	-377.11

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3140	3	2:59:11	19.8720	1381.31	96.54	-377.09
3141	3	3: 0: 9	19.8880	1381.28	96.54	-377.12
3142	3	3: 1: 6	19.9040	1381.32	96.55	-377.08
3143	3	3: 2: 4	19.9200	1381.29	96.56	-377.11
3144	3	3: 3: 1	19.9360	1381.31	96.56	-377.09
3145	3	3: 3:59	19.9520	1381.28	96.56	-377.12
3146	3	3: 4:57	19.9680	1381.28	96.56	-377.12
3147	3	3: 5:54	19.9840	1381.29	96.57	-377.11
3148	3	3: 6:52	20.0000	1381.28	96.57	-377.12
3149	3	3: 7:49	20.0160	1381.29	96.57	-377.11
3150	3	3: 8:47	20.0320	1381.26	96.58	-377.14
3151	3	3: 9:45	20.0480	1381.29	96.57	-377.11
3152	3	3:10:42	20.0640	1381.26	96.58	-377.14
3153	3	3:11:40	20.0800	1381.29	96.58	-377.11
3154	3	3:12:37	20.0960	1381.26	96.58	-377.14
3155	3	3:13:35	20.1120	1381.28	96.59	-377.12
3156	3	3:14:33	20.1280	1381.27	96.59	-377.13
3157	3	3:15:30	20.1440	1381.26	96.60	-377.14
3158	3	3:16:28	20.1600	1381.27	96.60	-377.13
3159	3	3:17:25	20.1760	1381.25	96.60	-377.15
3160	3	3:18:23	20.1920	1381.27	96.60	-377.13
3161	3	3:19:21	20.2080	1381.24	96.61	-377.16
3162	3	3:20:18	20.2240	1381.27	96.61	-377.13
3163	3	3:21:16	20.2400	1381.25	96.62	-377.15
3164	3	3:22:13	20.2560	1381.26	96.62	-377.14
3165	3	3:23:11	20.2720	1381.26	96.63	-377.14
3166	3	3:24: 9	20.2880	1381.24	96.63	-377.16
3167	3	3:25: 6	20.3040	1381.26	96.63	-377.14
3168	3	3:26: 4	20.3200	1381.22	96.63	-377.18
3169	3	3:27: 1	20.3360	1381.25	96.62	-377.15
3170	3	3:27:59	20.3520	1381.22	96.63	-377.18
3171	3	3:28:57	20.3680	1381.25	96.64	-377.15
3172	3	3:29:54	20.3840	1381.22	96.64	-377.18
3173	3	3:30:52	20.4000	1381.23	96.64	-377.17
3174	3	3:31:49	20.4160	1381.24	96.64	-377.16
3175	3	3:32:47	20.4320	1381.22	96.65	-377.18
3176	3	3:33:45	20.4480	1381.24	96.65	-377.16
3177	3	3:34:42	20.4640	1381.21	96.66	-377.19
3178	3	3:35:40	20.4800	1381.24	96.67	-377.16
3179	3	3:36:37	20.4960	1381.20	96.67	-377.20
3180	3	3:37:35	20.5120	1381.24	96.67	-377.16
3181	3	3:38:33	20.5280	1381.22	96.67	-377.18
3182	3	3:39:30	20.5440	1381.21	96.68	-377.19
3183	3	3:40:28	20.5600	1381.23	96.69	-377.17
3184	3	3:41:25	20.5760	1381.21	96.69	-377.19
3185	3	3:42:23	20.5920	1381.23	96.69	-377.17
3186	3	3:43:21	20.6080	1381.20	96.69	-377.20
3187	3	3:44:18	20.6240	1381.22	96.70	-377.18
3188	3	3:45:16	20.6400	1381.20	96.70	-377.20
3189	3	3:46:13	20.6560	1381.21	96.70	-377.19

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Friday: Mar. 18, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3190	3	3:47:11	20.6720	1381.21	96.70	-377.19
3191	3	3:48: 9	20.6880	1381.19	96.71	-377.21
3192	3	3:49: 6	20.7040	1381.21	96.71	-377.19
3193	3	3:50: 4	20.7200	1381.19	96.71	-377.21
3194	3	3:51: 1	20.7360	1381.23	96.72	-377.17
3195	3	3:51:59	20.7520	1381.19	96.73	-377.21
3196	3	3:52:57	20.7680	1381.22	96.73	-377.18
3197	3	3:53:54	20.7840	1381.19	96.73	-377.21
3198	3	3:54:52	20.8000	1381.20	96.74	-377.20
3199	3	3:55:49	20.8160	1381.19	96.75	-377.21
3200	3	3:56:47	20.8320	1381.18	96.74	-377.22
3201	3	3:57:45	20.8480	1381.20	96.74	-377.20
3202	3	3:58:42	20.8640	1381.17	96.75	-377.23
3203	3	3:59:40	20.8800	1381.20	96.76	-377.20
3204	3	4: 0:37	20.8960	1381.17	96.77	-377.23
3205	3	4: 1:35	20.9120	1381.20	96.77	-377.20
3206	3	4: 2:33	20.9280	1381.18	96.77	-377.22
3207	3	4: 3:30	20.9440	1381.18	96.78	-377.22
3208	3	4: 4:28	20.9600	1381.18	96.78	-377.22
3209	3	4: 5:25	20.9760	1381.16	96.78	-377.24
3210	3	4: 6:23	20.9920	1381.18	96.78	-377.22
3211	3	4: 7:21	21.0080	1381.15	96.79	-377.25
3212	3	4: 8:18	21.0240	1381.19	96.79	-377.21
3213	3	4: 9:16	21.0400	1381.15	96.80	-377.25
3214	3	4:10:13	21.0560	1381.17	96.80	-377.23
3215	3	4:11:11	21.0720	1381.16	96.80	-377.24
3216	3	4:12: 9	21.0880	1381.17	96.81	-377.23
3217	3	4:13: 6	21.1040	1381.17	96.81	-377.23
3218	3	4:14: 4	21.1200	1381.15	96.81	-377.25
3219	3	4:15: 1	21.1360	1381.17	96.82	-377.23
3220	3	4:15:59	21.1520	1381.14	96.82	-377.26
3221	3	4:16:57	21.1680	1381.17	96.82	-377.23
3222	3	4:17:54	21.1840	1381.14	96.83	-377.26
3223	3	4:18:52	21.2000	1381.16	96.82	-377.24
3224	3	4:19:49	21.2160	1381.13	96.83	-377.27
3225	3	4:20:47	21.2320	1381.16	96.83	-377.24
3226	3	4:21:45	21.2480	1381.15	96.83	-377.25
3227	3	4:22:42	21.2640	1381.14	96.83	-377.26
3228	3	4:23:40	21.2800	1381.16	96.84	-377.24
3229	3	4:24:37	21.2960	1381.14	96.85	-377.26
3230	3	4:25:35	21.3120	1381.16	96.85	-377.24
3231	3	4:26:33	21.3280	1381.13	96.85	-377.27
3232	3	4:27:30	21.3440	1381.15	96.86	-377.25
3233	3	4:28:28	21.3600	1381.12	96.86	-377.28
3234	3	4:29:25	21.3760	1381.14	96.86	-377.26
3235	3	4:30:23	21.3920	1381.13	96.86	-377.27
3236	3	4:31:21	21.4080	1381.13	96.87	-377.27
3237	3	4:32:18	21.4240	1381.13	96.87	-377.27
3238	3	4:33:16	21.4400	1381.11	96.88	-377.29
3239	3	4:34:13	21.4560	1381.14	96.88	-377.26

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3240	3	4:35:11	21.4720	1381.11	96.88	-377.29
3241	3	4:36: 9	21.4880	1381.14	96.88	-377.26
3242	3	4:37: 6	21.5040	1381.11	96.88	-377.29
3243	3	4:38: 4	21.5200	1381.13	96.89	-377.27
3244	3	4:39: 1	21.5360	1381.12	96.89	-377.28
3245	3	4:39:59	21.5520	1381.11	96.89	-377.29
3246	3	4:40:57	21.5680	1381.11	96.89	-377.29
3247	3	4:41:54	21.5840	1381.09	96.89	-377.31
3248	3	4:42:52	21.6000	1381.12	96.89	-377.28
3249	3	4:43:49	21.6160	1381.09	96.89	-377.31
3250	3	4:44:47	21.6320	1381.12	96.90	-377.28
3251	3	4:45:45	21.6480	1381.10	96.90	-377.30
3252	3	4:46:42	21.6640	1381.11	96.91	-377.29
3253	3	4:47:40	21.6800	1381.11	96.91	-377.29
3254	3	4:48:37	21.6960	1381.09	96.92	-377.31
3255	3	4:49:35	21.7120	1381.11	96.92	-377.29
3256	3	4:50:33	21.7280	1381.09	96.93	-377.31
3257	3	4:51:30	21.7440	1381.13	96.93	-377.27
3258	3	4:52:28	21.7600	1381.09	96.94	-377.31
3259	3	4:53:25	21.7760	1381.11	96.94	-377.29
3260	3	4:54:23	21.7920	1381.08	96.95	-377.32
3261	3	4:55:21	21.8080	1381.10	96.95	-377.30
3262	3	4:56:18	21.8240	1381.10	96.96	-377.30
3263	3	4:57:16	21.8400	1381.08	96.96	-377.32
3264	3	4:58:13	21.8560	1381.10	96.96	-377.30
3265	3	4:59:11	21.8720	1381.07	96.97	-377.33
3266	3	5: 0: 9	21.8880	1381.10	96.97	-377.30
3267	3	5: 1: 6	21.9040	1381.08	96.97	-377.32
3268	3	5: 2: 4	21.9200	1381.10	96.98	-377.30
3269	3	5: 3: 1	21.9360	1381.07	96.98	-377.33
3270	3	5: 3:59	21.9520	1381.09	96.98	-377.31
3271	3	5: 4:57	21.9680	1381.08	96.98	-377.32
3272	3	5: 5:54	21.9840	1381.07	96.99	-377.33
3273	3	5: 6:52	22.0000	1381.08	96.99	-377.32
3274	3	5: 7:49	22.0160	1381.06	96.99	-377.34
3275	3	5: 8:47	22.0320	1381.09	97.00	-377.31
3276	3	5: 9:45	22.0480	1381.05	97.00	-377.35
3277	3	5:10:42	22.0640	1381.07	97.00	-377.33
3278	3	5:11:40	22.0800	1381.05	97.00	-377.35
3279	3	5:12:37	22.0960	1381.06	97.00	-377.34
3280	3	5:13:35	22.1120	1381.06	97.01	-377.34
3281	3	5:14:33	22.1280	1381.05	97.01	-377.35
3282	3	5:15:30	22.1440	1381.07	97.02	-377.33
3283	3	5:16:28	22.1600	1381.05	97.02	-377.35
3284	3	5:17:25	22.1760	1381.08	97.03	-377.32
3285	3	5:18:23	22.1920	1381.04	97.03	-377.36
3286	3	5:19:21	22.2080	1381.07	97.04	-377.33
3287	3	5:20:18	22.2240	1381.05	97.04	-377.35
3288	3	5:21:16	22.2400	1381.06	97.05	-377.34
3289	3	5:22:13	22.2560	1381.06	97.05	-377.34

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3290	3	5:23:11	22.2720	1381.04	97.05	-377.36
3291	3	5:24: 9	22.2880	1381.07	97.06	-377.33
3292	3	5:25: 6	22.3040	1381.03	97.05	-377.37
3293	3	5:26: 4	22.3200	1381.05	97.05	-377.35
3294	3	5:27: 1	22.3360	1381.02	97.05	-377.38
3295	3	5:27:59	22.3520	1381.05	97.06	-377.35
3296	3	5:28:57	22.3680	1381.04	97.06	-377.36
3297	3	5:29:54	22.3840	1381.03	97.06	-377.37
3298	3	5:30:52	22.4000	1381.04	97.07	-377.36
3299	3	5:31:49	22.4160	1381.02	97.07	-377.38
3300	3	5:32:47	22.4320	1381.05	97.07	-377.35
3301	3	5:33:45	22.4480	1381.02	97.08	-377.38
3302	3	5:34:42	22.4640	1381.05	97.08	-377.35
3303	3	5:35:40	22.4800	1381.02	97.08	-377.38
3304	3	5:36:37	22.4960	1381.04	97.08	-377.36
3305	3	5:37:35	22.5120	1381.02	97.09	-377.38
3306	3	5:38:33	22.5280	1381.03	97.09	-377.37
3307	3	5:39:30	22.5440	1381.03	97.10	-377.37
3308	3	5:40:28	22.5600	1381.01	97.10	-377.39
3309	3	5:41:25	22.5760	1381.04	97.09	-377.36
3310	3	5:42:23	22.5920	1381.01	97.10	-377.39
3311	3	5:43:21	22.6080	1381.03	97.10	-377.37
3312	3	5:44:18	22.6240	1381.00	97.10	-377.40
3313	3	5:45:16	22.6400	1381.03	97.11	-377.37
3314	3	5:46:13	22.6560	1381.01	97.11	-377.39
3315	3	5:47:11	22.6720	1381.01	97.11	-377.39
3316	3	5:48: 9	22.6880	1381.02	97.11	-377.38
3317	3	5:49: 6	22.7040	1380.99	97.11	-377.41
3318	3	5:50: 4	22.7200	1381.02	97.12	-377.38
3319	3	5:51: 1	22.7360	1381.00	97.12	-377.40
3320	3	5:51:59	22.7520	1381.03	97.13	-377.37
3321	3	5:52:57	22.7680	1380.99	97.13	-377.41
3322	3	5:53:54	22.7840	1381.01	97.13	-377.39
3323	3	5:54:52	22.8000	1381.01	97.13	-377.39
3324	3	5:55:49	22.8160	1380.99	97.14	-377.41
3325	3	5:56:47	22.8320	1381.01	97.14	-377.39
3326	3	5:57:45	22.8480	1380.99	97.15	-377.41
3327	3	5:58:42	22.8640	1381.02	97.15	-377.38
3328	3	5:59:40	22.8800	1380.98	97.16	-377.42
3329	3	6: 0:37	22.8960	1381.01	97.16	-377.39
3330	3	6: 1:35	22.9120	1380.99	97.16	-377.41
3331	3	6: 2:33	22.9280	1381.00	97.17	-377.40
3332	3	6: 3:30	22.9440	1381.00	97.17	-377.40
3333	3	6: 4:28	22.9600	1380.98	97.17	-377.42
3334	3	6: 5:25	22.9760	1381.00	97.18	-377.40
3335	3	6: 6:23	22.9920	1380.97	97.18	-377.43
3336	3	6: 7:21	23.0080	1381.00	97.18	-377.40
3337	3	6: 8:18	23.0240	1380.97	97.19	-377.43
3338	3	6: 9:16	23.0400	1381.00	97.19	-377.40
3339	3	6:10:13	23.0560	1380.97	97.19	-377.43

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3340	3	6:11:11	23.0720	1380.98	97.19	-377.42
3341	3	6:12: 9	23.0880	1380.98	97.19	-377.42
3342	3	6:13: 6	23.1040	1380.97	97.20	-377.43
3343	3	6:14: 4	23.1200	1380.99	97.20	-377.41
3344	3	6:15: 1	23.1360	1380.95	97.20	-377.45
3345	3	6:15:59	23.1520	1380.99	97.21	-377.41
3346	3	6:16:57	23.1680	1380.95	97.21	-377.45
3347	3	6:17:54	23.1840	1380.99	97.22	-377.41
3348	3	6:18:52	23.2000	1380.96	97.22	-377.44
3349	3	6:19:49	23.2160	1380.96	97.22	-377.44
3350	3	6:20:47	23.2320	1380.97	97.22	-377.43
3351	3	6:21:45	23.2480	1380.95	97.22	-377.45
3352	3	6:22:42	23.2640	1380.97	97.22	-377.43
3353	3	6:23:40	23.2800	1380.94	97.23	-377.46
3354	3	6:24:37	23.2960	1380.97	97.23	-377.43
3355	3	6:25:35	23.3120	1380.94	97.24	-377.46
3356	3	6:26:33	23.3280	1380.97	97.24	-377.43
3357	3	6:27:30	23.3440	1380.96	97.25	-377.44
3358	3	6:28:28	23.3600	1380.95	97.25	-377.45
3359	3	6:29:25	23.3760	1380.96	97.25	-377.44
3360	3	6:30:23	23.3920	1380.95	97.26	-377.45
3361	3	6:31:21	23.4080	1380.97	97.26	-377.43
3362	3	6:32:18	23.4240	1380.93	97.26	-377.47
3363	3	6:33:16	23.4400	1380.96	97.26	-377.44
3364	3	6:34:13	23.4560	1380.93	97.27	-377.47
3365	3	6:35:11	23.4720	1380.96	97.27	-377.44
3366	3	6:36: 9	23.4880	1380.95	97.28	-377.45
3367	3	6:48:48	23.6990	1380.93	97.32	-377.47
3368	3	6:49:46	23.7150	1380.91	97.32	-377.49
3369	3	6:50:43	23.7310	1380.93	97.32	-377.47
3370	3	6:51:41	23.7470	1380.90	97.33	-377.50
3371	3	6:52:39	23.7630	1380.93	97.33	-377.47
3372	3	6:53:36	23.7790	1380.91	97.33	-377.49
3373	3	6:54:34	23.7950	1380.93	97.33	-377.47
3374	3	6:55:31	23.8110	1380.91	97.33	-377.49
3375	3	6:56:29	23.8270	1380.91	97.34	-377.49
3376	3	6:57:27	23.8430	1380.92	97.34	-377.48
3377	3	6:58:24	23.8590	1380.89	97.34	-377.51
3378	3	6:59:22	23.8750	1380.92	97.34	-377.48
3379	3	7: 0:19	23.8910	1380.89	97.34	-377.51
3380	3	7: 1:17	23.9070	1380.93	97.35	-377.47
3381	3	7: 2:15	23.9230	1380.90	97.35	-377.50
3382	3	7: 3:12	23.9390	1380.92	97.35	-377.48
3383	3	7: 4:10	23.9550	1380.90	97.36	-377.50
3384	3	7: 5: 7	23.9710	1380.90	97.36	-377.50
3385	3	7: 6: 5	23.9870	1380.90	97.37	-377.50
3386	3	7: 7: 3	24.0030	1380.88	97.37	-377.52
3387	3	7: 8: 0	24.0190	1380.91	97.37	-377.49
3388	3	7: 8:58	24.0350	1380.88	97.38	-377.52
3389	3	7: 9:55	24.0510	1380.92	97.38	-377.48

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Friday: Mar. 18, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3390	3	7:10:53	24.0670	1380.89	97.39	-377.51
3391	3	7:11:51	24.0830	1380.90	97.39	-377.50
3392	3	7:12:48	24.0990	1380.87	97.39	-377.53
3393	3	7:13:46	24.1150	1380.88	97.39	-377.52
3394	3	7:14:43	24.1310	1380.89	97.39	-377.51
3395	3	7:15:41	24.1470	1380.87	97.39	-377.53
3396	3	7:16:39	24.1630	1380.91	97.40	-377.49
3397	3	7:17:36	24.1790	1380.88	97.40	-377.52
3398	3	7:18:34	24.1950	1380.90	97.41	-377.50
3399	3	7:19:31	24.2110	1380.87	97.41	-377.53
3400	3	7:20:29	24.2270	1380.89	97.41	-377.51
3401	3	7:21:27	24.2430	1380.88	97.42	-377.52
3402	3	7:22:24	24.2590	1380.87	97.42	-377.53
3403	3	7:23:22	24.2750	1380.89	97.42	-377.51
3404	3	7:24:19	24.2910	1380.86	97.42	-377.54
3405	3	7:25:17	24.3070	1380.89	97.42	-377.51
3406	3	7:26:15	24.3230	1380.85	97.42	-377.55
3407	3	7:27:12	24.3390	1380.88	97.43	-377.52
3408	3	7:28:10	24.3550	1380.87	97.43	-377.53
3409	3	7:29: 7	24.3710	1380.87	97.44	-377.53
3410	3	7:30: 5	24.3870	1380.88	97.44	-377.52
3411	3	7:31: 3	24.4030	1380.86	97.44	-377.54
3412	3	7:32: 0	24.4190	1380.89	97.45	-377.51
3413	3	7:32:58	24.4350	1380.85	97.45	-377.55
3414	3	7:33:55	24.4510	1380.88	97.46	-377.52
3415	3	7:34:53	24.4670	1380.85	97.46	-377.55
3416	3	7:35:51	24.4830	1380.87	97.47	-377.53
3417	3	7:36:48	24.4990	1380.86	97.47	-377.54
3418	3	7:37:46	24.5150	1380.85	97.47	-377.55
3419	3	7:38:43	24.5310	1380.87	97.47	-377.53
3420	3	7:39:41	24.5470	1380.84	97.47	-377.56
3421	3	7:40:39	24.5630	1380.87	97.47	-377.53
3422	3	7:41:36	24.5790	1380.83	97.48	-377.57
3423	3	7:42:34	24.5950	1380.86	97.47	-377.54
3424	3	7:43:31	24.6110	1380.84	97.48	-377.56
3425	3	7:44:29	24.6270	1380.86	97.48	-377.54
3426	3	7:45:27	24.6430	1380.85	97.49	-377.55
3427	3	7:46:24	24.6590	1380.84	97.49	-377.56
3428	3	7:47:22	24.6750	1380.85	97.49	-377.55
3429	3	7:48:19	24.6910	1380.83	97.49	-377.57
3430	3	7:49:17	24.7070	1380.85	97.49	-377.55
3431	3	7:50:15	24.7230	1380.82	97.49	-377.58
3432	3	7:51:12	24.7390	1380.86	97.49	-377.54
3433	3	7:52:10	24.7550	1380.83	97.50	-377.57
3434	3	7:53: 7	24.7710	1380.84	97.50	-377.56
3435	3	7:54: 5	24.7870	1380.84	97.51	-377.56
3436	3	7:55: 3	24.8030	1380.82	97.51	-377.58
3437	3	7:56: 0	24.8190	1380.84	97.51	-377.56
3438	3	7:56:58	24.8350	1380.81	97.51	-377.59
3439	3	7:57:55	24.8510	1380.85	97.51	-377.55

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3440	3	7:58:53	24.8670	1380.81	97.51	-377.59
3441	3	7:59:51	24.8830	1380.85	97.51	-377.55
		Broke pack-off seal.				
3442	3	8: 0:48	24.8990	1380.76	97.52	-377.64
3443	3	8: 1:46	24.9150	1380.82	97.52	-377.58
3444	3	8: 2:43	24.9310	1380.84	97.52	-377.56
3445	3	8: 3:41	24.9470	1380.82	97.52	-377.58
3446	3	8: 4:39	24.9630	1380.84	97.53	-377.56
3447	3	8: 5:36	24.9790	1380.81	97.53	-377.59
3448	3	8: 6:34	24.9950	1380.84	97.53	-377.56
3449	3	8: 7:31	25.0110	1380.81	97.54	-377.59
3450	3	8: 8:29	25.0270	1380.84	97.54	-377.56
3451	3	8: 9:27	25.0430	1380.82	97.55	-377.58
3452	3	8:10:24	25.0590	1380.82	97.56	-377.58
3453	3	8:11:22	25.0750	1380.83	97.55	-377.57
3454	3	8:12:19	25.0910	1380.81	97.56	-377.59
3455	3	8:13:17	25.1070	1380.83	97.56	-377.57
3456	3	8:14:15	25.1230	1380.80	97.57	-377.60
3457	3	8:15:12	25.1390	1380.82	97.57	-377.58
3458	3	8:16:10	25.1550	1380.80	97.56	-377.60
3459	3	8:17: 7	25.1710	1380.82	97.57	-377.58
3460	3	8:18: 5	25.1870	1380.81	97.57	-377.59
3461	3	8:19: 3	25.2030	1380.81	97.58	-377.59
3462	3	8:20: 0	25.2190	1380.82	97.58	-377.58
3463	3	8:20:58	25.2350	1380.80	97.59	-377.60
		Drop down hole 10 feet, then pull out of hole making static gradient stops.				
3464	3	8:21:55	25.2510	1380.82	97.59	-377.58
3465	3	8:22:53	25.2670	1380.78	97.58	-377.62
3466	3	8:23:51	25.2830	1381.37	97.58	-377.03
3467	3	8:24:48	25.2990	1382.41	97.60	-375.99
3468	3	8:25:46	25.3150	1374.15	97.63	-384.25
3469	3	8:26:43	25.3310	1347.19	97.31	-411.21
3470	3	8:27:41	25.3470	1305.22	97.21	-453.18
3471	3	8:28:39	25.3630	1252.07	96.81	-506.33
3472	3	8:29:36	25.3790	1200.10	95.75	-558.30
3473	3	8:30:34	25.3950	1145.68	95.25	-612.72
3474	3	8:31:31	25.4110	1091.45	94.12	-666.95
3475	3	8:32:29	25.4270	1036.89	93.52	-721.51
3476	3	8:33:27	25.4430	983.35	92.48	-775.05
3477	3	8:34:24	25.4590	949.10	91.30	-809.30
3478	3	8:35:22	25.4750	945.60	90.70	-812.80
3479	3	8:36:19	25.4910	946.11	90.58	-812.29
3480	3	8:37:17	25.5070	946.33	90.52	-812.07
3481	3	8:38:15	25.5230	946.43	90.49	-811.97
3482	3	8:39:12	25.5390	946.52	90.47	-811.88
3483	3	8:40:10	25.5550	946.53	90.45	-811.87
3484	3	8:41: 7	25.5710	946.57	90.44	-811.83
		Leaving 2,000 feet.				
3485	3	8:42: 5	25.5870	946.57	90.43	-811.83

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-49 WELL #4 [Friday: Mar. 18, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3486	3	8:43: 3	25.6030	943.87	90.42	-814.53
3487	3	8:44: 0	25.6190	900.64	90.40	-857.76
3488	3	8:44:58	25.6350	845.46	90.32	-912.94
3489	3	8:45:55	25.6510	788.16	89.72	-970.24
3490	3	8:46:53	25.6670	730.22	88.80	-1028.18
3491	3	8:47:51	25.6830	671.77	88.04	-1086.63
3492	3	8:48:48	25.6990	614.76	87.22	-1143.64
3493	3	8:49:46	25.7150	610.17	86.56	-1148.23
3494	3	8:50:43	25.7310	597.56	86.33	-1160.84
3495	3	8:51:41	25.7470	569.55	86.11	-1188.85
3496	3	8:52:39	25.7630	523.06	85.70	-1235.34
3497	3	8:53:36	25.7790	512.24	85.13	-1246.16
3498	3	8:54:34	25.7950	512.36	84.96	-1246.04
3499	3	8:55:31	25.8110	512.43	84.89	-1245.97
3500	3	8:56:29	25.8270	512.53	84.85	-1245.87
3501	3	8:57:27	25.8430	512.56	84.82	-1245.84
3502	3	8:58:24	25.8590	512.61	84.81	-1245.79
3503	3	8:59:22	25.8750	512.64	84.79	-1245.76
3504	3	9: 0:19	25.8910	512.65	84.78	-1245.75
3505	3	9: 1:17	25.9070	512.68	84.77	-1245.72
3506	3	9: 2:15	25.9230	512.66	84.76	-1245.74
3507	3	9: 3:12	25.9390	512.70	84.75	-1245.70
3508	3	9: 4:10	25.9550	512.68	84.75	-1245.72
3509	3	9: 5: 7	25.9710	512.71	84.74	-1245.69
3510	3	9: 6: 5	25.9870	512.70	84.74	-1245.70
		Leaving 1,000 feet.				
3511	3	9: 7: 3	26.0030	512.71	84.73	-1245.69
3512	3	9: 8: 0	26.0190	504.76	84.73	-1253.64
3513	3	9: 8:58	26.0350	456.61	84.61	-1301.79
3514	3	9: 9:55	26.0510	401.99	83.83	-1356.41
3515	3	9:10:53	26.0670	344.78	83.27	-1413.62
3516	3	9:11:51	26.0830	296.56	82.55	-1461.84
3517	3	9:12:48	26.0990	294.35	81.97	-1464.05
3518	3	9:13:46	26.1150	294.38	81.83	-1464.02
3519	3	9:14:43	26.1310	294.44	81.75	-1463.96
3520	3	9:15:41	26.1470	294.55	81.70	-1463.85
3521	3	9:16:39	26.1630	294.67	81.67	-1463.73
3522	3	9:17:36	26.1790	294.72	81.64	-1463.68
3523	3	9:18:34	26.1950	294.78	81.62	-1463.62
3524	3	9:19:31	26.2110	294.78	81.60	-1463.62
3525	3	9:20:29	26.2270	294.82	81.59	-1463.58
3526	3	9:21:27	26.2430	294.83	81.57	-1463.57
3527	3	9:22:24	26.2590	294.84	81.56	-1463.56
3528	3	9:23:22	26.2750	294.91	81.56	-1463.49
3529	3	9:24:19	26.2910	294.95	81.55	-1463.45
3530	3	9:25:17	26.3070	295.07	81.54	-1463.33
3531	3	9:26:15	26.3230	295.12	81.54	-1463.28
3532	3	9:27:12	26.3390	295.15	81.53	-1463.25
3533	3	9:28:10	26.3550	295.06	81.53	-1463.34
3534	3	9:29: 7	26.3710	294.96	81.53	-1463.44

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3535	3	9:30: 5	26.3870	294.95	81.53	-1463.45
3536	3	9:31: 3	26.4030	294.93	81.53	-1463.47
3537	3	9:32: 0	26.4190	294.91	81.53	-1463.49
3538	3	9:32:58	26.4350	294.87	81.52	-1463.53
3539	3	9:33:55	26.4510	294.93	81.52	-1463.47
3540	3	9:34:53	26.4670	294.96	81.52	-1463.44
3541	3	9:35:51	26.4830	295.01	81.52	-1463.39
		Leaving 500 feet.				
3542	3	9:36:48	26.4990	295.01	81.52	-1463.39
3543	3	9:37:46	26.5150	290.75	81.52	-1467.65
3544	3	9:38:43	26.5310	276.21	81.43	-1482.19
3545	3	9:39:41	26.5470	254.36	81.11	-1504.04
3546	3	9:40:39	26.5630	231.35	81.09	-1527.05
3547	3	9:41:36	26.5790	208.49	80.85	-1549.91
3548	3	9:42:34	26.5950	185.13	80.64	-1573.27
3549	3	9:43:31	26.6110	165.01	80.19	-1593.39
3550	3	9:44:29	26.6270	151.09	79.71	-1607.31
3551	3	9:45:27	26.6430	134.57	79.44	-1623.83
3552	3	9:46:24	26.6590	115.98	79.23	-1642.42
3553	3	9:47:22	26.6750	97.59	78.78	-1660.81
3554	3	9:48:19	26.6910	84.02	76.55	-1674.38
3555	3	9:49:17	26.7070	76.93	72.42	-1681.47
3556	3	9:50:15	26.7230	76.72	70.95	-1681.68
3557	3	9:51:12	26.7390	77.54	71.10	-1680.86
3558	3	9:52:10	26.7550	78.28	71.32	-1680.12
3559	3	9:53: 7	26.7710	78.80	71.52	-1679.60
3560	3	9:54: 5	26.7870	79.11	71.71	-1679.29
3561	3	9:55: 3	26.8030	79.30	71.89	-1679.10
3562	3	9:56: 0	26.8190	79.41	72.06	-1678.99
3563	3	9:56:58	26.8350	79.46	72.22	-1678.94
3564	3	9:57:55	26.8510	79.51	72.37	-1678.89
3565	3	9:58:53	26.8670	79.49	72.48	-1678.91
		Bleed off lubricator.				
3566	3	9:59:51	26.8830	79.51	72.57	-1678.89
3567	3	10: 0:48	26.8990	69.52	72.64	-1688.88
3568	3	10: 1:46	26.9150	43.10	72.64	-1715.30
		Shut down Data Acquisition System and rig down.				
3569	3	10: 2:43	26.9310	13.68	72.61	-1744.72

APPENDIX F - PRESSURE GAUGE CALIBRATION CERTIFICATE

MILTON M. COOKE COMPANY

WELL TESTING SPECIALISTS

2310 McALLISTER • HOUSTON, TEXAS 77092

713/683-0333 TX. WATS: 1-800-392-3861

FAX: 683-0128

FIELD CALIBRATION CHECK: [PRE-TEST]

(GRC EPG-520 - SURFACE READOUT GAUGE)

DATE: 03/15/1994

D.W.T. S/N: 13469

GRC GAUGE S/N: 69491

D.W.P. (PSIG)	GAUGE PRESSURE (PSIA)	DIFFERENCE (+/-PSI)
0.0	14.16	+14.16
550.0	559.71	+ 9.71
1050.0	1059.39	+ 9.39
2050.0	2058.31	+ 8.31

MILTON M. COOKE COMPANY

WELL TESTING SPECIALISTS

2310 McALLISTER • HOUSTON, TEXAS 77092

713/683-0333 TX. WATS: 1-800-392-3861

FAX: 683-0128

FIELD CALIBRATION CHECK: [POST-TEST]

(GRC EPG-520 - SURFACE READOUT GAUGE)

DATE: 03/18/1994

D.W.T. S/N: 13469

GRC GAUGE S/N: 69491

D.W.P. (PSIG)	GAUGE PRESSURE (PSIA)	DIFFERENCE (+/-PSI)
0.0	12.37	+12.37
550.0	570.01	+20.01
1050.0	1058.19	+ 8.19
2050.0	2059.29	+ 9.29

APPENDIX G - REGULATORY CORRESPONDENCE

Interoffice Memo

Hoechst Celanese

Date: March 31, 1994

JMK-079-94

To: Ray H. Horton

From: J. M. Knobeloch

Dept/Location: Maintaince Eng.

Dept/Location: Laboratory

Subject: Analysis of Well Feeds For Mechanical Integrity Testing

cc: W. C. Cornman, N. C. Stafford, R. S. O'Neal, R. E. Bennett, G. E. Organ, E. H. Chiu, J. L. Popejoy, CR 2 Shift Supervisors, C M. Gray, L. P. Molina, G. J. McCarthy

Samples that were collected by Utilities operators of V-509 (Well Feed) were analyzed for specific gravity and viscosity at temperatures of 80 F and 120 F. The analyses below were performed by Clark M. Gray and Luis P. Molina. All viscosities are listed in centipoise (cps) and specific gravities are listed in (g/ml).

		At 80 F		At 120 F	
Sample Date	Time	SpG	Viscosity	SpG	Viscosity
3-11-94	10 PM	0.9986	0.87	0.9905	0.58
3-12-94	---	0.9987	0.91	0.9907	0.60
3-12-94	3 AM	0.9987	0.88	0.9907	0.58
3-13-94	6 AM	0.9988	0.91	0.9908	0.58
3-13-94	2 PM	0.9988	0.88	0.9908	0.58
3-14-94	6 AM	0.9988	0.91	0.9907	0.57
3-14-94	2 PM	0.9987	0.90	0.9906	0.59
3-14-94	10 PM	0.9988	0.91	0.9908	0.58
3-15-94	6 AM	0.9988	0.93	0.9908	0.61
3-15-94	10 AM	0.9986	0.91	0.9906	0.59
3-15-94	2 PM	0.9988	0.93	0.9908	0.59
3-16-94	6 AM	0.9987	0.88	0.9906	0.59
3-16-94	2 PM	0.9981	0.91	0.9887	0.59
3-18-94	8 PM	0.9982	0.92	0.9902	0.59
3-19-94	12 noon	0.9986	0.88	0.9905	0.60
3-20-94	12 noon	0.9985	0.93	0.9903	0.56
3-21-94	4 AM	0.9982	0.93	0.9901	0.61
3-21-94	6 PM	0.9984	0.92	0.9903	0.61
3-22-94	6 AM	0.9984	0.95	0.9903	0.58
3-22-94	12 noon	0.9980	0.88	0.9899	0.58
3-22-94	8 PM	0.9982	0.90	0.9900	0.60
3-23-94	4 AM	0.9983	0.88	0.9903	0.57
3-23-94	12 noon	0.9984	0.85	0.9903	0.59

I would like to acknowledge both Clark M. Gray and Luis P. Molina for their effort in measuring the specific gravities and viscosities of this large number of samples.

If any additional information is required please call me.

John M. Knobeloch

John M. Knobeloch

VISCOSITY of LIQUIDS

This method discribes the measurement of the viscosity of a liquid using a Cannon-Fenske viscometer. This method is applicable over a broad range of temperatures. For a in depth discussion of viscosity see (Technique of Organic Chemistry Volume I - Part I "Physical Methods of Organic Chemistry". Third Edition, Interscience Publishers, New York 1959 pages 703-705). In order to find the viscosity you will need to obtain a factor for the apparatus, actual measurements of your sample, and the density of your sample.

1) Set an iso-thermal bath to the temperature at which you wish to measure the viscosity and let it equilibriate.

2) Fill the reservoir of the Cannon-Fenske viscometer half full of nanopure water. Submerse this viscometer until almost all of it is under the water in the iso-thermal bath. Give the viscometer 10-15 minutes to equilibriate.

3) Use a pipet bulb to pull the water into the top bulb of the two smaller bulbs of the viscometer. Remove the bulb and replace with your finger to hold the liquid in place.

4) Release the liquid by removing your finger. Time using a stop watch the time it takes the meniscus to travel starting from when the meniscus touches the line between the two small bulbs to when it touches the line below the lower of the two small bulbs. (Repeat this 3 times and take the average)

5) Look up in a reputable hand book such as the CRC Handbook of Chemistry and Physics the viscosity (in cps) of water at the temperature you are running at. (see attached page)

6) Calculate the factor for the Cannon-Fenske viscometer using the equation below.

Factor= Viscosity of water at Temperature (cps)/ Time (sec)

After you have found a factor for the viscometer you are ready to start testing on your sample.

7) Remove the water from the viscometer and dry.

8) Follow the instructions listed above starting with #2 going through #4 using the same procedure except that you will be using your sample instead of water.

9) Obtain the density (g per ml) of the sample you are running at the same temperature it is tested at.

Viscosity = (Time in sec) X (Factor) X (Density in g per ml)

This equation will give you viscosity in centipoise (cps)

THE VISCOSITY OF WATER 0°C TO 100°C

Contribution from the National Bureau of Standards not subject to copyright.

°C	η(cp)	°C	η(cp)	°C	η(cp)	°C	η(cp)
0	1.787	26	0.8705	52	0.5290	78	0.3638
1	1.728	27	.8513	53	.5204	79	.3592
2	1.671	28	.8327	54	.5121	80	.3547
3	1.618	29	.8148	55	.5040	81	.3503
4	1.567	30	.7975	56	.4961	82	.3460
5	1.519	31	.7808	57	.4884	83	.3418
6	1.472	32	.7647	58	.4809	84	.3377
7	1.428	33	.7491	59	.4736	85	.3337
8	1.386	34	.7340	60	.4665	86	.3297
9	1.346	35	.7194	61	.4596	87	.3259
10	1.307	36	.7052	62	.4528	88	.3221
11	1.271	37	.6915	63	.4462	89	.3184
12	1.235	38	.6783	64	.4398	90	.3147
13	1.202	39	.6654	65	.4335	91	.3111
14	1.169	40	.6529	66	.4273	92	.3076
15	1.139	41	.6408	67	.4213	93	.3042
16	1.109	42	.6291	68	.4155	94	.3008
17	1.081	43	.6178	69	.4098	95	.2975
18	1.053	44	.6067	70	.4042	96	.2942
19	1.027	45	.5960	71	.3987	97	.2911
20	1.002	46	.5856	72	.3934	98	.2879
21	0.9779	47	.5755	73	.3882	99	.2848
22	.9548	48	.5656	74	.3831	100	.2818
23	.9325	49	.5561	75	.3781		
24	.9111	50	.5468	76	.3732		
25	.8904	51	.5378	77	.3684		

The above table was calculated from the following empirical relationships derived from measurements in viscometers calibrated with water at 20°C (and one atmosphere), modified to agree with the currently accepted value for the viscosity at 20° of 1.002 cp:

$$0^\circ \text{ to } 20^\circ\text{C}: \log_{10} \eta_T = \frac{1301}{998.333 + 8.1855(T-20) + 0.00585(T-20)^2} - 3.30233$$

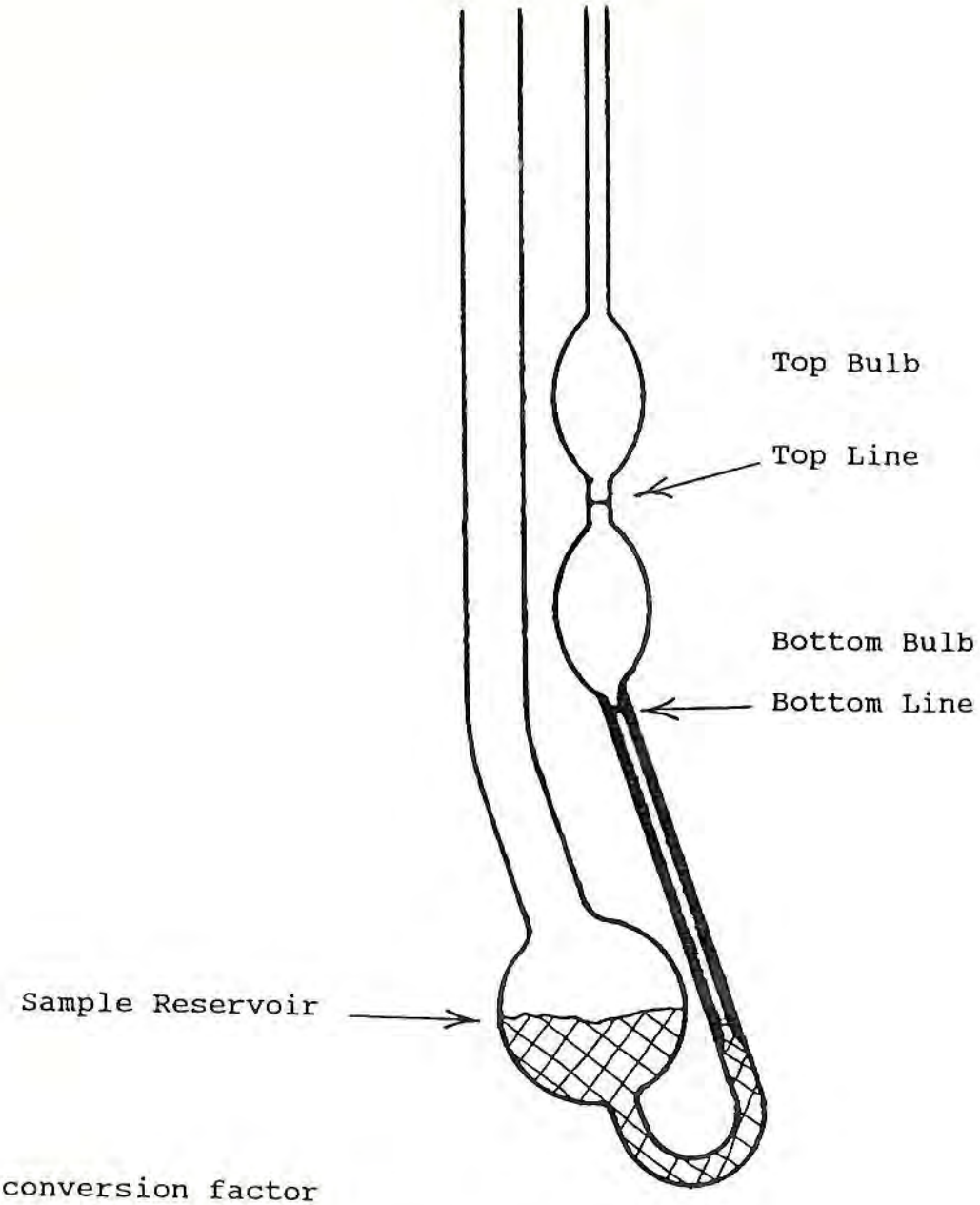
(R. C. Hardy and R. L. Cottington, J.Res.NBS 42, 573 (1949).)

$$20^\circ \text{ to } 100^\circ\text{C}: \log_{10} \frac{\eta_T}{\eta_{20}} = \frac{1.3272(20-T) - 0.001053(T-20)^2}{T + 105}$$

(J. F. Swindells, NBS, unpublished results.)

from 53 Rd Edition 1972-1973 of CRC Handbook of Chemistry & physics

CANNON-FENSKE VISCOMETER



conversion factor

Centipoise = Centistokes X Density

This method was put together March 31, 1994 by Clark M. Gray and John M. Knobeloch.

ECO Solutions, Inc.

HOECHST CELANESE CHEMICAL GROUP, INC.
Bay City Plant

PRESSURE FALLOFF AND MECHANICAL INTEGRITY TESTING FOR WDW-110 (Well #1-A)

Prepared by:

ECO Solutions, Inc.
10333 Richmond, Suite 250
Houston, Texas 77042

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April 1994

Job No. 94-004

Hoechst Celanese

Chemical Group
Hoechst Celanese Corporation
Bay City Plant
PO Box 509
Highway 3057
Bay City, TX 77404-0509

April 27, 1994
IOC-038-94

CERTIFIED MAIL

Mr. Ben K. Knape - Head
UIC Team
UIC, Uranium and Radioactive Waste Section
Industrial and Hazardous Waste Division
Texas Natural Resource Conservation Commission
P. O. Box 13087
1700 North Congress Avenue
Austin, Texas 78711-3087

Subject: **PRESSURE FALLOFF MECHANICAL INTEGRITY TESTING (MIT) REPORT FOR WDW-110**

Dear Mr. Knape:

Enclosed are two copies of the Pressure Falloff and MIT report for WDW-110 which are provided for your review and approval. As you are aware, the testing occurred between February 21st and March 28th, 1994 and was performed by our Contractor, ECO Solutions, Inc., Houston, Texas.

Please don't hesitate to contact me at 409/241-4197 if you have comments and/or questions concerning the report.

Very truly yours,

I. O. Coleman, Jr./cjs

I. O. Coleman, Jr.
Environmental Section Leader

IOC/cjs
attachment

cc: Mr. Laurence G. Walker, Geologist
UIC Team
Industrial and Hazardous Waste Division
Texas Natural Resource Conservation Commission
P. O. Box 13087
Austin, Texas 78711-3087

Mr. Phil Dellinger - **CERTIFIED MAIL** - w/report
Underground Injection Control Program
Environmental Protection Agency
1445 Ross Avenue, Suite #1200
Dallas, Texas 75202-2733

MAY - 3 1994

Hoechst

ECO Solutions, Inc.

HOECHST CELANESE CHEMICAL GROUP, INC.
Bay City Plant

PRESSURE FALLOFF AND MECHANICAL INTEGRITY TESTING FOR WDW-110 (Well #1-A)

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6 W-SU

Prepared by:

ECO Solutions, Inc.
10333 Richmond, Suite 250
Houston, Texas 77042

April 1994

Job No. 94-004

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MAY - 3
6 W-SU

1.0 INTRODUCTION

1.1 INTRODUCTION

Hoechst Celanese Chemical Group, Inc. (HCCG) contracted ECO Solutions, Inc. (ECO) to conduct the annual mechanical integrity testing on WDW-110 (Well #1-A), HCCG's Class I injection well located at the Bay City facility. A schematic of the well is included as Figure 1. The attached report details the data and test results associated with that testing.

The following provides an overview of the key elements of the testing:

* An annulus pressure test was conducted to satisfy the annual mechanical integrity test requirements of the Texas Natural Resource Conservation Commission (TNRCC).

* A radioactive tracer survey was conducted to satisfy the annual requirements of the TNRCC.

* Pressure fall-off testing was conducted to satisfy the annual requirements of the U.S. Environmental Protection Agency (EPA) and the TNRCC.

The annulus pressure test was conducted on Monday, February 21, 1994 and the radioactive tracer was conducted on March 25, 1994. The testing was supervised by Mr. Robert Hall of ECO Solutions and witnessed by Mr. Larry Walker of the TNRCC and Mr. Ray Horton of HCCG.

1.2 EXECUTIVE SUMMARY

WDW-110 successfully passed the 1994 annual mechanical integrity test conducted on March 28, 1994. Mr. Larry Walker of the TNRCC gave verbal approval to place the well back in service after completion of the test.

Radioactive Tracer Survey

The analysis of the radioactive tracer survey (RAT) performed on March 25, 1994 demonstrated that no upward fluid movement from the injection interval is occurring. The RAT checked for

upward fluid movement using three separate tests. All three showed no evidence of upward migration. This interpretation was supported by an independent evaluation performed by Western Atlas and included in Appendix A of this report.

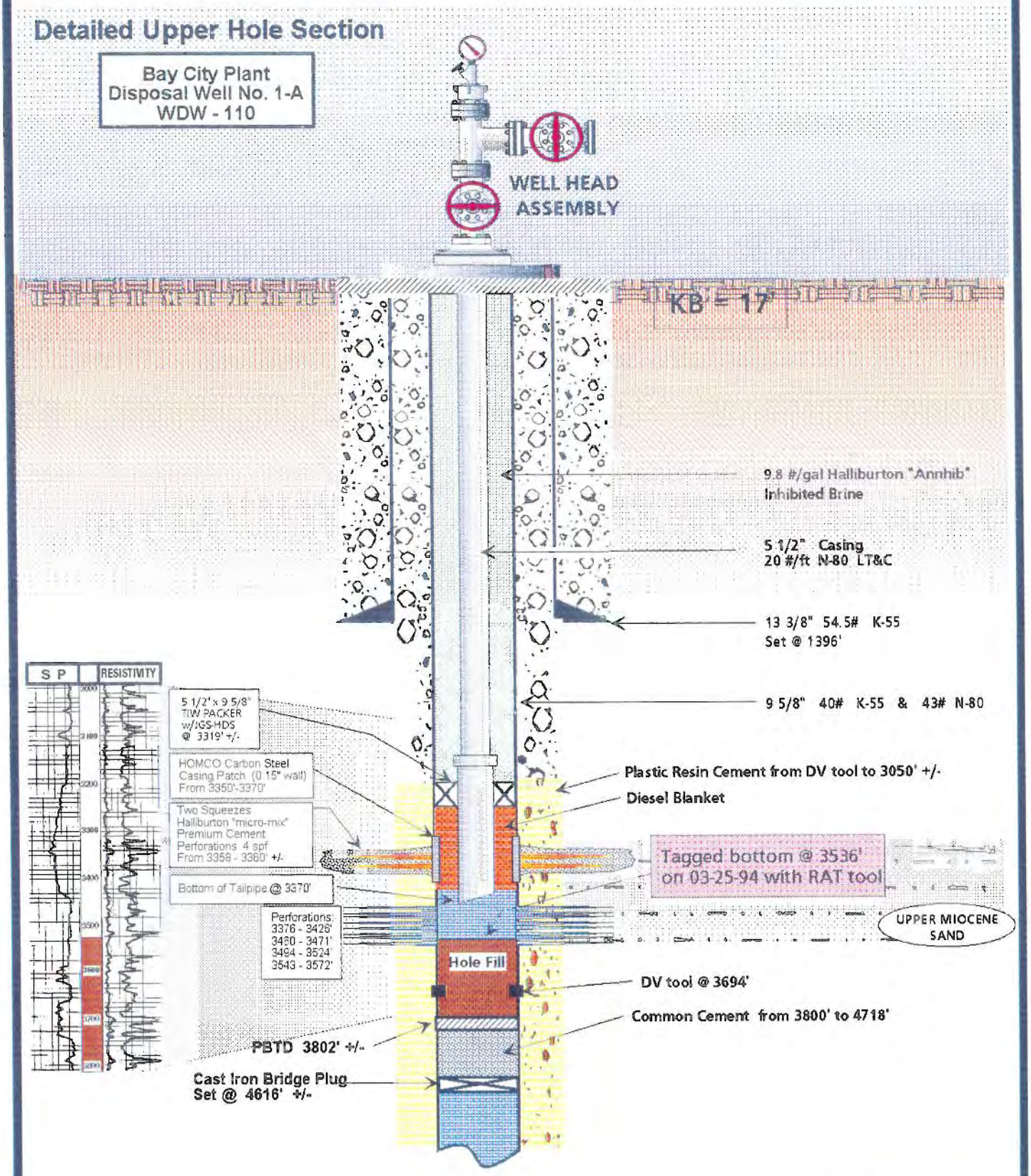
Annulus Pressure Test

A demonstration of a leak-free annulus was supported by an annulus pressure test (APT). The annulus was pressurized to 1092 psig on February 21, 1994 for a thirty minute test. At the end of the thirty minute test the annulus pressure had decreased to 1082 psig. The total pressure loss of 10 psi is within the 5% pressure loss criteria set by the TNRCC. Annulus pressure test plots and data are included in Appendix B.

HOECHST CELANESE CHEMICAL GROUP, INC.

Detailed Upper Hole Section

Bay City Plant
Disposal Well No. 1-A
WDW - 110



ECO Solutions, Inc.

110-1AU / BHS / 04-07-94

Hoechst Celanese Chemical Group, Inc. - WDW-110 (Well #1-A)

EVENT TIMELINE

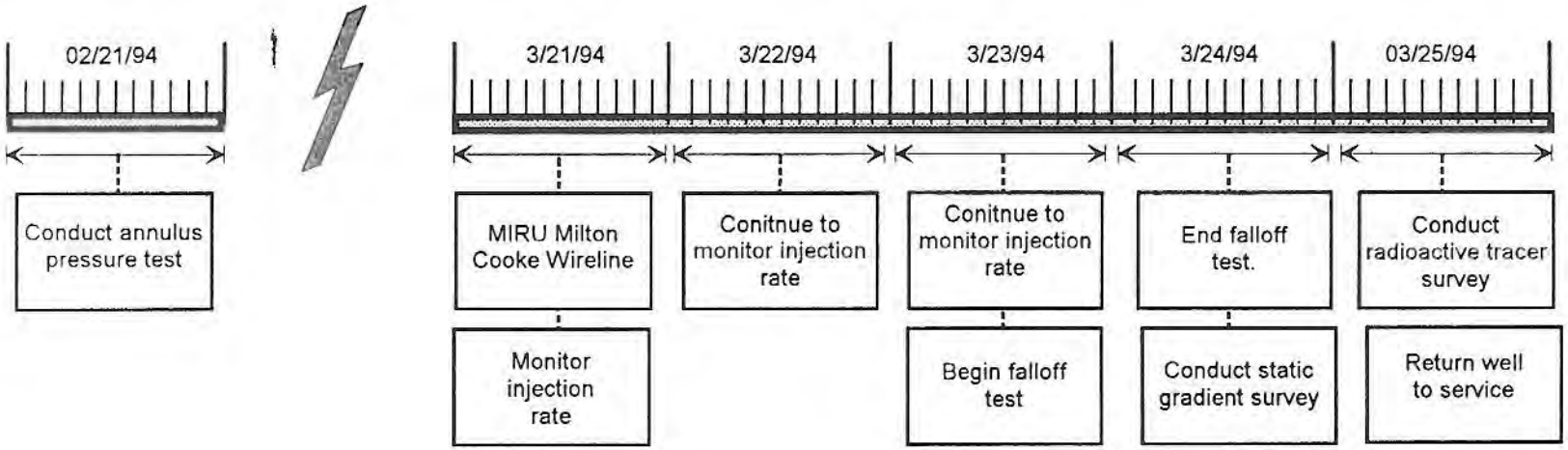


TABLE OF EVENTS

2/21/94	3/21/94	3/22/94	3/23/94	3/24/94	3/25/94
Conducted annulus pressure test. Witnessed by Mr. Larry Walker of the TNRCC.	Move in and rigged up Milton Cooke Wireline. Ran in hole with gauge. Monitored injection rate.	Continued to monitor injection rate.	Continued to monitor the injection rate. Began fall-off testing.	Ended fall-off test. Conducted static gradient survey.	Conducted radioactive tracer survey. Returned well to service.

ECO Solutions, Inc.
Houston, Texas

W#1-A-TL.DRW / 4-18-94 / i# 94004

2.0 FIELD OPERATIONS SUMMARY

Monday, February 21, 1994

HCCG personnel pressurized the annulus to 1092 psig for the thirty minute test. The corresponding shut-in tubing pressure was 70 psig at the beginning of the thirty minute test. At the end of the test the annulus pressure had decreased to 1082 psig with a corresponding shut-in tubing pressure of 70 psig. Pressure test successful. Mr. Larry Walker, TNRCC inspector, on location to witness test.

Monday, March 21, 1994

Milton Cooke Wireline arrived at the Bay City Plant and checked in at the front gate. Moved in and rigged up on WDW-110. Other equipment moved from WDW-49 (Well #4). Met with Ray Horton and reviewed test procedures and current injection condition of all wells.

WDW-14 (Well #2)	Out of service Friday, February 18, 1994
WDW-32 (Well #3)	Out of service Friday, March 11, 1994
WDW-49 (Well #4)	Out of service Thursday, March 17, 1994
WDW-110 (Well #1-A)	Maintaining constant rate since Friday, Marcl. 18, 1994

Begin GRC Data Acquisition System (GRC EPG-520 gauge, Serial #69491). Pressured up lubricator with surface readout and memory gauge back-up tool string. Adjusted wireline counter, prepared to go in hole.

Ran in hole with well injecting at 280 gpm, surface injection pressure 315 psig. Ran gauge to 3,430' and began logging with collar locator. Tied into end of tubing at 3,382'. Continued in hole and tagged top of fill at 3,359'. Pulled up hole and set gauge at test depth of 3,300'. Monitored bottom hole injection pressure and temperature.

Injection Rate	280 gpm
Bottom hole injection pressure	1724 psia
Surface injection pressure	314 psi

Tuesday, March 22, 1994

Continued to monitor injection period.

Injection Rate	278 gpm
Bottom hole injection pressure	1731 psia
Surface injection pressure	320 psi

Generated Cartesian curve to evaluate pressure stability. Cartesian plot indicated a slight pressure deviation. Discussed the possible cause with Ray Horton and the night operators. The heat exchanger is not in service, pressure deviation possibly caused by temperature sensitivity. Put heat exchanger back in service.

Checked motor valve controller to verify operation. Motor valve and rate meter were responsive. Continued to monitor injection period.

Injection Rate	280 gpm
Bottom hole injection pressure	1736 psia
Surface injection pressure	316 psi

Flow rate fluctuating from approximately 286 gpm to 280 gpm. Investigated possible causes. Shut-in boiler feed water system on the well (boiler feed water used to maintain proper differential on casing).

Wednesday, March 23, 1994

Continued to monitor injection period.

Injection Rate	280 gpm
Bottom hole injection pressure	1735 psia
Surface injection pressure	320 psi

Generated Cartesian curve to evaluate pressure stability. Cartesian plot still indicated slight pressure deviation. Discussed possible causes with Ray Horton and operators. Decreased injection rate to 160 gpm for 25 minutes and increased injection rate back up to 280 gpm. Continued to monitor injection period.

Injection Rate	280 gpm
Bottom hole injection pressure	1724 psia
Surface injection pressure	314 psi

Flow rate and bottom hole pressure stabilized, prepared for fall-off test.

Shut down injection pump at Control Room 2. Began fall-off test.

Injection Rate	279 gpm
Bottom hole injection pressure	1753 psia
Surface injection pressure	320 psi

Continued to monitor fall-off period.

Bottom hole shut-in pressure	1577 psia
Surface shut-in pressure	83 psi

Thursday, March 24, 1994

Continued to monitor fall-off period.

Bottom hole shut-in pressure	1513 psia
Surface shut-in pressure	78 psig

Generated Semi-Log and Log-Log curves for observation. Pressure derivative curve and semi-log indicated radial flow period had been obtained. Prepared to end fall-off test. Monitored fall-off test for five more hours, ended fall-off test.

Bottom hole shut-in pressure	1513 psia
Surface shut-in pressure	78 psig

Dropped tool downhole to tag bottom. Began pulling out of hole, making static gradient stops. Completed static gradient survey. Bled down lubricator and rigged down Milton Cooke Wireline.

Friday, March 25, 1994

Western Atlas personnel attended the plant orientation at the front gate and then the unit specific orientation at the well. Western Atlas Wireline was rigged up to run Radioactive Tracer (RAT) survey.

Reviewed log with Mr. Larry Walker of TNRCC, verbal approval given to place well back in service. Pulled out of the hole and rigged down Western Atlas.

3.0 PRESSURE FALL-OFF

3.1 PRESSURE FALL-OFF TESTING

Pressure fall-off testing commenced on March 21, 1994 and concluded on March 24, 1994. The flowing bottomhole pressure was monitored for a total of 52 hours followed by a 21 hour shut-in period. The period of last shut-in was March 11 - 18, 1994. Flow data is shown in Table 3.3 and a graphic presentation of injection versus days for this 5 day period is included as Figure 2. Plots and data for the fall-off test are included in Appendices A and B, respectively.

Date	Injection Rate (gpm)
3/19/94	268
3/20/94	277
3/21/94	279
3/22/94	281
3/23/94	185

3.2 PRESSURE FALL-OFF ANALYSIS

The following analysis was performed by utilizing both Semi-Log and Log-Log analysis. A) The Semi-Log curve was generated by plotting Pressure vs. the Superposition time function utilizing the given rate history. The semi-log straight line was then calculated by linear regression through the infinite acting flow period of the fall-off curve. The semi-log slope and P_{1hr} values were obtained from the semi=log straight line and utilized for the final permeability and skin calculations. B) The Log-Log curves were generated by plotting Delta-P/Delta-Q and Pressure derivative vs. the Agarwal equivalent time function. The Log-Log curves were simultaneously positioned over $[T_D/C_D]$ Wellbore Storage Type-curves until a solution match was obtained. Permeability and skin values were calculated from this match and then compared with those obtained from the Semi-Log analysis.

Semi-Log (Superposition) - The straight line area of the semi-log curve was identified by first using the 1-1/2 log cycle rule to estimate the end of wellbore storage effects. Secondly, the time of the flat portion from the Pressure Derivative curve was used in determining the area of the semi-log curve in which the straight line was drawn. The semi-log straight line yielded a slope value of 5.3075 psi/cycle and a P_{1hr} of 1520 psi. The pressure difference between P_{1hr} and the

injection pressure followed with the calculated slope would give indications of positive skin damage and high permeability.

Log-Log ([T_D/C_D] Wellbore storage Type-curves) - The high maxim of the derivative curve illustrates wellbore storage and positive skin effects. The flattening portion of the derivative indicating the infinite acting flow period of the curve was observed approximately 0.9 hours following the start time of the fall-off period. The flat portion of the derivative curve was the main factor used to obtain a type curve match yielding similar results to the semi-log analysis. The derivative curve illustrated an upward trend following the radial flow period of the test. This was also observed in the semi-log plot by a slight increase in slope following the semi-log straight line. This anomaly could possibly be due to the contact of the waste front and original formation fluid.

Conclusions - The system was diagnosed as a homogeneous reservoir with a calculated permeability of 1050 (md) and skin damage of +43.1 utilizing an h_{net} value of 165 feet. The flow efficiency of 19.1% suggests that the near wellbore conditions have large affects on the injection volume limitations and that the total pressure drop is primarily due to conditions within a small radius from the well.

The following table is provided to give comparative results with the previous test. The primary variables affecting the calculated results are included.

Date	Rate	h_{net}	Uw	Slope	kh/u	k	S
MM/YY	GPM	ft	cp	psi/cyl	md-ft	md	--
02/93	200	165	0.5560	3.2000	348621	1174.8	+ 29.1
03/94	279	165	0.5914	5.3075	293000	1050.2	+ 43.1

The calculated results indicate a difference in transmissibility, (kh/u) of 15.9% and a difference in skin of 32.5% between the two tests. The increase in skin is most likely caused by the increase in the fill determined in the present completion, which partially covers the bottom set of perforations. Last year the top of fill was tagged at 3,595 feet and this year the top of fill was tagged at 3,559 feet, an increase of 36 feet. The transmissibility and permeability values are fairly consistent between the two tests.

The time to exit the waste front exceeded the start time of the infinite acting flow period, therefore the viscosity of the injection fluid was used for the final analysis.

A homogeneous simulator was utilized to confirm the calculated results mentioned above. The main assumptions were as follows: a single well with infinite acting and radial flow conditions being injected at a constant rate with constant reservoir conditions such as porosity, permeability, and compressibility. Based on this particular reservoir the simulated data matched the actual data with a reasonable degree of accuracy.

The program used for final analysis and well simulation was "PanSystem 2.1", marketed by Edinburgh Petroleum Services.

Table 3.1
Fall-off Test Data - WDW-110 (Well #1-A)

1.	*General Test Information*	
	Date of Test	March 21 - 24, 1994
	Time since stabilized pressure (hrs.)	
	Cumulative injection (gals.)	gallons
	Wellbore radius (ft.)	0.3
	Gross completed interval (ft.)	120'
	Type of completion	Perforated
	Depth to fill	3,558'
	Justified interval thickness (ft.)	165'
	Average historical waste fluid viscosity (cps)	0.556
	Formation fluid viscosity (cps)	0.71
	Porosity (%)	33
	Total compressibility (psi^{-1})	6.0×10^{-6}
	Formation volume factor	1.0
	Initial formation bottomhole pressure (psia)	1501 (1968) @ 3,300'
2.	*Injection Period*	
	Time of injection period (hrs.)	52
	Injection rate (gallons per minute)	278.67
	Test fluid	Non-hazardous wastestream
	Pumps used for test	Byron Jackson - Centrifugal
	Injection fluid viscosity (cps)	0.5914
	Final injection pressure (psia)	1754.13
	Final injection temperature (°F)	99.76

	Gauge type	GRC EPG-520 Serial # 69491
	Gauge resolution and calibration	0.01
	Gauge depth (feet)	3,300'
3.	*Fall-off Period*	
	Total Shut-in Time (hrs.)	21
	Final Shut-in Pressure (psia)	1512.40
	Final Shut-in Temperature °F	103.90
	Final Shut-in Tubing Pressure (psig)	78

Table 3.2 Average Injection Rate
March 11, 1994 - March 23, 1994

DATE	INJECTION RATE (gpm)
3/11/94	0
3/12/94	0
3/13/94	0
3/14/94	0
3/15/94	0
3/16/94	0
3/17/94	0
3/18/94	160
3/19/94	268
3/20/94	277
3/21/94	279
3/22/94	281
3/23/94	185

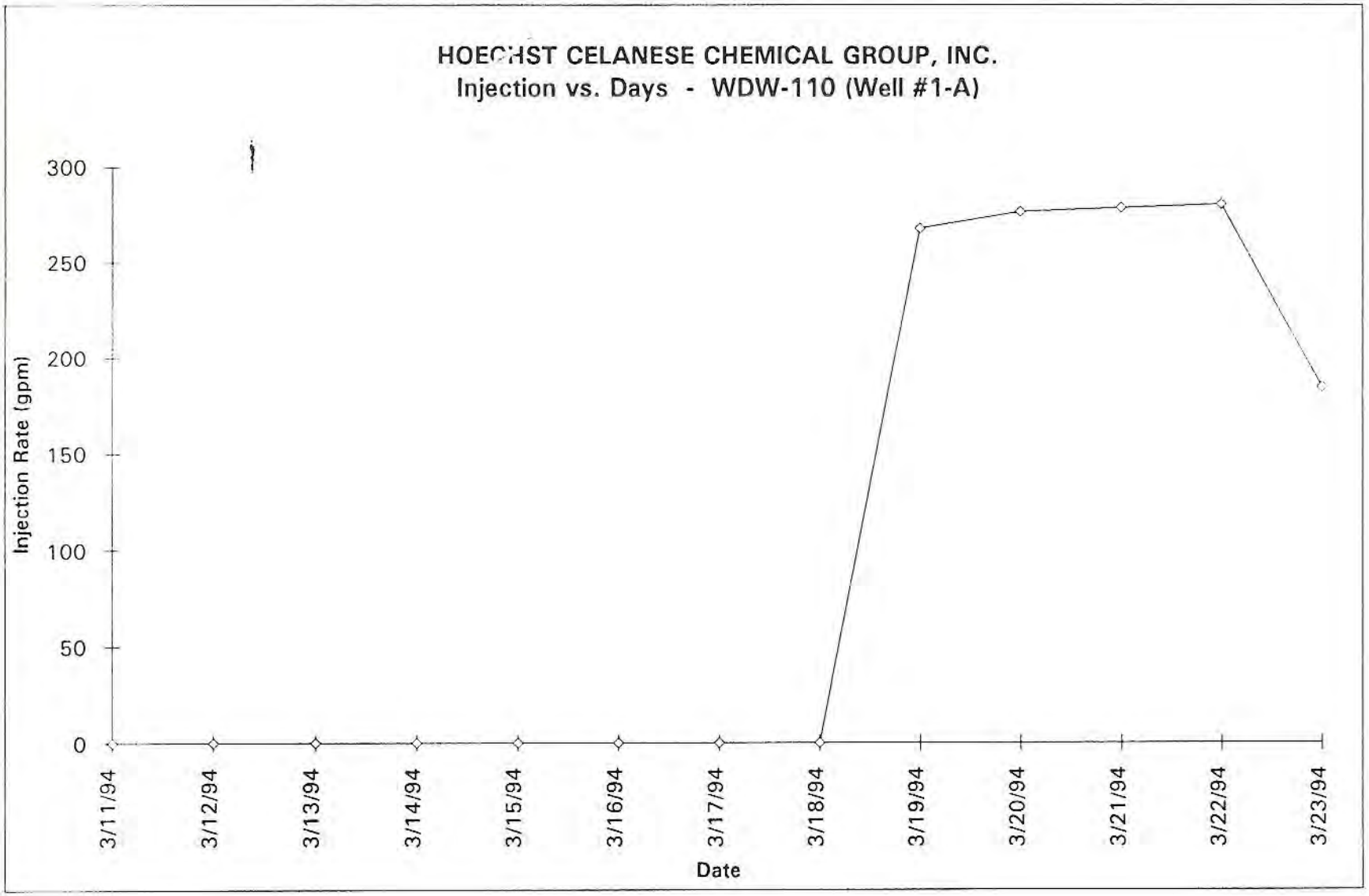
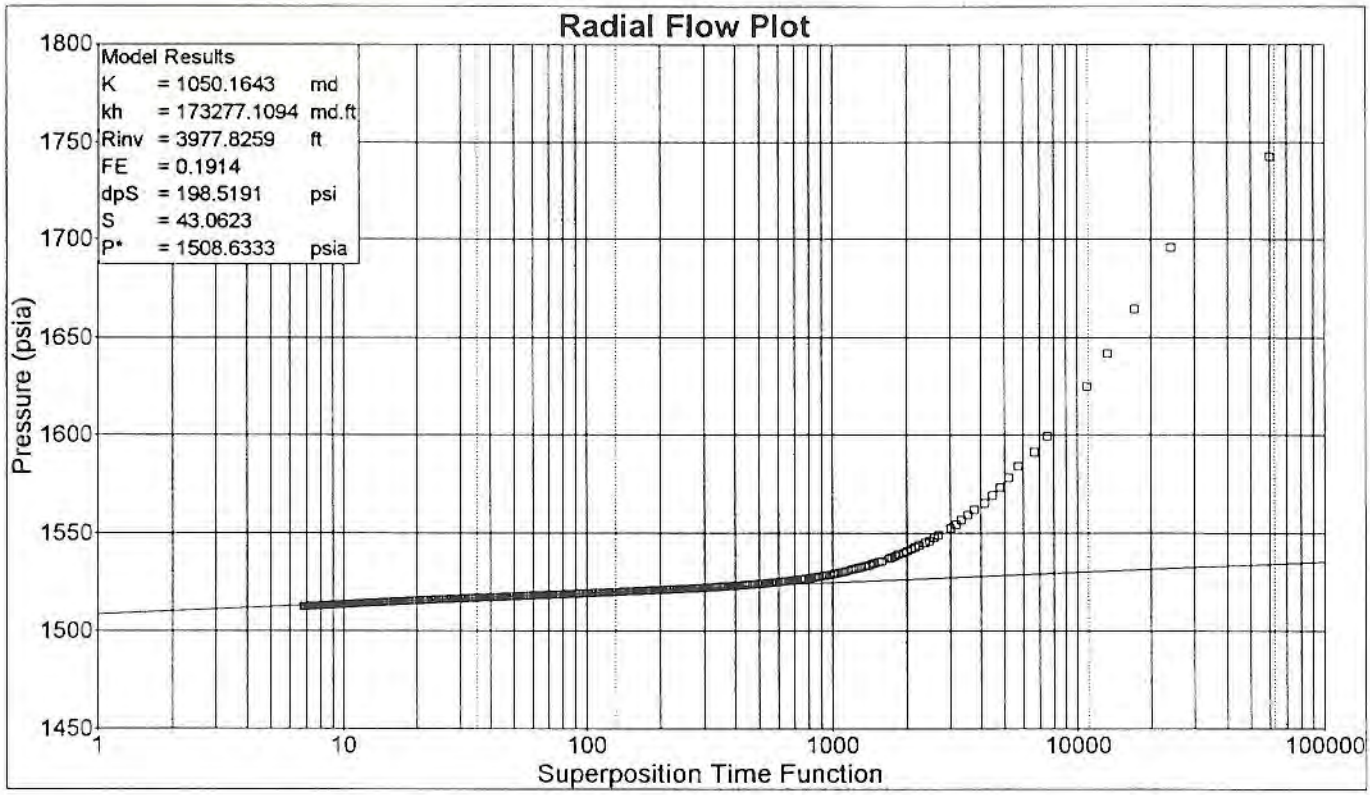


FIGURE 3

ECO SOLUTIONS, INC.

ECO Solutions, Inc.	Report File:	WDW110#1.PAN
MECHANICAL INTEGRITY TEST	Analysis Date:	4/15/94
Fall-Off Test Analysis		



HOECHST CELANESE CHEMICAL GROUP, INC.
WDW-110 Well # 1-A
Bay City Facility, Texas

03/21 - 24/1994

Semi-Log analysis utilizing Superposition Time Function.

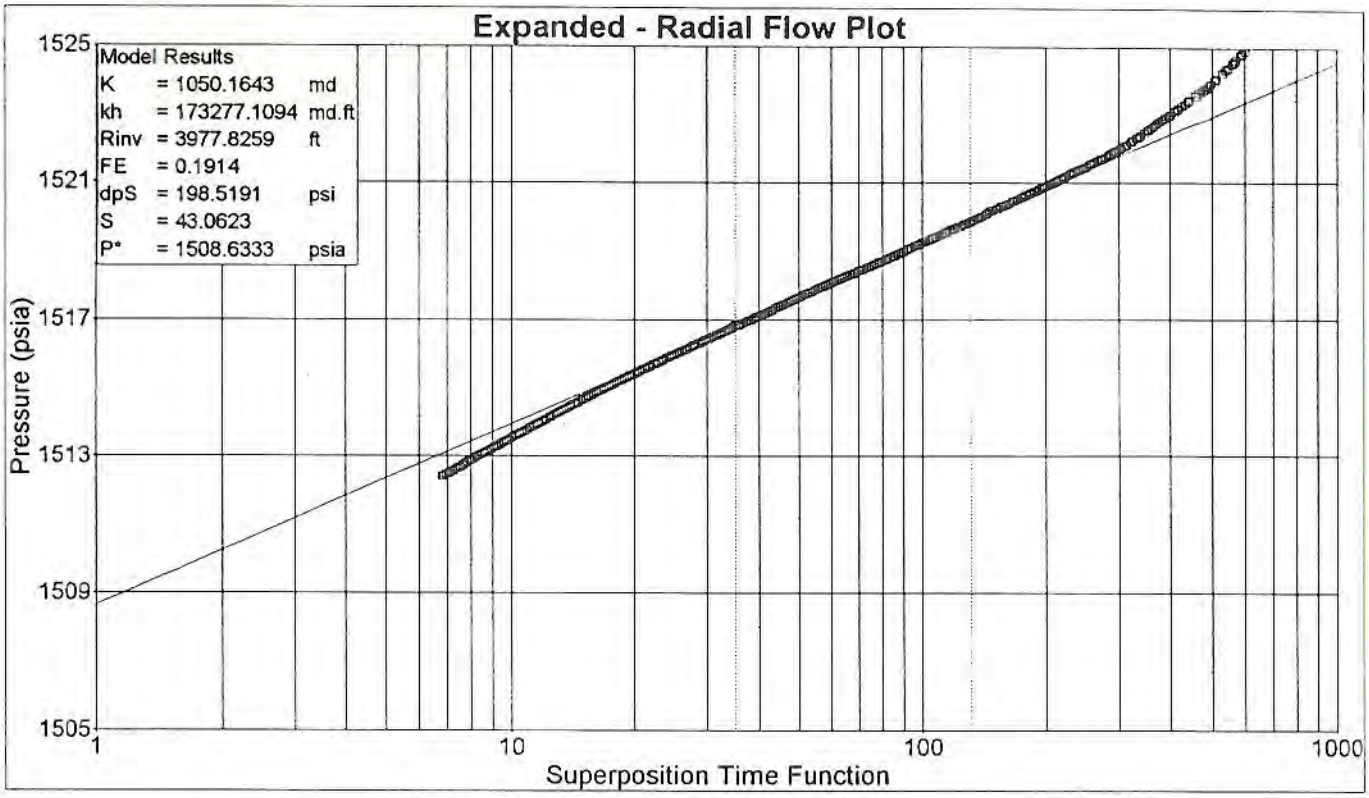
Radial Flow Plot Line details

Line type : Radial flow
Slope : 5.30751
Intercept : 1508.63
Coefficient of Determination : 0.999804

FIGURE 4

PanSystem - Copyright (C) 1993 Edinburgh Petroleum Services Ltd.

ECO Solutions, Inc.		Report File:	WDW110#1.PAN
MECHANICAL INTEGRITY TEST		Analysis Date:	4/15/94
Fall-Off Test Analysis			



HOECHST CELANESE CHEMICAL GROUP, INC.
WDW-110 Well # 1-A
Bay City Facility, Texas

03/21 - 24/1994

Semi-Log analysis utilizing Superposition Time Function.

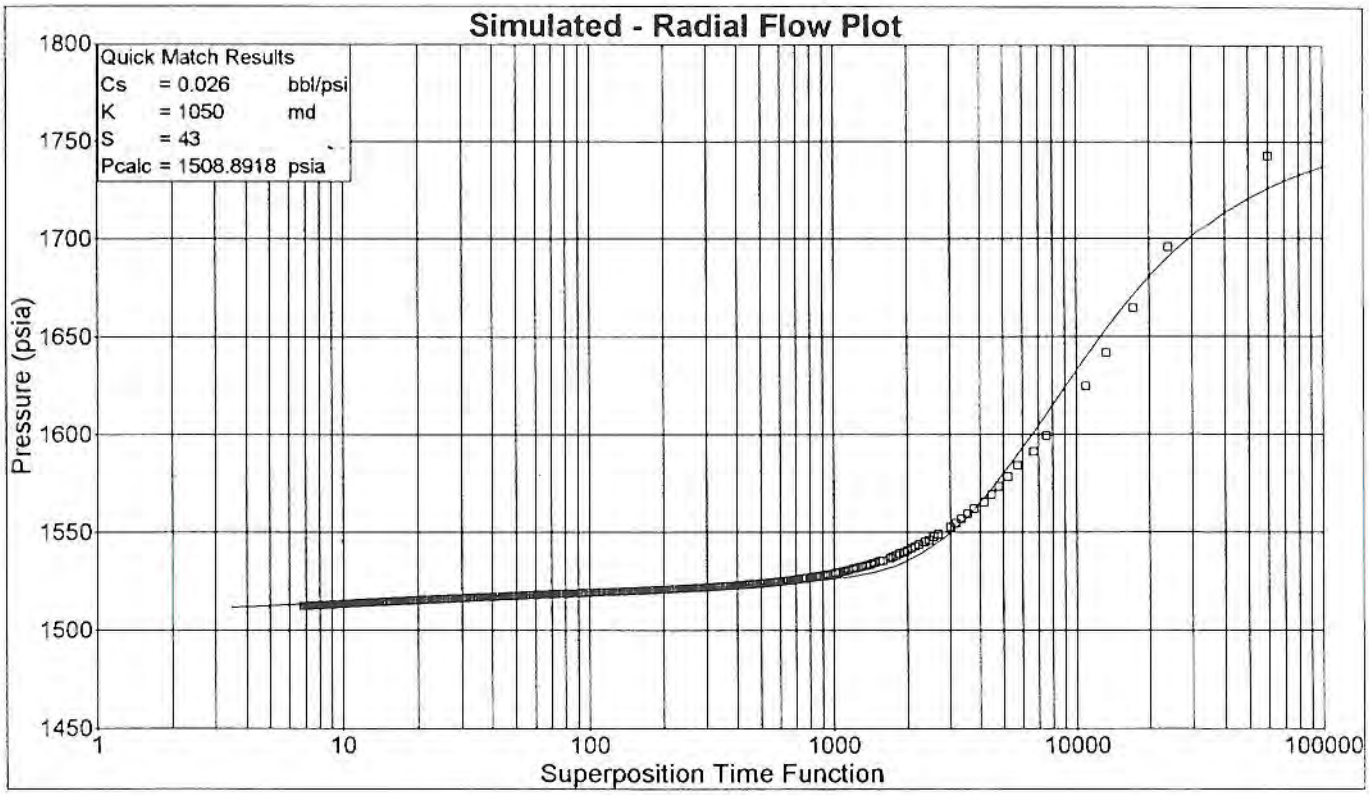
Expanded - Radial Flow Plot Line details

Line type : Radial flow
Slope : 5.30751
Intercept : 1508.63
Coefficient of Determination : 0.999804

FIGURE 5

PanSystem - Copyright (C) 1993 Edinburgh Petroleum Services Ltd.

ECO Solutions, Inc.	Report File:	WDW110#1.PAN
MECHANICAL INTEGRITY TEST	Analysis Date:	4/15/94
Fall-Off Test Analysis		



HOECHST CELANESE CHEMICAL GROUP, INC.
WDW-110 Well # 1-A
Bay City Facility, Texas

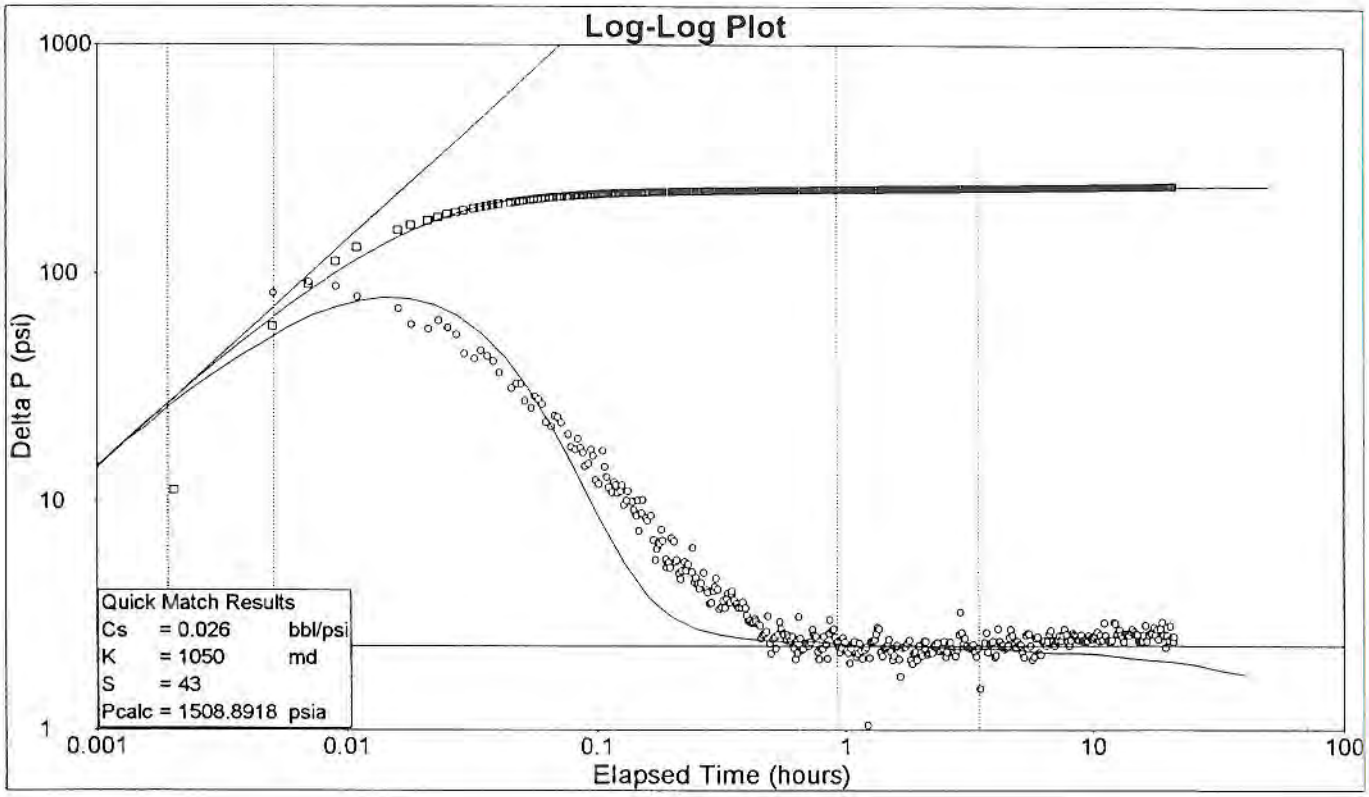
03/21 - 24/1994

Semi-Log analysis utilizing Superposition Time Function.

FIGURE 6

PanSystem - Copyright (C) 1993 Edinburgh Petroleum Services Ltd.

ECO Solutions, Inc.		Report File:	WDW110#1.PAN
MECHANICAL INTEGRITY TEST		Analysis Date:	4/15/94
Fall-Off Test Analysis			



HOECHST CELANESE CHEMICAL GROUP, INC.
WDW-110 Well # 1-A
Bay City Facility, Texas

03/21 - 24/1994

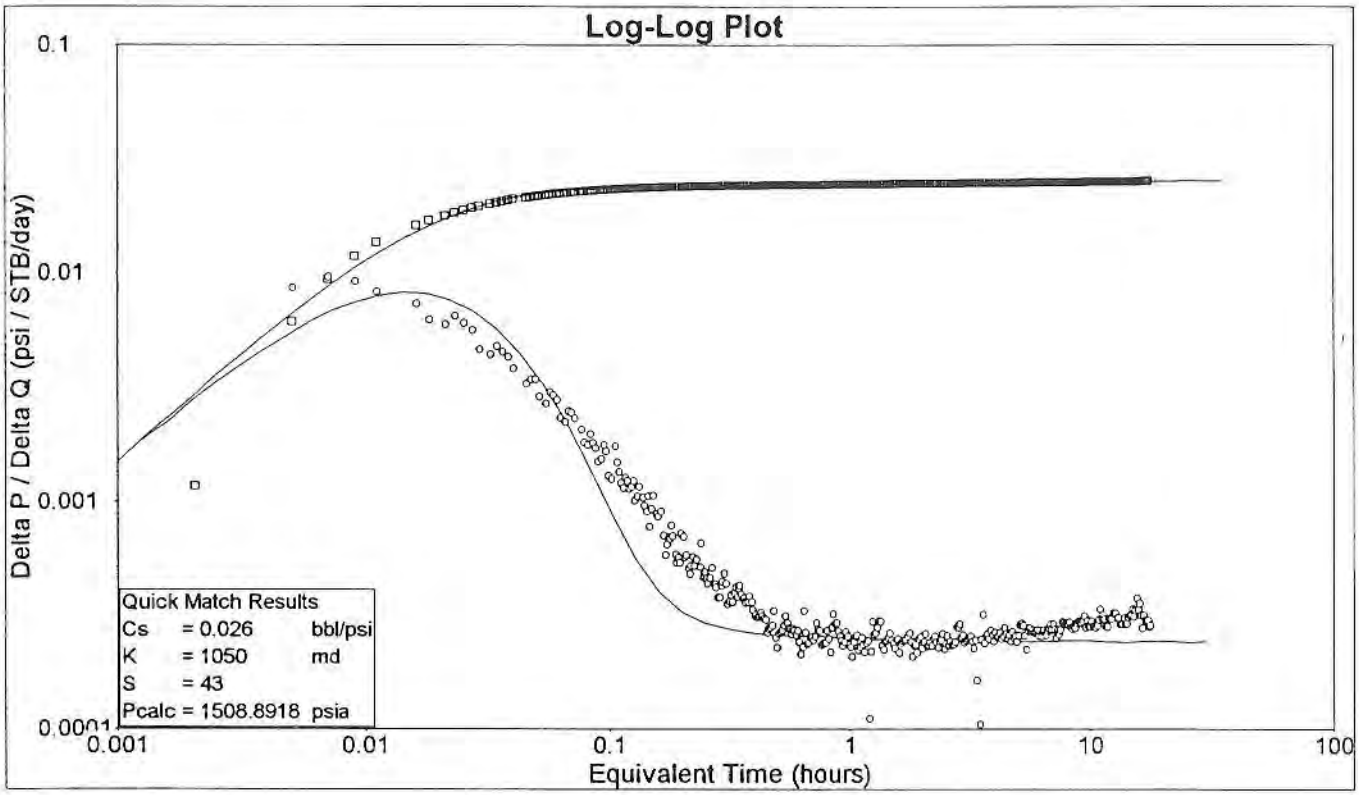
Log-Log plot used to identify flow regimes.

End of unit slop:	Approximately	0.005 hours
Start of infinite acting flow period:	Approximately	0.9 hours
Time to exit waste front:	Approximately	1.6 hours

FIGURE 7

PanSystem - Copyright (C) 1993 Edinburgh Petroleum Services Ltd.

ECO Solutions, Inc.		Report File:	WDW110#1.PAN
MECHANICAL INTEGRITY TEST		Analysis Date:	4/15/94
Fall-Off Test Analysis			



HOECHST CELANESE CHEMICAL GROUP, INC.
WDW-110 Well # 1-A
Bay City Facility, Texas

03/21 - 24/1994

Log-Log analysis utilizing Equivalent time function.

FIGURE 8

PanSystem - Copyright (C) 1993 Edinburgh Petroleum Services Ltd.

4.0 MECHANICAL INTEGRITY TESTING

4.1 ANNULUS PRESSURE TEST

An annulus pressure test (APT) was conducted on Monday, February 21, 1994 in order to demonstrate a leak-free annulus. The APT was witnessed by Mr. Larry Walker of the TNRCC. The annulus was pressured up to 1092 psig with a corresponding shut-in tubing pressure of 70 psig for thirty minutes. At the end of the thirty minute test the annulus pressure decreased to 1082 psig with a corresponding tubing pressure of 70 psig. The 10 psi or 0.9% pressure loss is within the 5% allowable pressure loss criteria set by the TNRCC.

4.2 RADIOACTIVE TRACER SURVEY

On Friday, March 25, 1994 Western Atlas Wireline conducted a radioactive tracer (RAT) survey to insure that all fluids are entering the injection interval. Analysis of the RAT showed no upward fluid movement. Atlas conducted the RAT as follows:

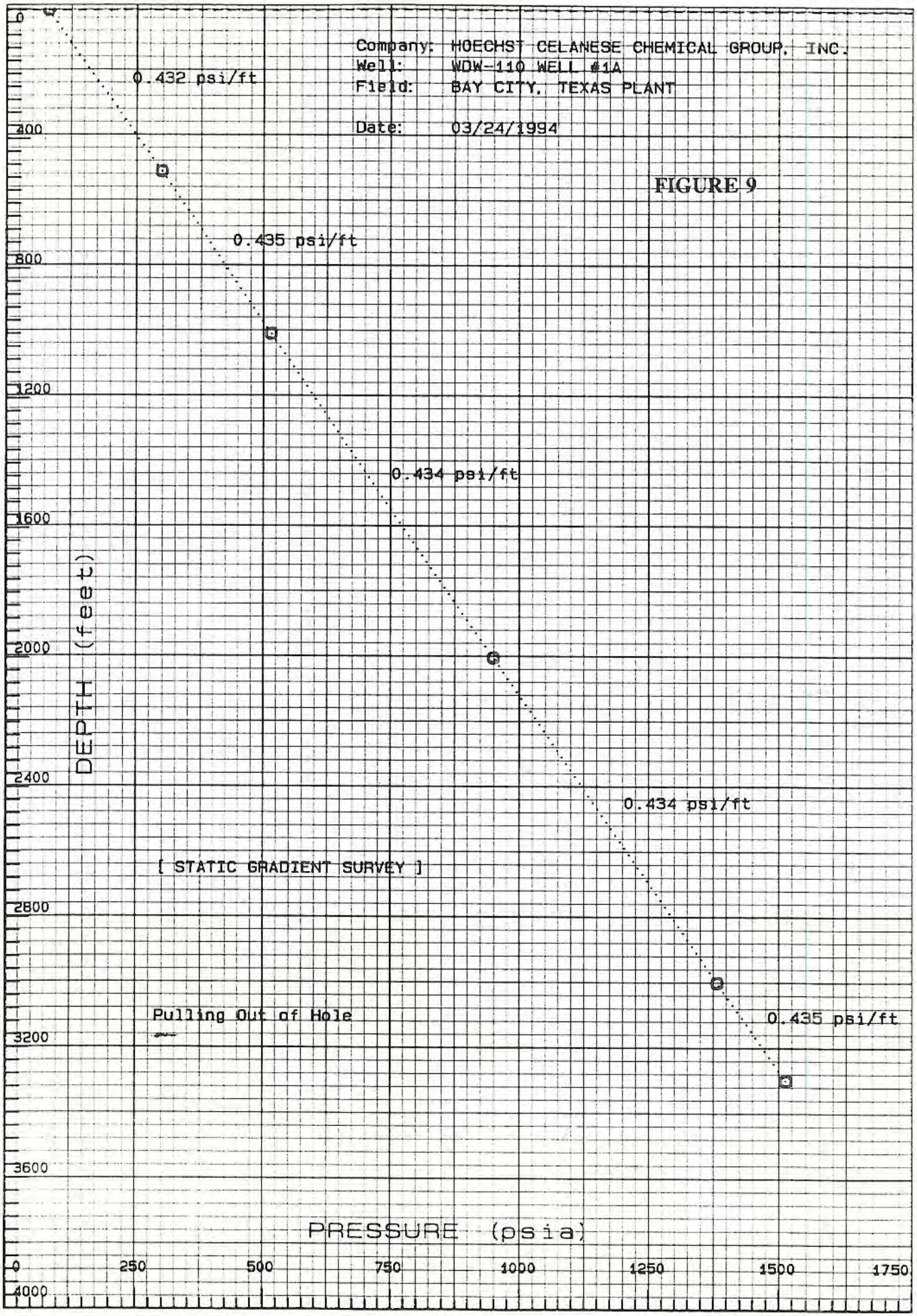
1. Ran API gamma-ray tie in strip.
2. Ran #1 base log from 3,520' to 3,000'.
3. Ran #2 base log from 3,520' to 3,000'.
4. Made multiple pass survey #1 with a radioactive slug ejected at 3,113' and a pump rate of 26 gpm.
5. Made multiple pass survey #2 with a radioactive slug ejected at 3,113' and a pump rate of 26 gpm.
6. Ran stationary survey #1 at 3,360'. Watched slug pass tool and ran check for 15 minutes more. Pump rate was 100 gpm.
7. Ran stationary survey #2 at 3,360'. Watched slug pass tool and ran check for 15 minutes more. Pump rate at 100 gpm.
8. Ran after survey base log from 3,520' to 3,000'.

4.3 STATIC GRADIENT SURVEY

The static gradient survey was run while pulling out of the hole after the pressure fall-off testing. Readings were taken at 3,300' and every 1,000 feet from 3,000' to 1,000' and again at 500'. Table 4.1 shows the depth, pressure and psi/ft for each of the stops and Figure 11 graphically shows the gradient survey. Data for the static gradient survey is included in Appendix F.

Table 4.1 Static Gradient Survey

Depth (feet)	Pressure (psi)	PSI/ft
0	80.60	
500	296.59	0.432
1000	513.93	0.435
2000	948.17	0.434
3000	1381.99	0.434
3300	1512.40	0.435



46 0780
K+E 10 X 10 TO THE INCH • 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.

ECO Solutions, Inc.
Hoechst Celanese Chemical Group, Inc.
Pressure Falloff/MIT Testing

APPENDIX A

RADIOACTIVE TRACER SURVEY AND ATLAS WIRELINE SERVICES INTERPRETATION LETTER

DIAGNOSTIC RADIOACTIVE TRACERLOG

Hoechst Celanese Chemical Group, Inc.
Well No. 1-A
Bay City Plant
Matagorda County, Texas

Prepared for
ECO Solutions, Inc.
Houston, Texas

ATLAS WIRELINE SERVICES
WESTERN ATLAS INTERNATIONAL

March 25, 1994

Prepared by Freeman Hill, III

DISCLAIMER

In making interpretations of logs, our employees will give Customer the benefit of their best judgement, but since all interpretations are opinions based on inferences from electrical or other measurements, we cannot, and we do not guarantee the accuracy or the correctness of any interpretation. We shall not be liable or responsible for any loss, cost, damages, or expenses whatsoever incurred or sustained by the Customer resulting from any interpretation made/by any of our employees.

Disposal Well Background

The Hoechst Celanese Chemical Group, Inc.'s Injection Well No. 1-A, located at the Bay City facility has been used for underground injection. In addition to surface casing string, the well contains a string of 9-5/8 inch OD casing cemented to 5938 ft and 5.5 inch tubing and packer assembly, located at 3319 ft. (PBTD = 3802 ft; Fill = 3536 ft) Perforated interval from 3376 ft. to 3572 ft.

A logging program consisting of a Radioactive Tracer ejector and detector instrument was used to evaluate the integrity of the casing and cement and to verify that the injection interval had accepted the disposed fluids.

Radioactive Tracerlog Survey

1. Logged API gamma ray from well depth of 2981 ft to T.D.

   Purpose: Base-line for radioactive tracer instrument and post survey.

   Analysis: Gamma ray instruments respond to naturally occurring radiation (e.g., potassium, uranium, thorium) found in formations. Normally, shaly formations tend to contain more of these gamma ray-producing elements than a sand formation.

2. Logged gamma ray detectors off Radioactive Tracerlog from well depth of 2998 ft. to T.D. (3536 ft.)

   Purpose: A base-line for radioactive tracer instrument.

   Analysis: Baseline check - good. There were not any anomalies.

3. Repeat Step 2.

   Analysis: No anomalies noted.

4. While injecting into the well at 25 gpm, radioactive material (Iodine -131) was ejected from radioactive tracer instrument at 3113 ft. The instrument was lowered further into the well and then logged in the upward direction in order to intercept and detect the radioactive slug as it moved down the well. By repeating this process of lowering the instrument and logging in the upward direction, the radioactive slug was traced through the casing packer and into the injection interval located below.

   Purpose: Ensure injected fluids move through the tubing in a downward direction and that no upward or out of zone fluid movement through a cement channel is detected.

Analysis: The following table depicts the depths where the detector intercepted the radioactive slug as it moved with the surface-injected fluids downward toward the injection interval.

File #	Interception Depth ft. (Bottom Detector)
4	3182
5	3300
6	3390
7	3404
8	3412
9	---- - Dissipating

The radioactive peak responses from the first pass, file # 4, to file # 9 the last pass, become smaller, but cover a longer vertical interval, due to the movement of the wireline and instrument mixing the radioactive slug with the injected fluids. The radioactive material appears to continually move in the downward direction and into the disposal interval. There is no evidence of any problems.

5. Repeat step 4 (Chase Survey). (Pump Rate = 25 GPM)

Purpose: Ensure injected fluids move through the tubing in a downward direction and that no channel activity (fluid movement) to other zones above the target interval is detected.

Analysis: The following table depicts the depths where the detector intercepted the second radioactive slug (ejected at 4681 ft) as it moved with the injected fluids downward toward the injection interval.

File #	Interception Depth ft. (Bottom Detector)
10	3150
11	3250
12	3376
13	3402
14	3412 - Dissipating
15	---- - Dissipating

Again, the radioactive peak responses on the log become smaller (and wider) during the survey due to the mixing action of the wireline and instrument. The radioactive slug appeared to continuously move down to the disposal area. There is no evidence of any problems.

6. The tool was stationed at 3350 ft, above the disposal interval, for a stationary reading. The radioactive isotope is released and after the initial response to the isotope passing by the detector in a downward motion, then the isotope or an increase in radiation, should not be monitored again. If the isotope is seen again, then communication (channel behind pipe) is highly possible.

   Purpose: Ensure injected fluids move downward and not back up on the outside of casing in a channel, (Pump Rate - 100 GPM) (15-minute test).

   Analysis: After the initial response to the radioactive slug, the isotope did not come back into the tools' vicinity. No channel indicated.

7. Repeat step 6 (Stationary Reading). (Pump Rate - 100 GPM) (15-minute test).

   Purpose: Ensure injected fluids are not channeling up.

   Analysis: After the initial response to the radioactive slug, the isotope did not come back in the tools' vicinity. No channel indicated.

8. Logged gamma detectors from well depth 2946 ft. to T.D.

   Purpose: Monitor any anomalies or change in background baseline.

   Analysis: No unexplainable anomalies found.

9. Logged gamma detectors from well depth 2985 ft. to T.D. Repeat Step 8.

   Purpose: Monitor any anomalies.

   Analysis: No unexplainable anomalies found.

Conclusion:

In my opinion, the Hoecsht Celanese Well No. 1-A, located in the Bay City Plant, does not have any integrity problems that would result in disposed fluids migrating to intervals other than the injection zone. The logging program consisting of a radioactive tracer ejector and detector instrument should satisfy the annual mechanical integrity requirement.

Western Atlas International

ATLAS WIRELINE SERVICES

NUCLEAR TRACER LOG

FILE NO.

API NO.

FINAL PRINT

COMPANY HOECHST CELANESE CORP.

WELL DISPOSAL WELL NO. 1-A

FIELD BAY CITY

COUNTY MATAGORDA STATE TX.

LOCATION:
BAY CITY PLANT

SEC N/A TWP N/A RGE N/A

OTHER SERVICES
NONE

PERMANENT DATUM GL ELEV. N/A
LOGGING MEASURED FROM RKB 17.0 FT. ABOVE P.D.
DRILLING MEASURED FROM RKB

ELEVATIONS
KB N/A
DF N/A
GL N/A

DATE	3-25-94	
RUN	1	
SERVICE ORDER	123486	
DEPTH-DRILLER	3800	
DEPTH-LOGGER	3536	
BOTTOM LOGGED INTERVAL	3536	
TOP LOGGED INTERVAL	3000	
TYPE FLUID IN HOLE	BRINE	
SALINITY PPM CL.	N/A	
DENSITY LB/GAL.	N/A	
LEVEL	FULL	
MAX. REC. TEMP. DEG. F	142 F	
OPR. RIG TIME	CRANE	
EQUIP. NO. / LOC.	6411 HOUSTON	
RECORDED BY	T. FERGUSON	
WITNESSED BY	MR. BOB HALL	

BOREHOLE RECORD

NO.	BIT	FROM	TO

FOLD HERE

IN MAKING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL GIVE CUSTOMER THE BENEFIT OF THEIR BEST JUDGEMENT, BUT SINCE ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS, WE CANNOT, AND WE DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION. WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COST, DAMAGES, OR EXPENSES WHATSOEVER INCURRED OR SUSTAINED BY THE CUSTOMER RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

CASING RECORD

SIZE	WGT	FROM	TO
13 5/8	N/A	0	1398
9 5/8	40&43	0	5938

REMARKS RUN (1)

CHASE DOWNS PUMP-IN RATE WAS 25 GPM.
STATIONARY'S WERE TAKEN WITH A PUMP-IN RATE OF 100 GPM.

NO CHANNELING SEEN IN THIS SURVEY.

BACKGROUND AFTER LOG

****

FILE: 20

CURVE DELAY REPORT

CURVE	PHYS. DELAY	UNITS
TDET	6,6	FT,IN
BDET	0	FT,IN
CCL	16,6	FT,IN

PARAMETERS

*** NONE ***

DISPLAY SCALE CHANGES

*** NONE ***

COMPANY: HOECHST CELANESE CORP.

WELL NAME: WELL 1-A

SERVICE: F 150A FILE: 20 DATE: 03/25/94

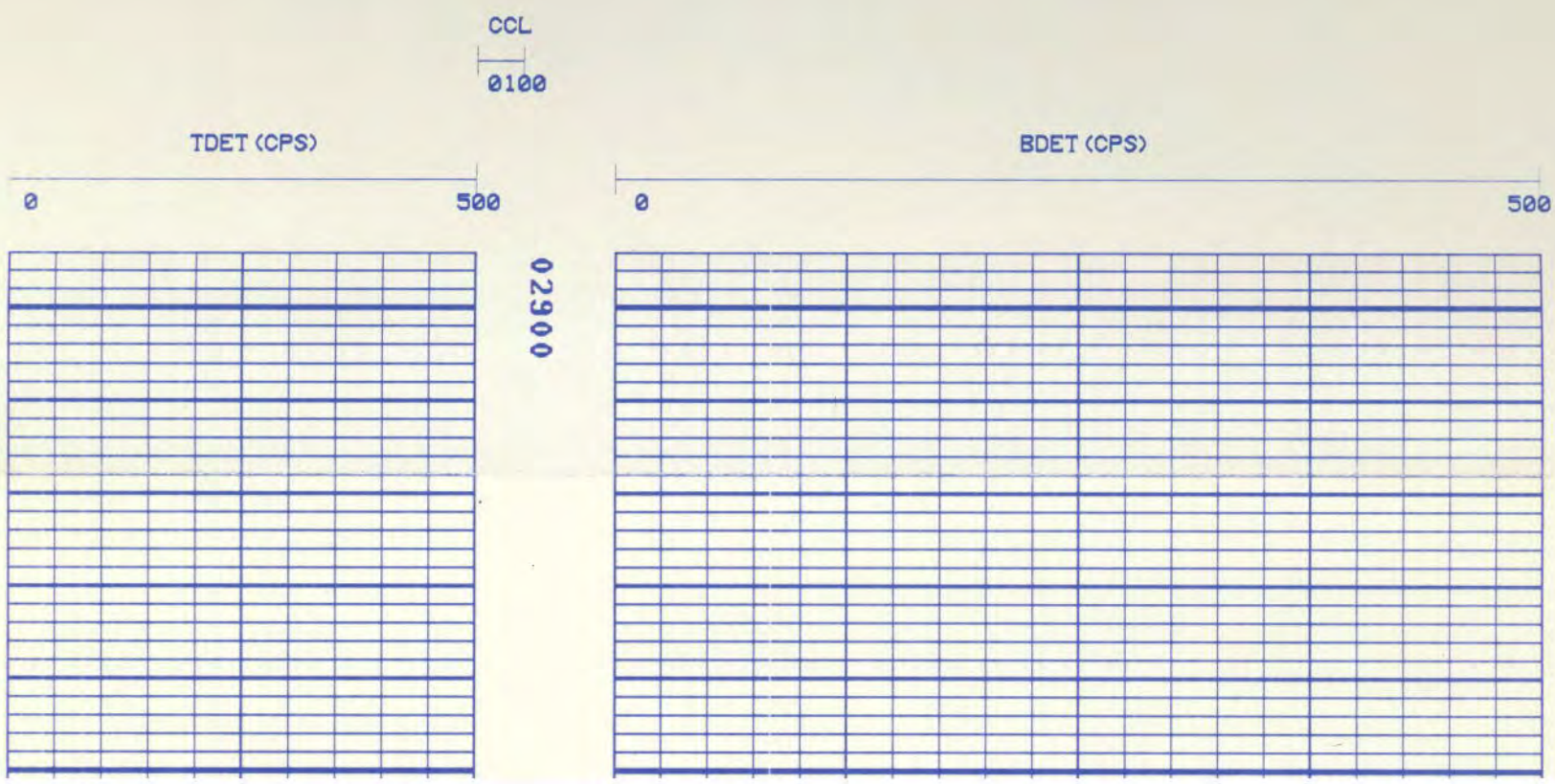
REVISION: FSYS256 REV:G002 VER:2.0

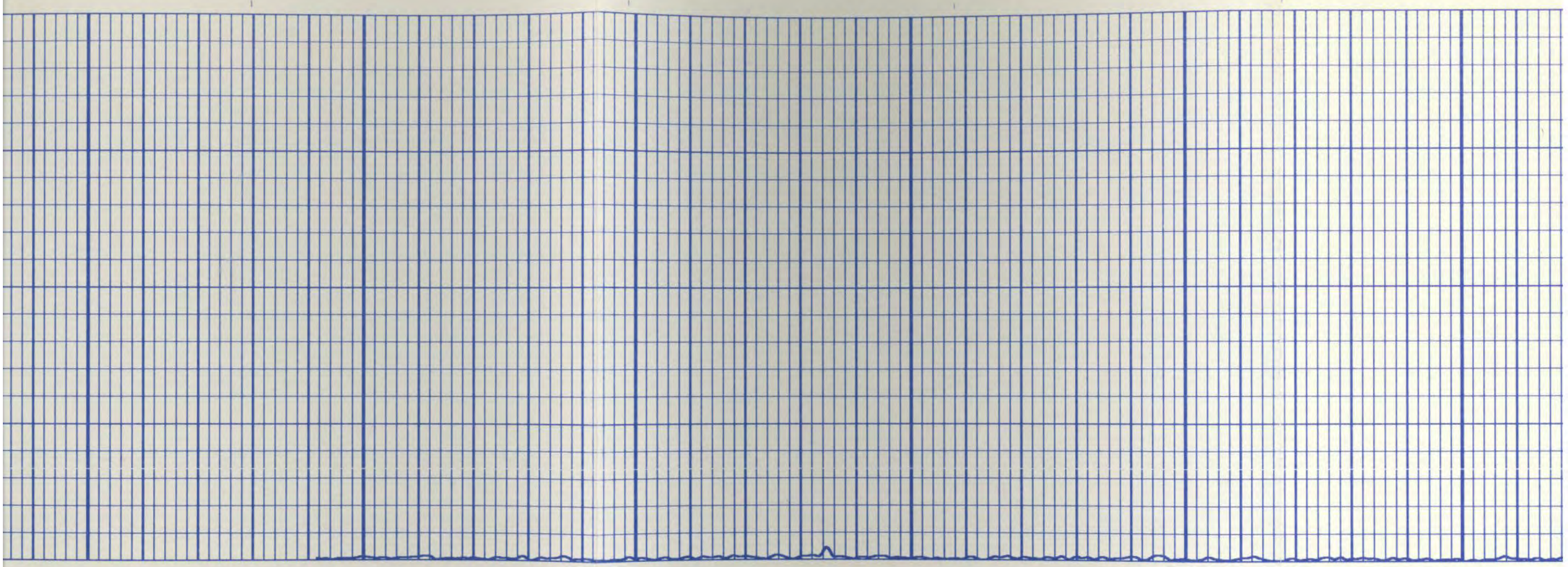
RUN: 1

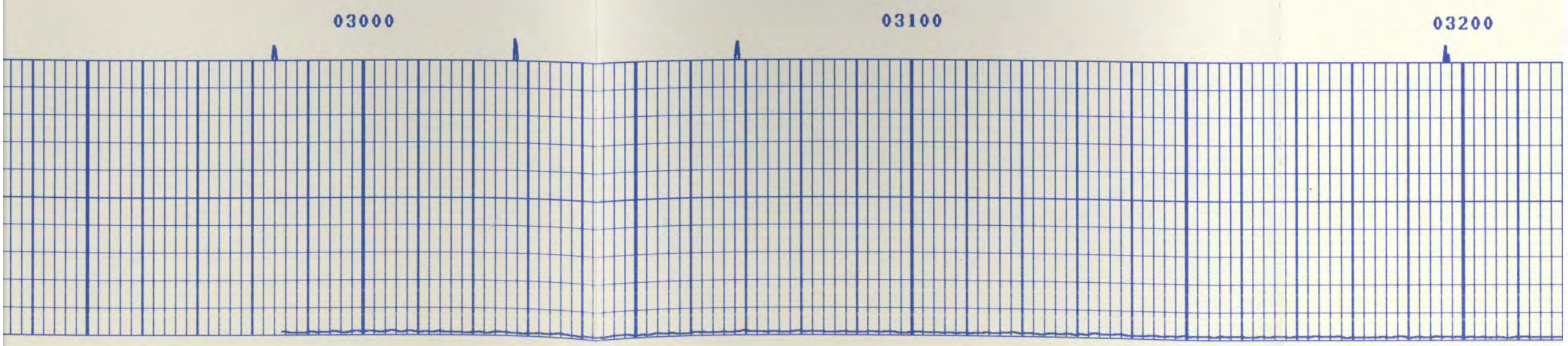
TRIP: 1

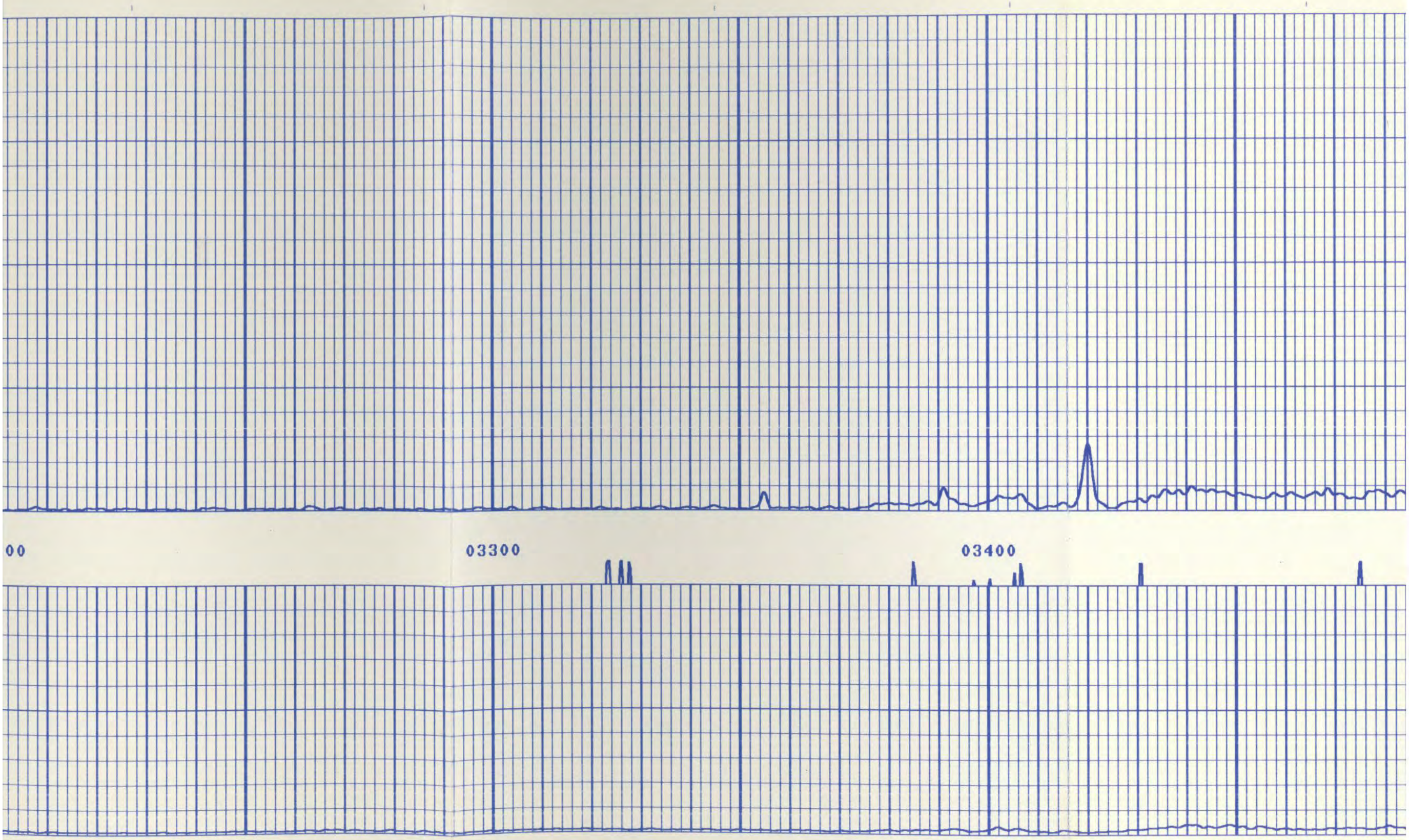
TIME: 13:35:48

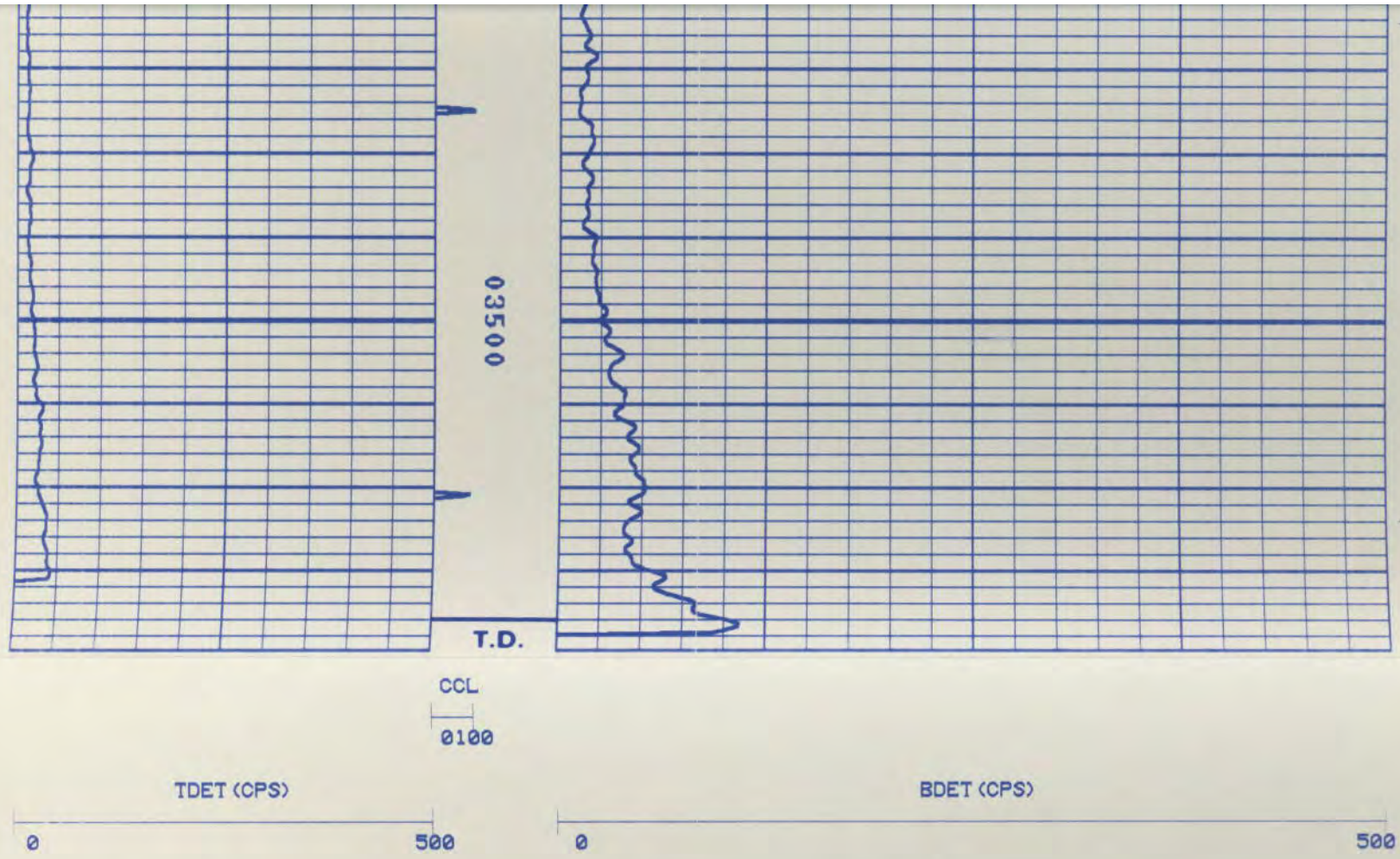
MODE: RECORD






03000
03100
03200


00
03300
03400



FILE: 20

****

BACKGROUND AFTER LOG REPEAT

****

FILE: 19

CURVE DELAY REPORT

CURVE	PHYS. DELAY	UNITS
TDET	6,6	FT,IN
BDET	0	FT,IN
CCL	16,6	FT,IN

PARAMETERS

*** NONE ***

DISPLAY SCALE CHANGES

*** NONE ***

COMPANY: HOECHST CELANESE CORP. RUN: 1

WELL NAME: WELL 1-A TRIP: 1

SERVICE: F 150A FILE: 19 DATE: 03/25/94 TIME: 13:22:59

COMPANY: HOECHST CELANESE CORP.

WELL NAME: WELL 1-A

SERVICE: F 150A FILE: 19 DATE: 03/25/94

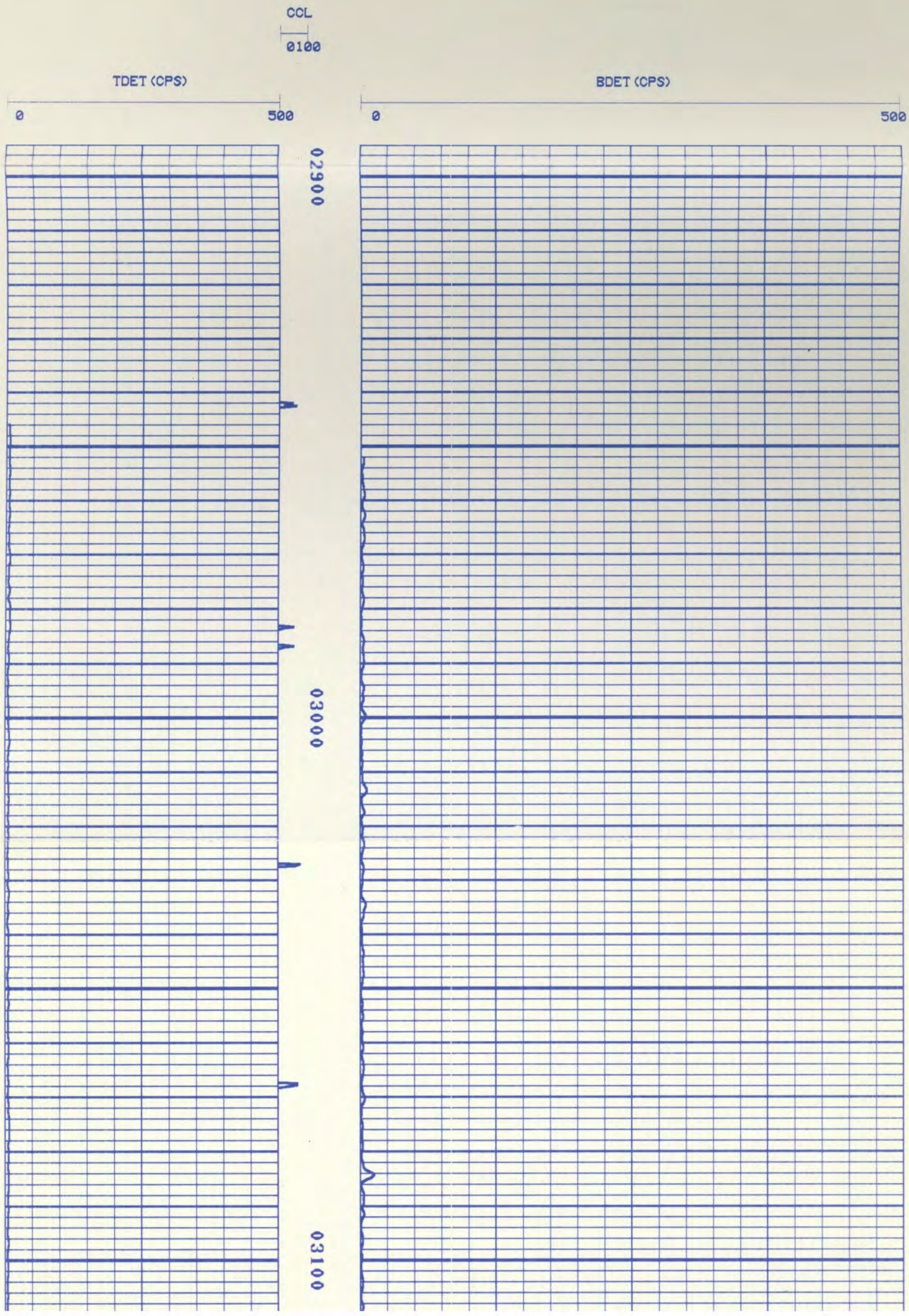
REVISION: FSYS256 REV:G002 VER:2.0

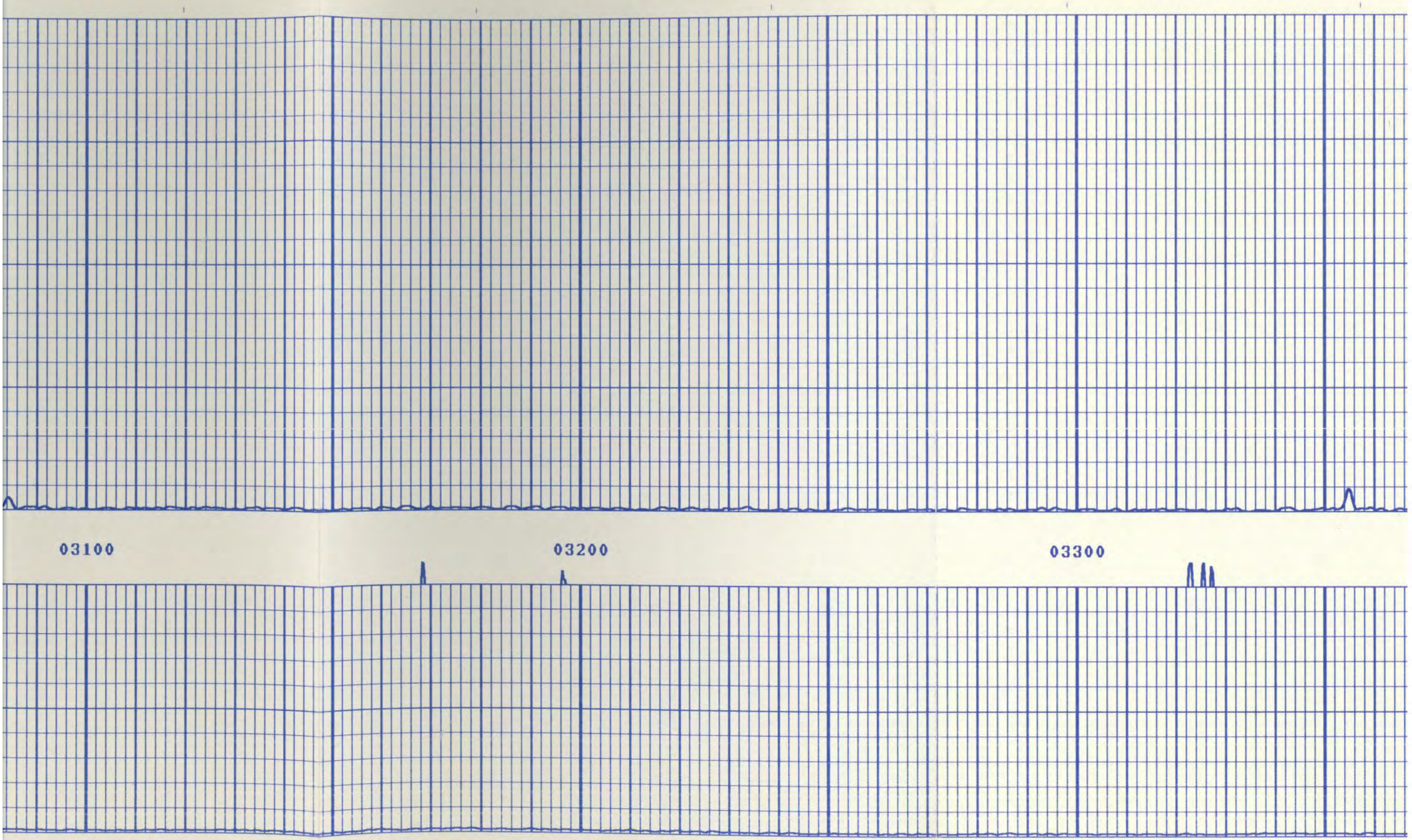
RUN: 1

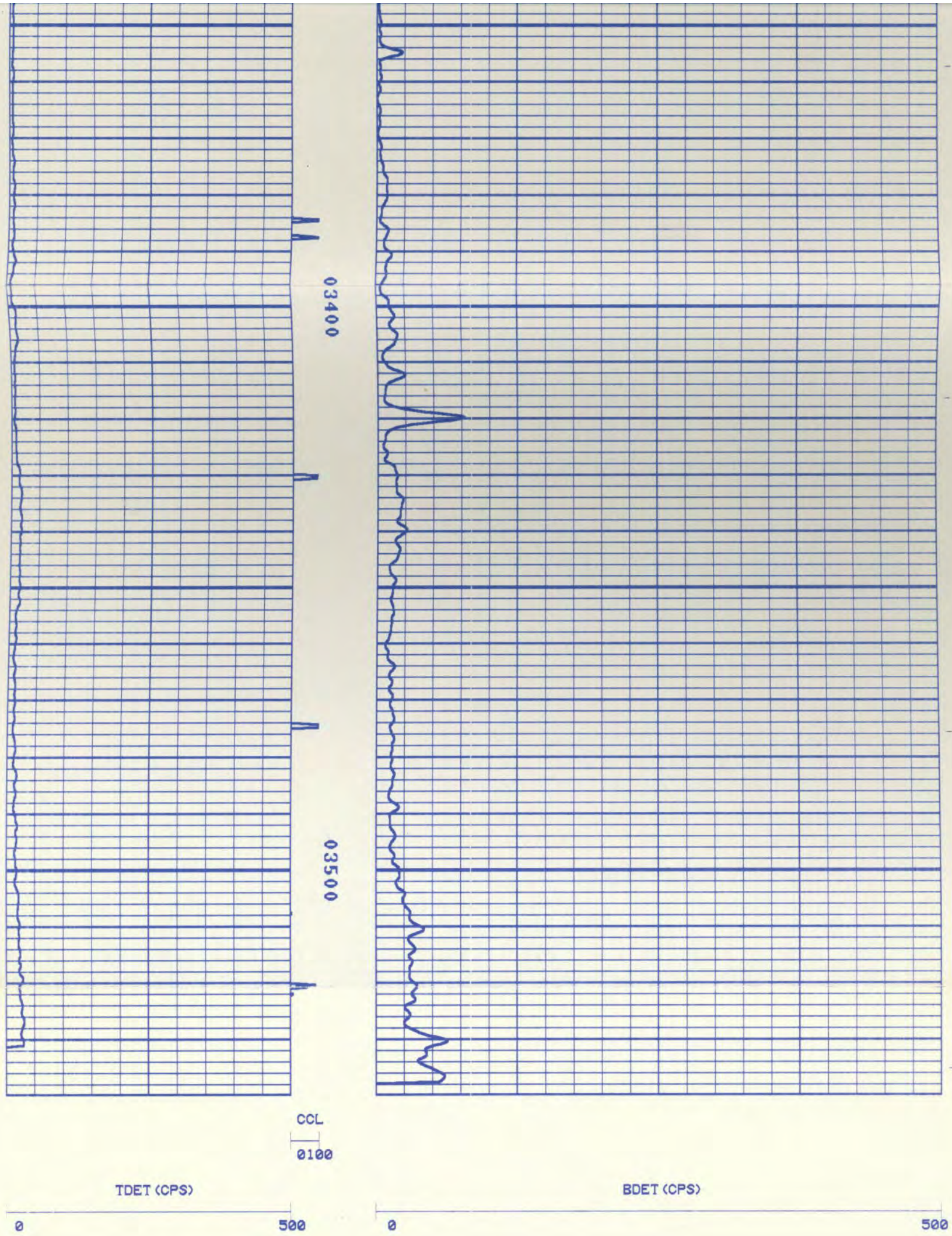
TRIP: 1

TIME: 13:22:59

MODE: RECORD




03100
03200
03300



TWO FILES BELOW ARE STATIONARY READINGS TAKEN WITH A PUMP-IN RATE OF 100 GPM.

****

FILE: 16

COMPANY: HOECHST CELANESE CORP.

RUN: 1

WELL NAME: WELL 1-A

TRIP: 1

SERVICE: F 150A FILE: 16 DATE: 03/25/94

TIME: 12:41:54

REVISION: FSYS256 REV:G002 VER:2.0

MODE: RECORD

DEPTH: 3361

TDET (CPS)

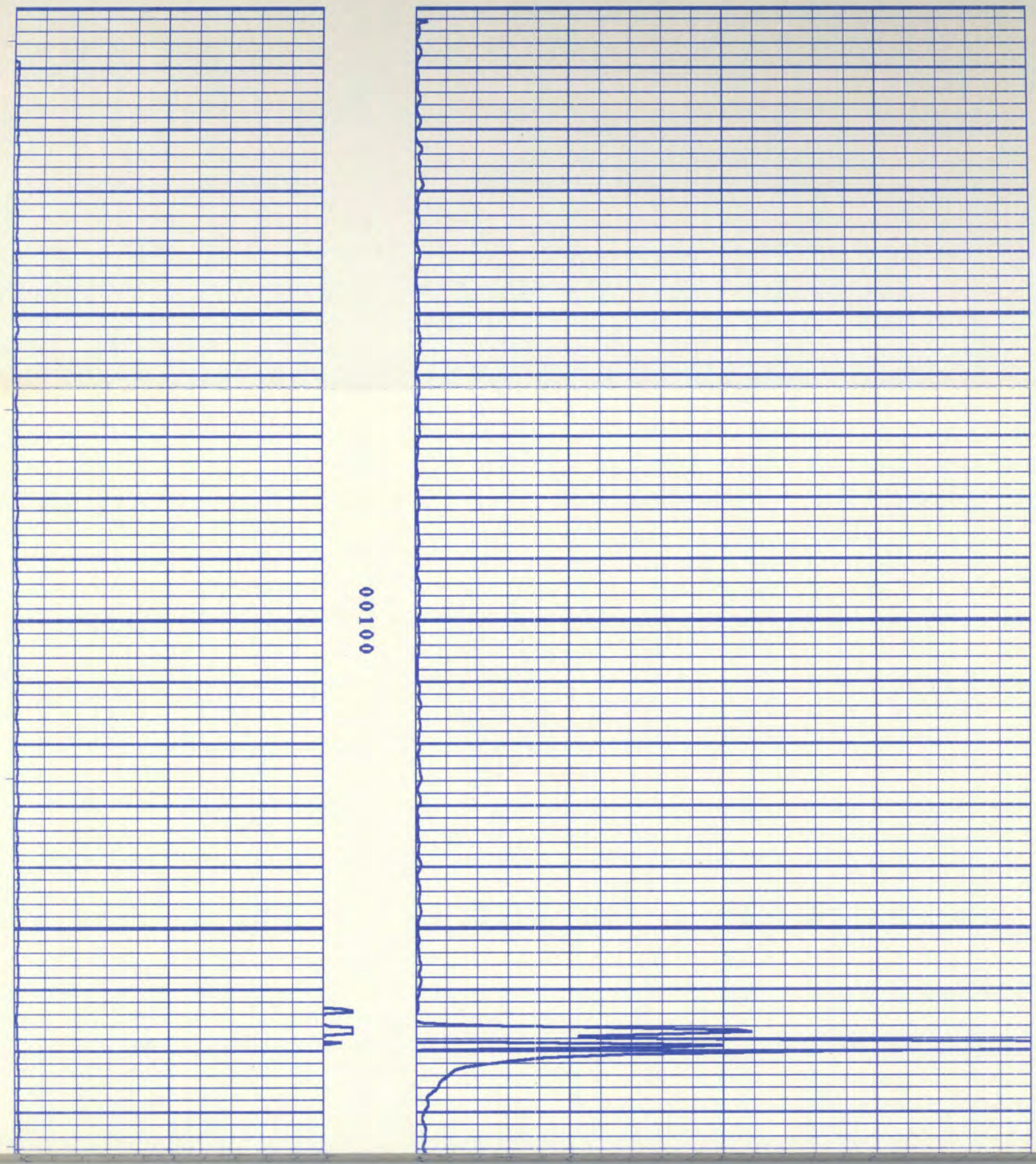
0 500

BDET (CPS)

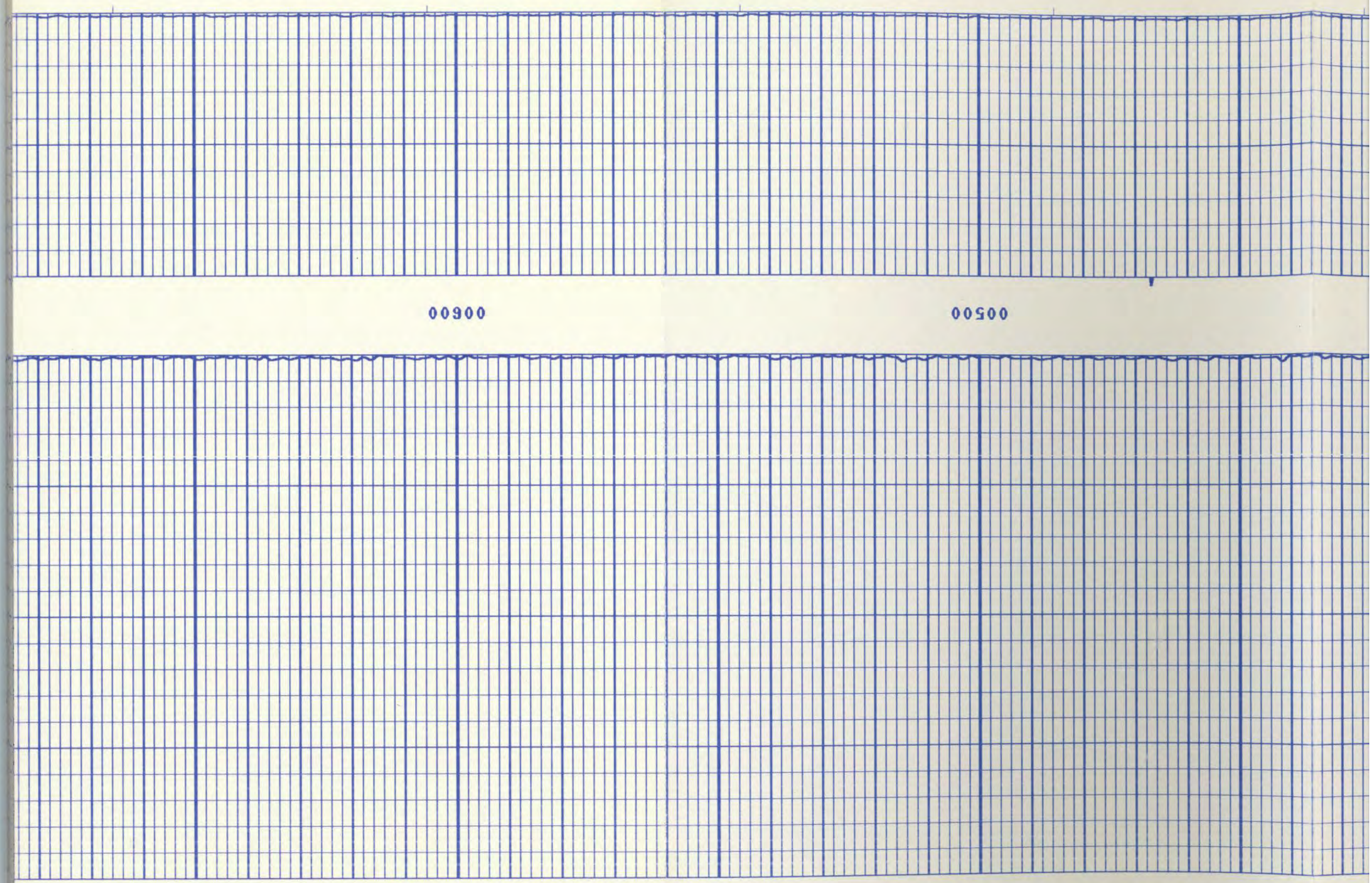
0 500

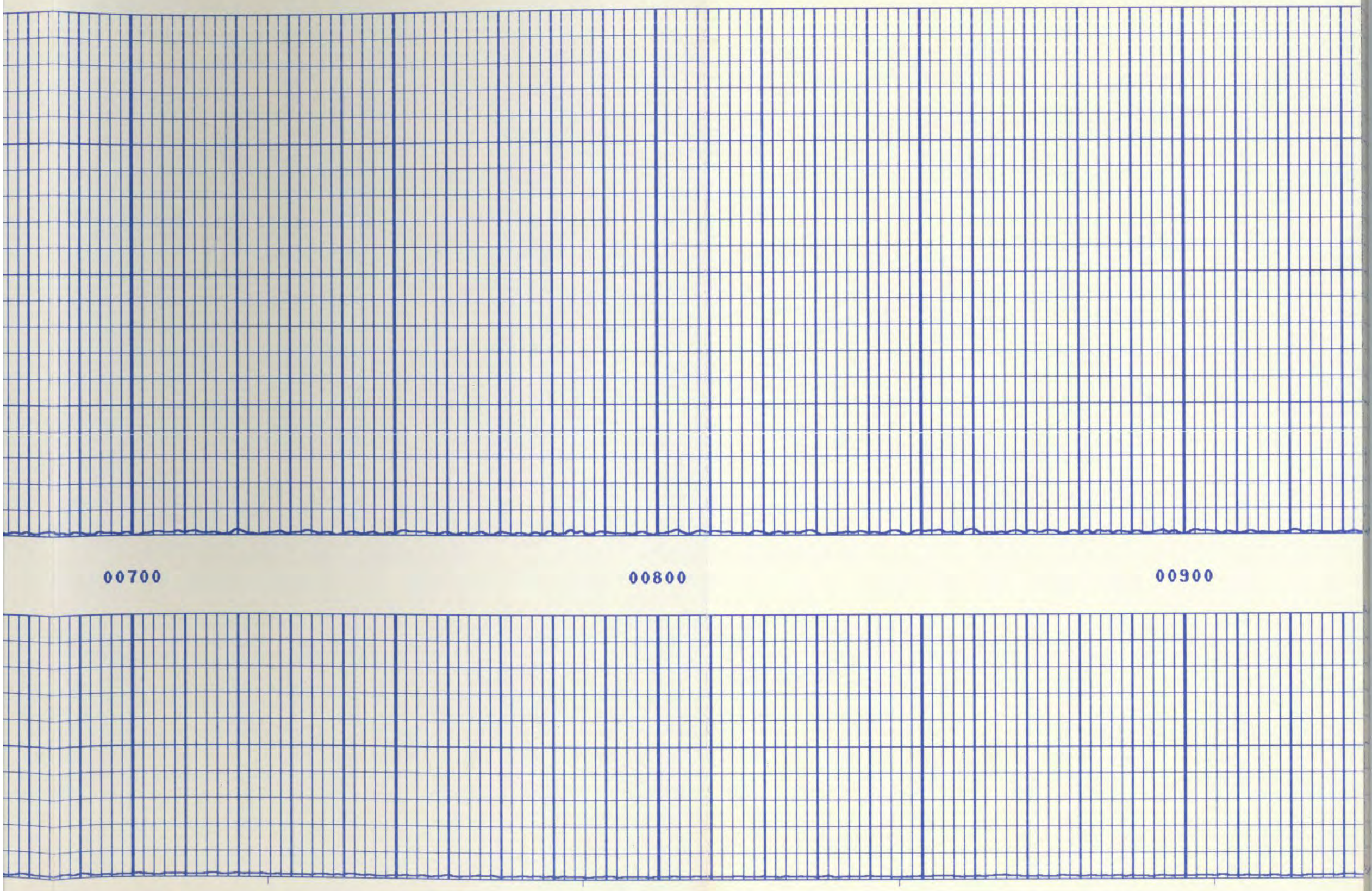
CCL

0100



00200
00300
00400


00600
00500


00700
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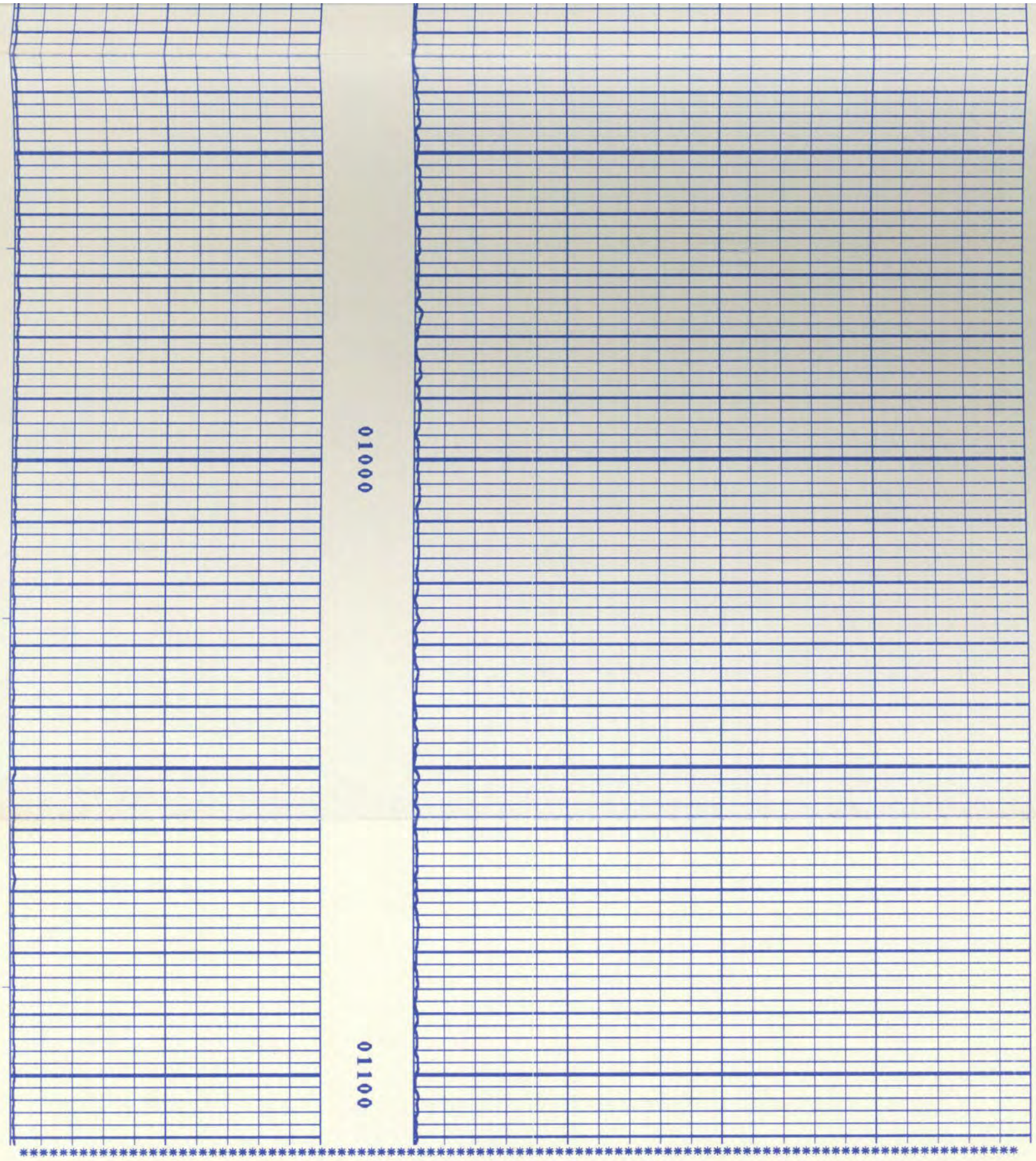


FILE: 17

COMPANY: HOECHST CELANESE CORP.

RUN: 1

WELL NAME: WELL 1-A

TRIP: 1

SERVICE: F 150A FILE: 17 DATE: 03/25/94 TIME: 13:00:54

REVISION: FSYS256 REV:G002 VER:2.0

MODE: RECORD

DEPTH: 3361

TDET (CPS)

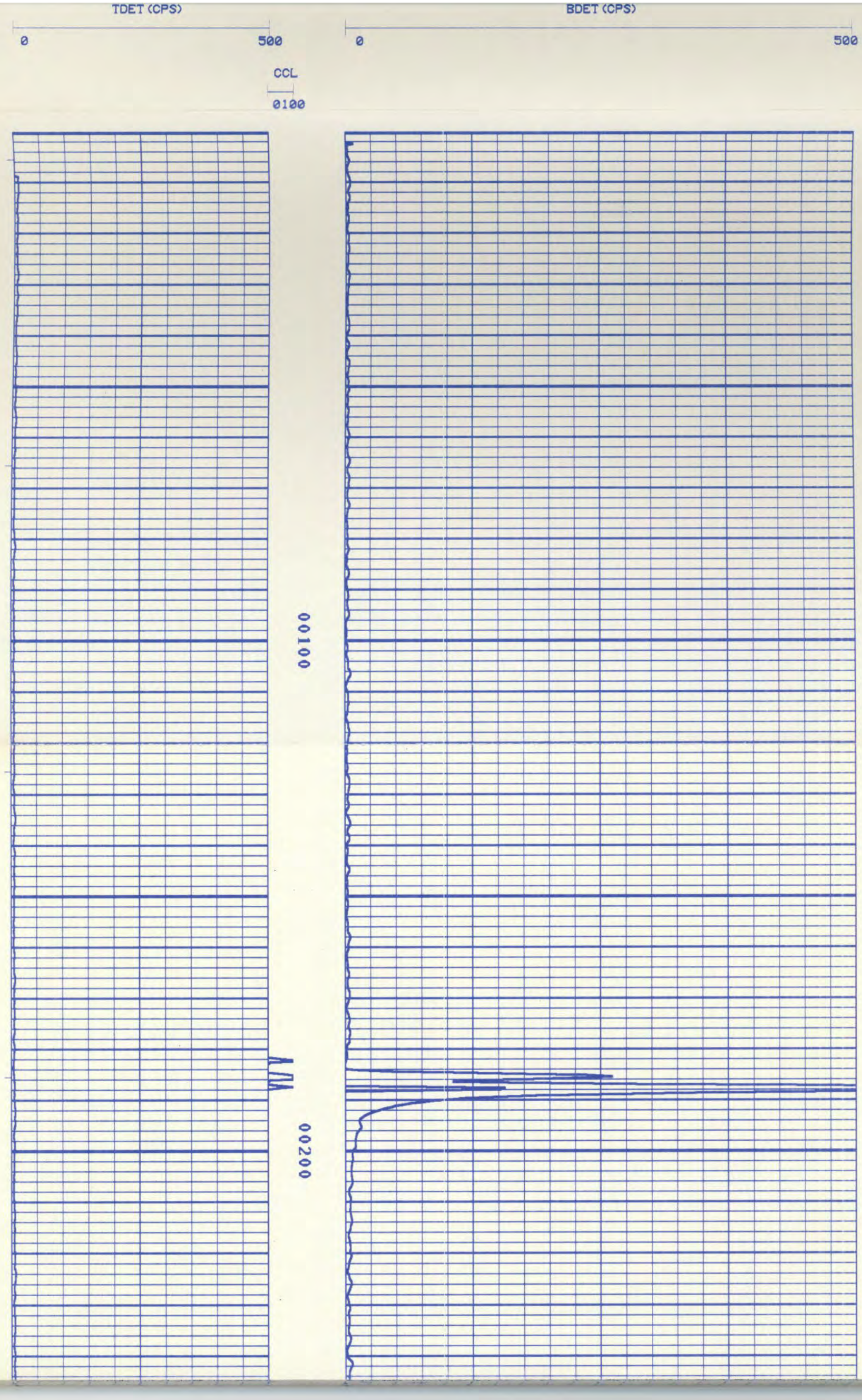
0 500

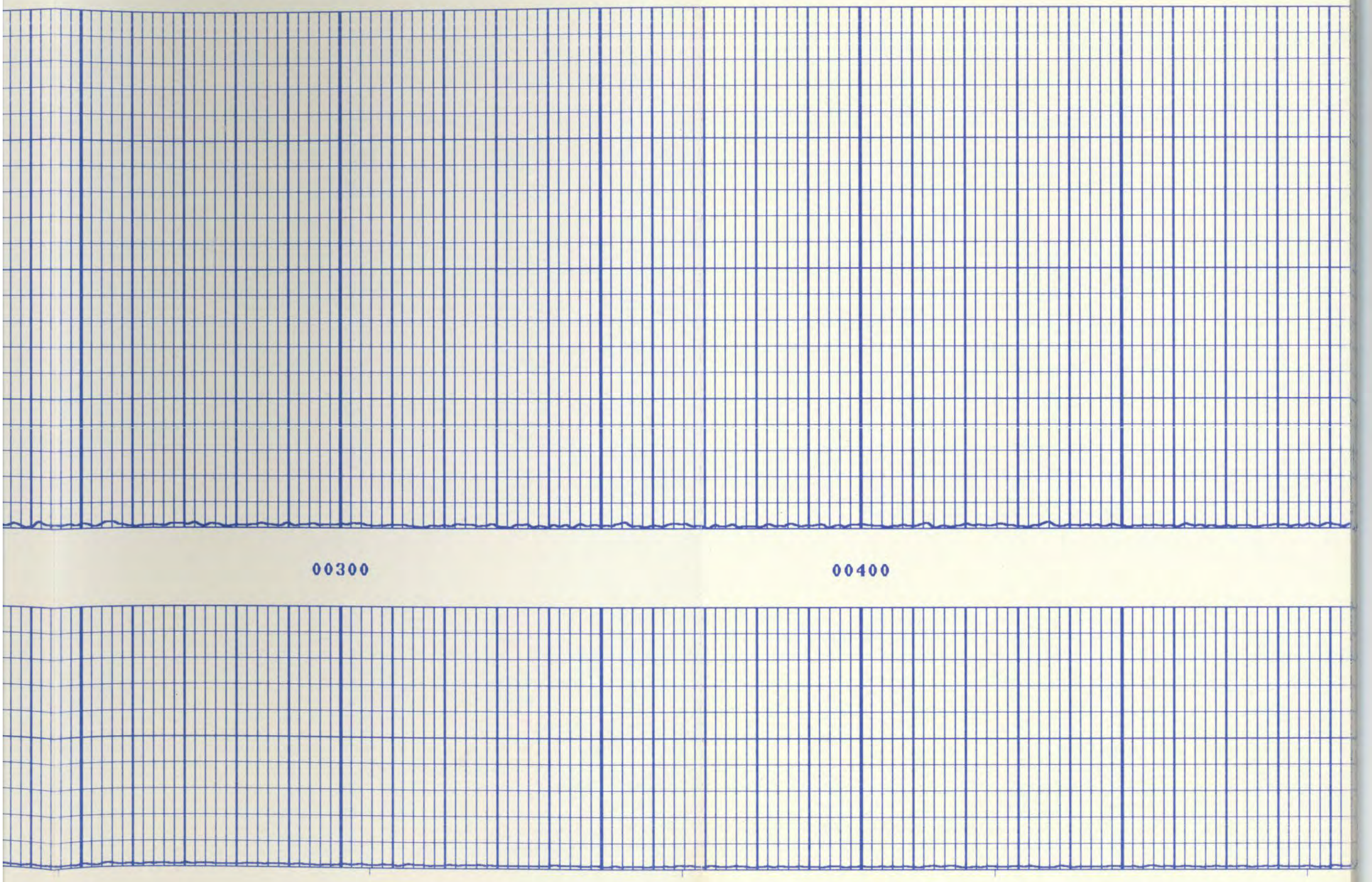
BDET (CPS)

0 500

CCL

0100


TDET (CPS)
0
500
BDET (CPS)
0
500
CCL
0100
00100
00200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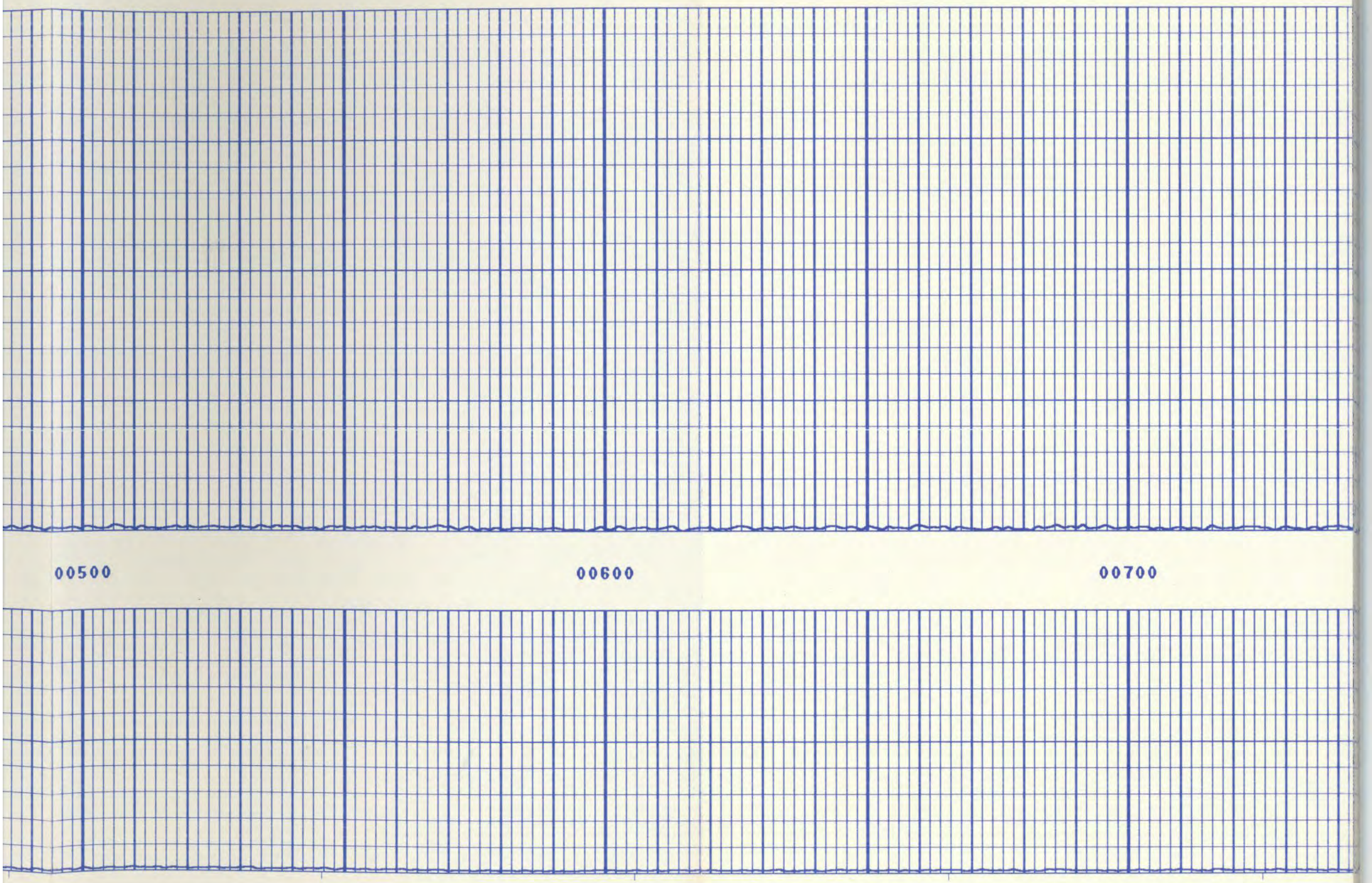
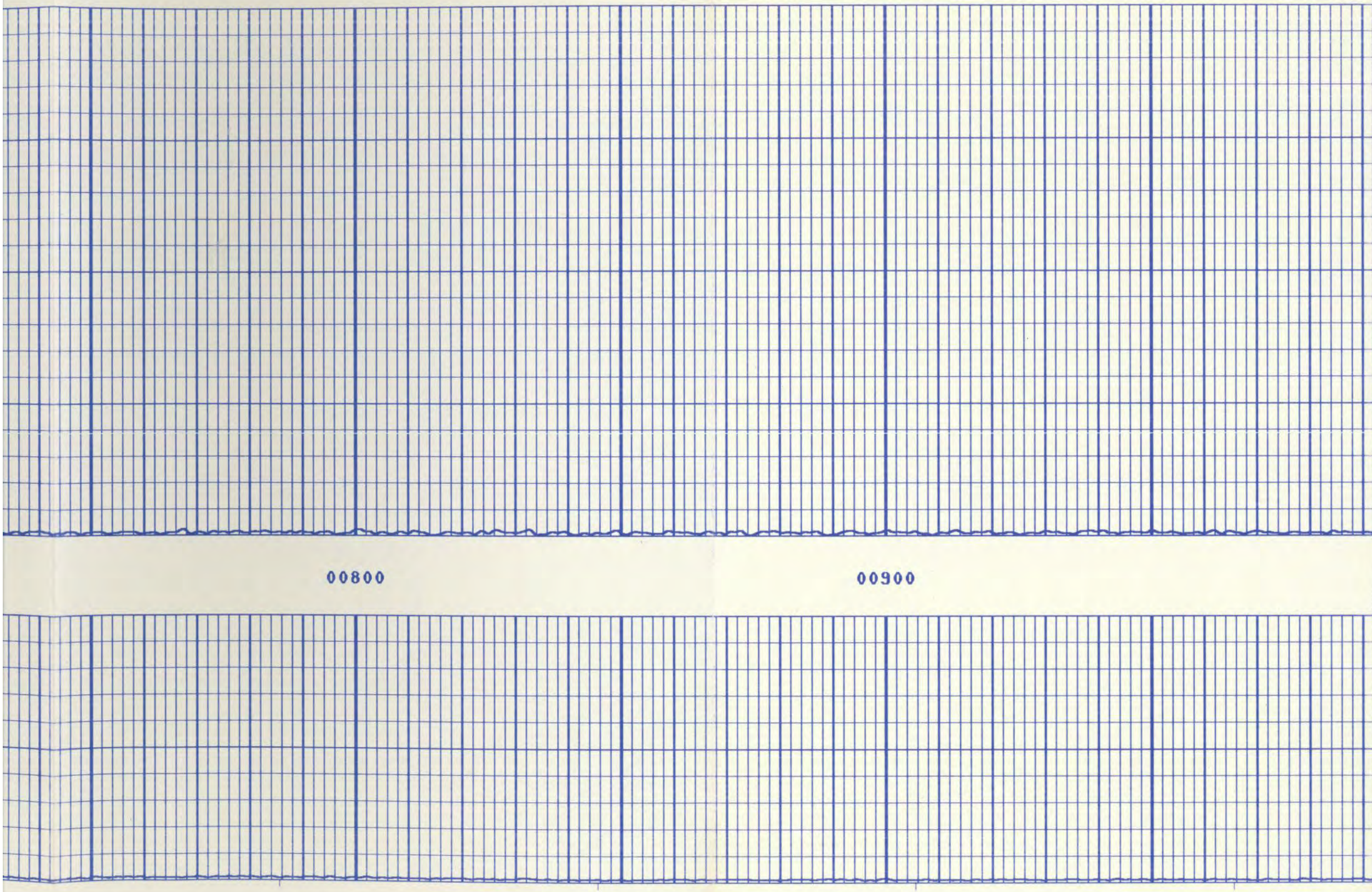
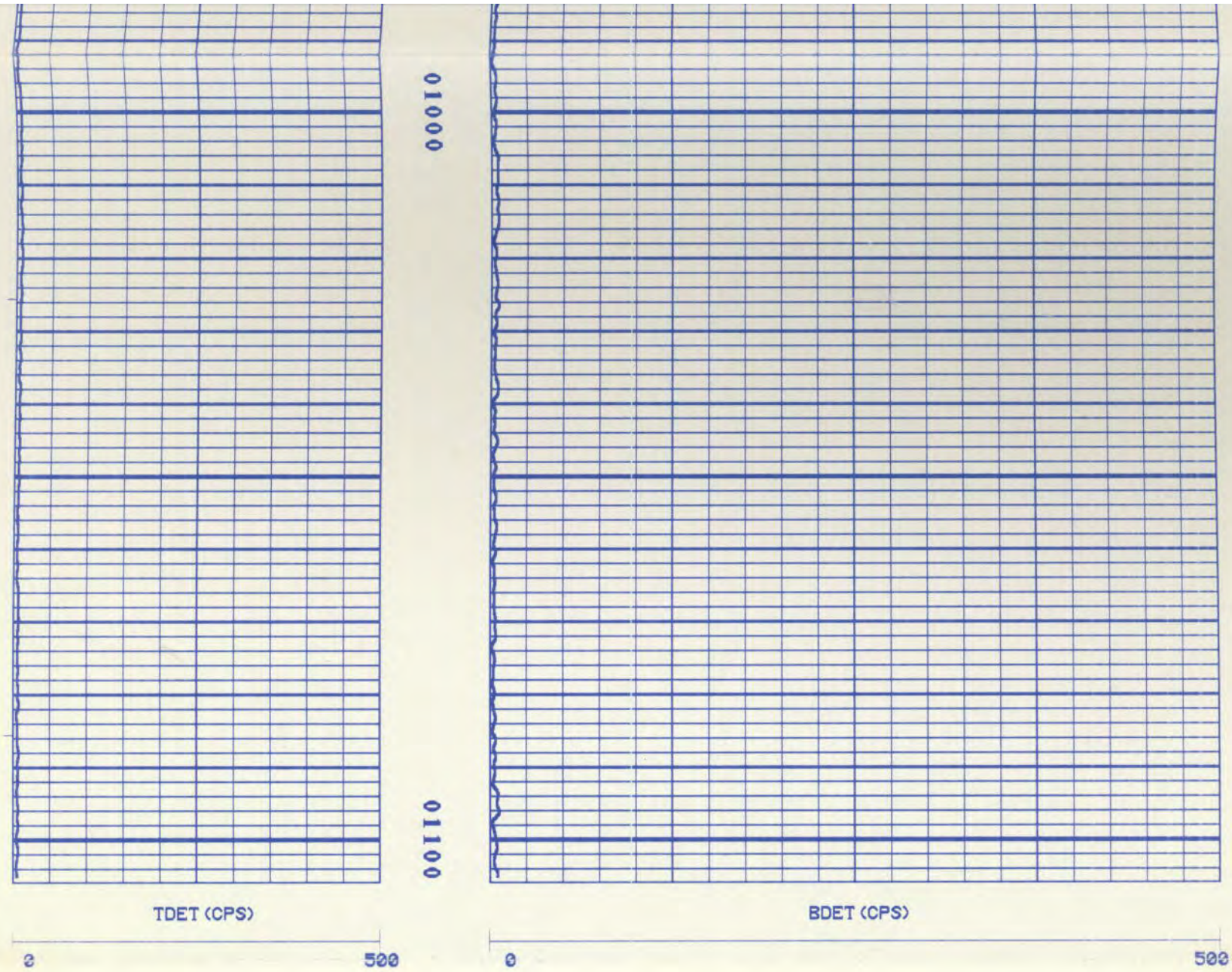
00400


00500
00600
00700


00800
00900



CCL

0100

DISPLAY SCALE CHANGES

*** NONE ***

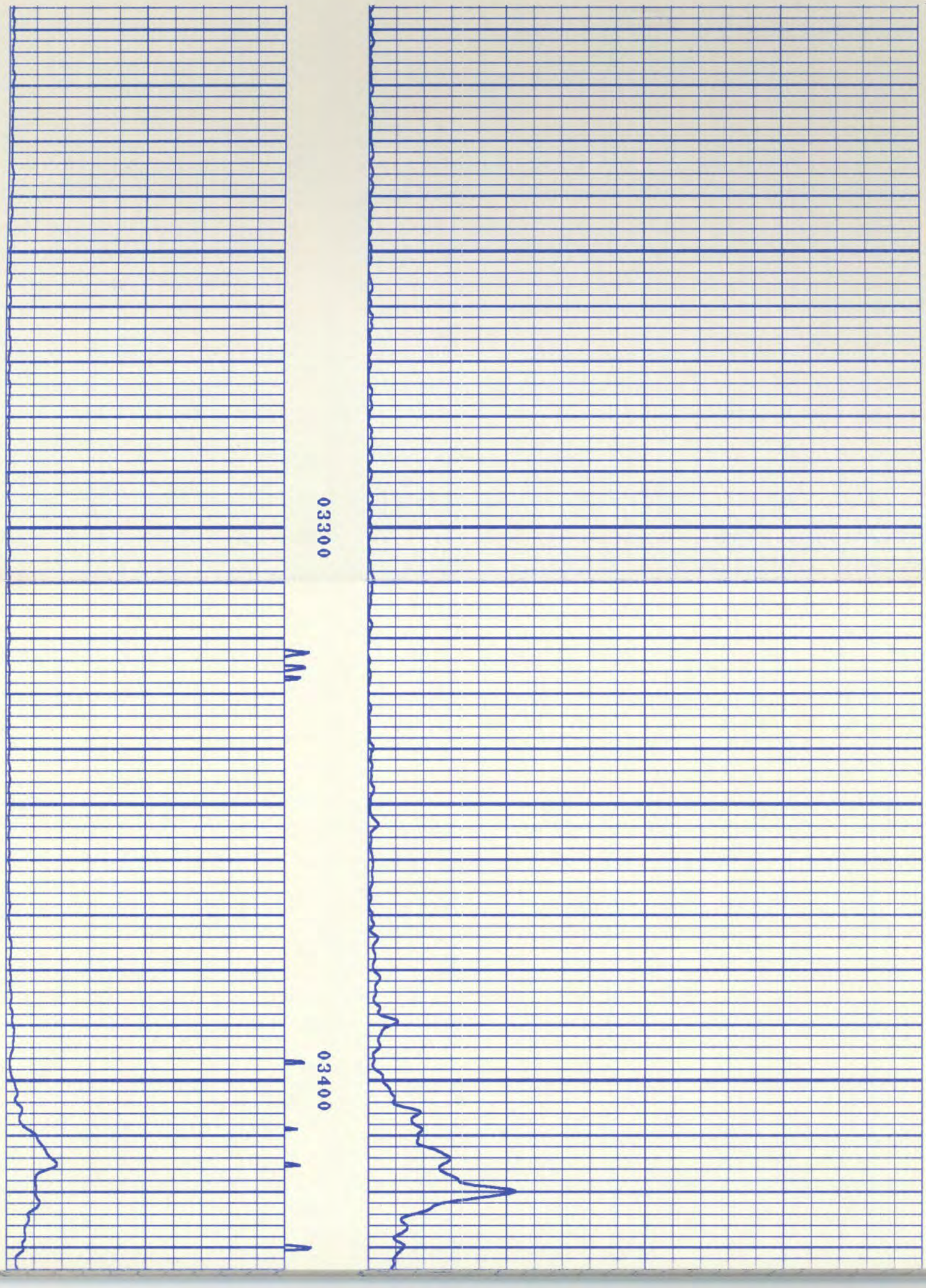
PARAMETERS

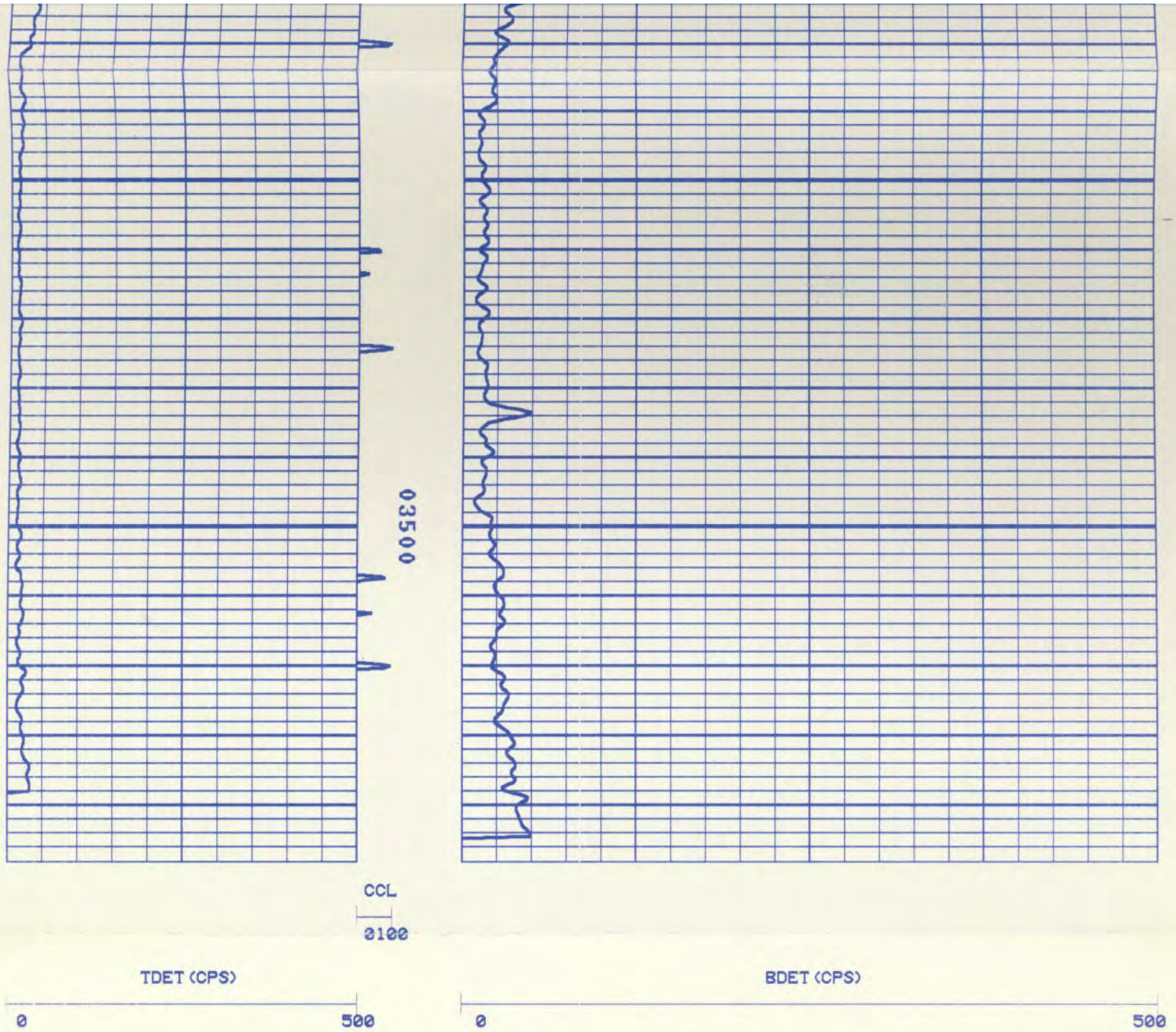
*** NONE ***

FILE: 17

****

CHASE DOWN NO. 2





FILE: 15

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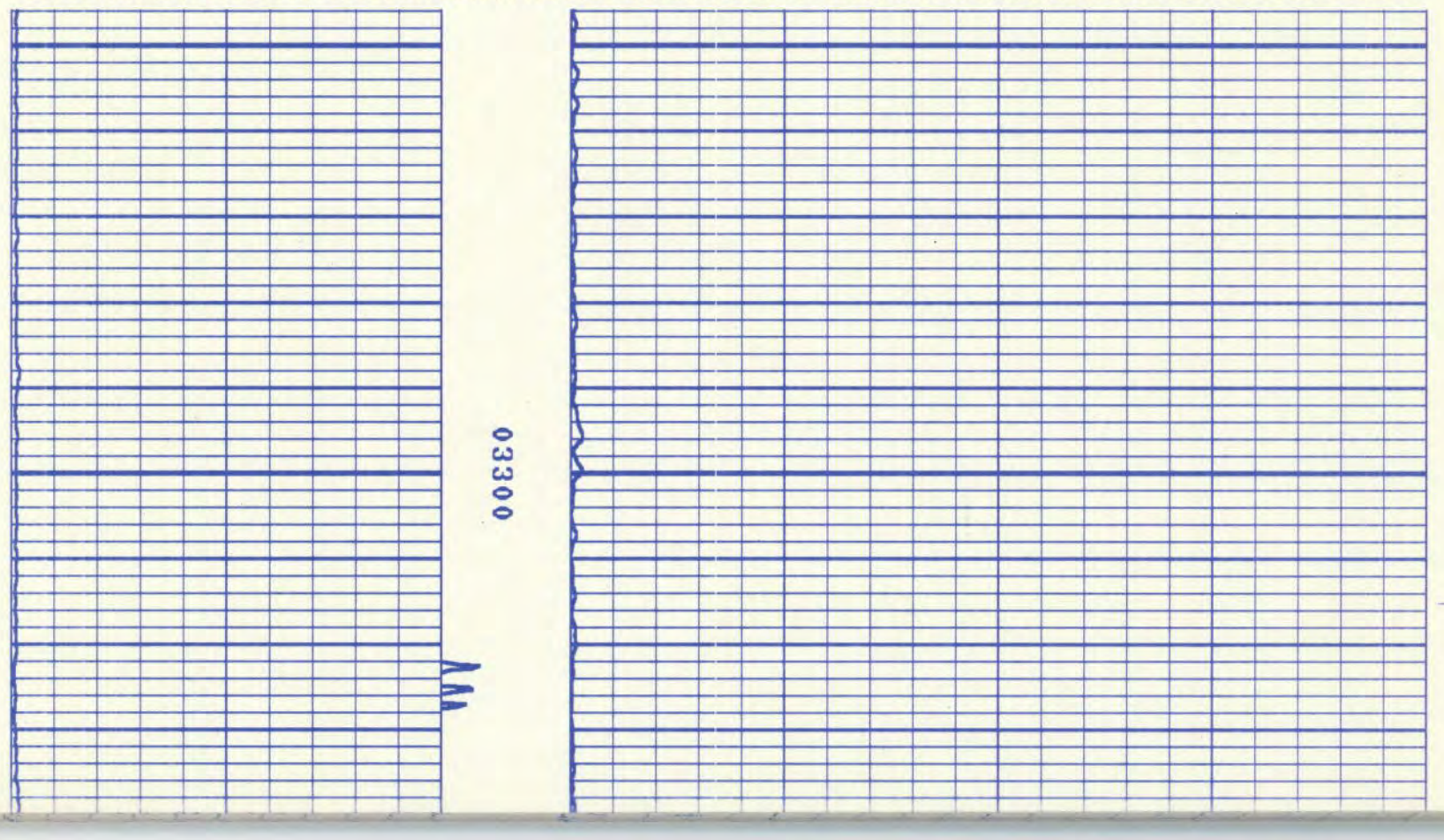
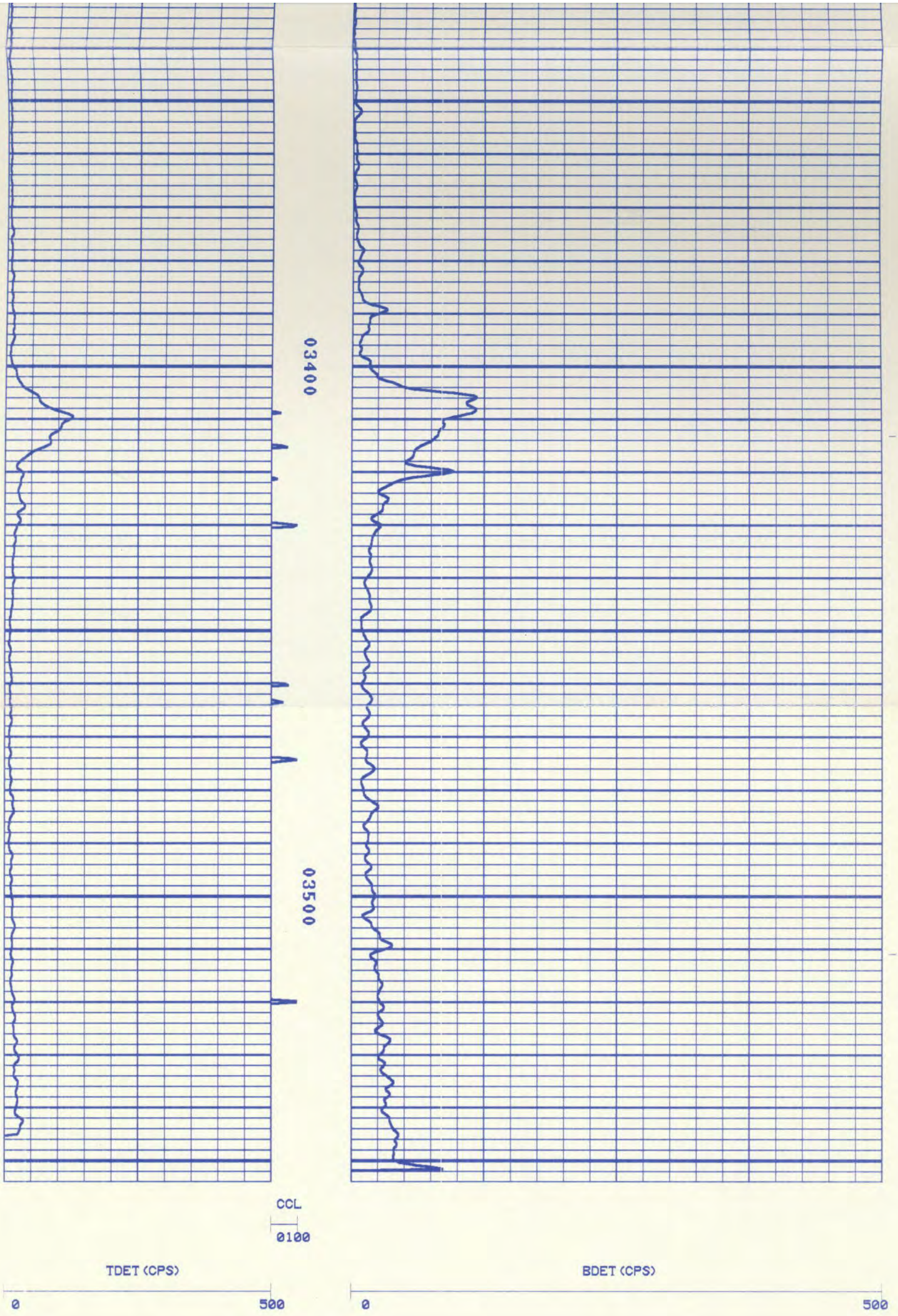




FILE: 14

CCL

0100

TDET (CPS)

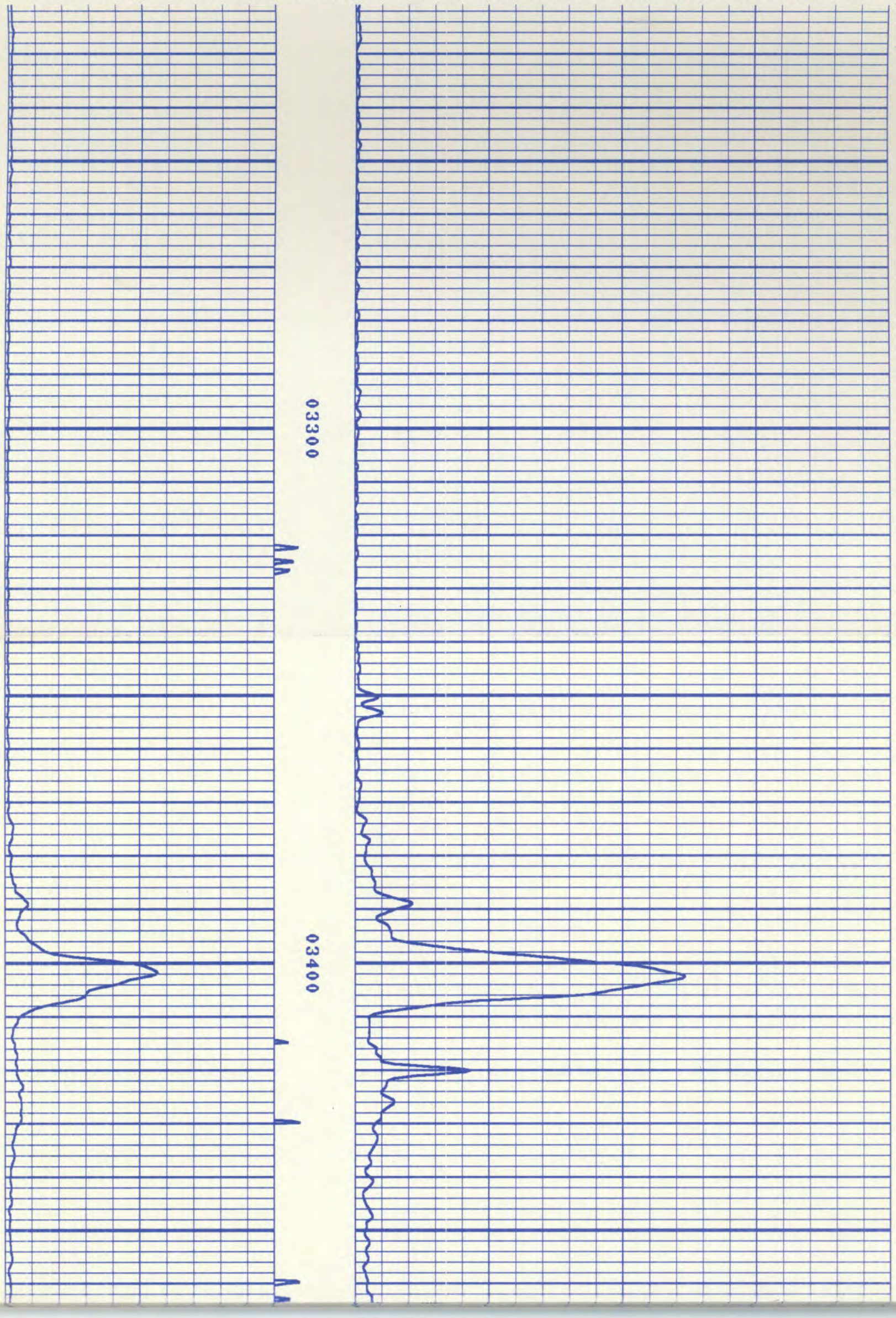
0 500

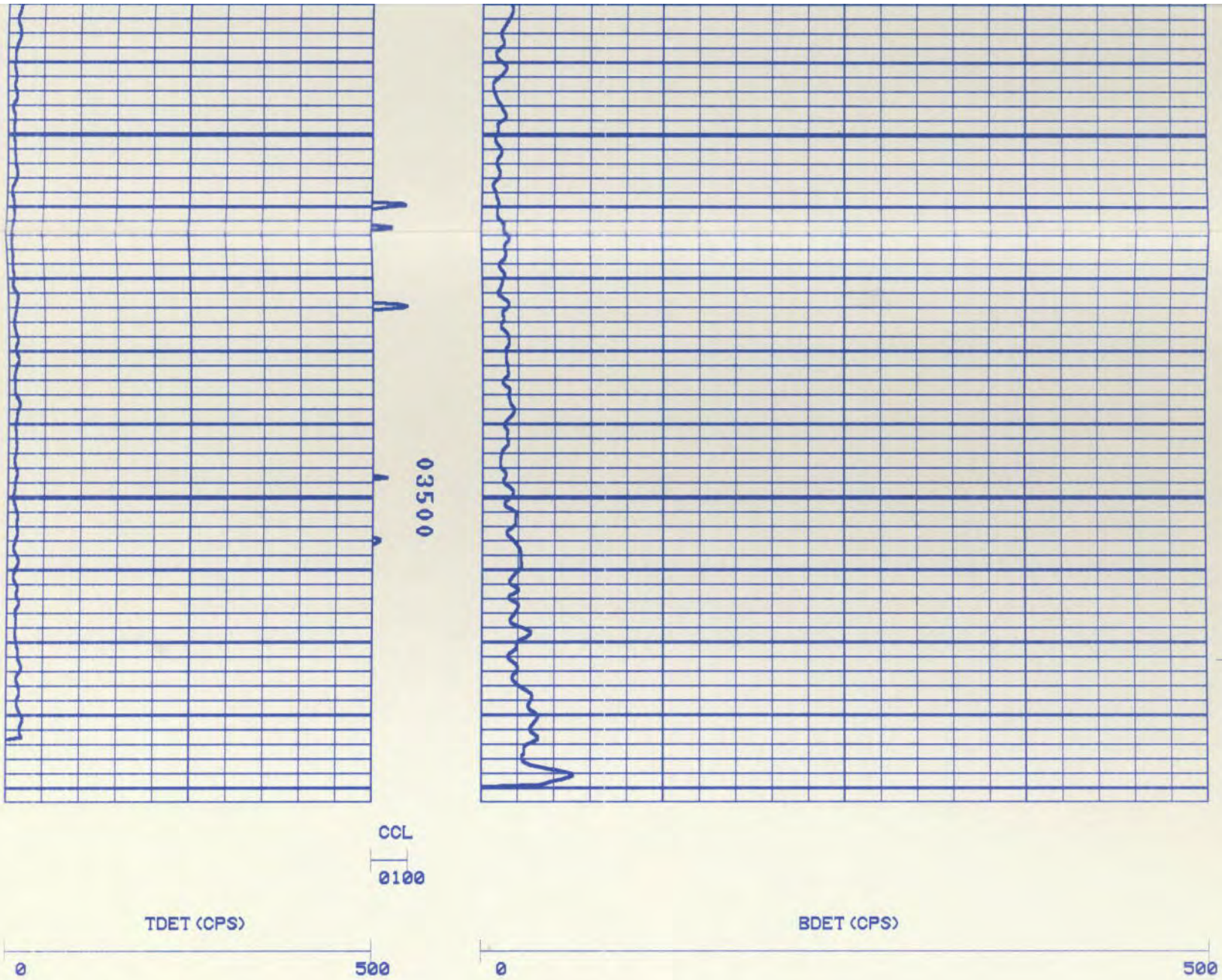
BDET (CPS)

0 500

FILE: 14

****





FILE: 13

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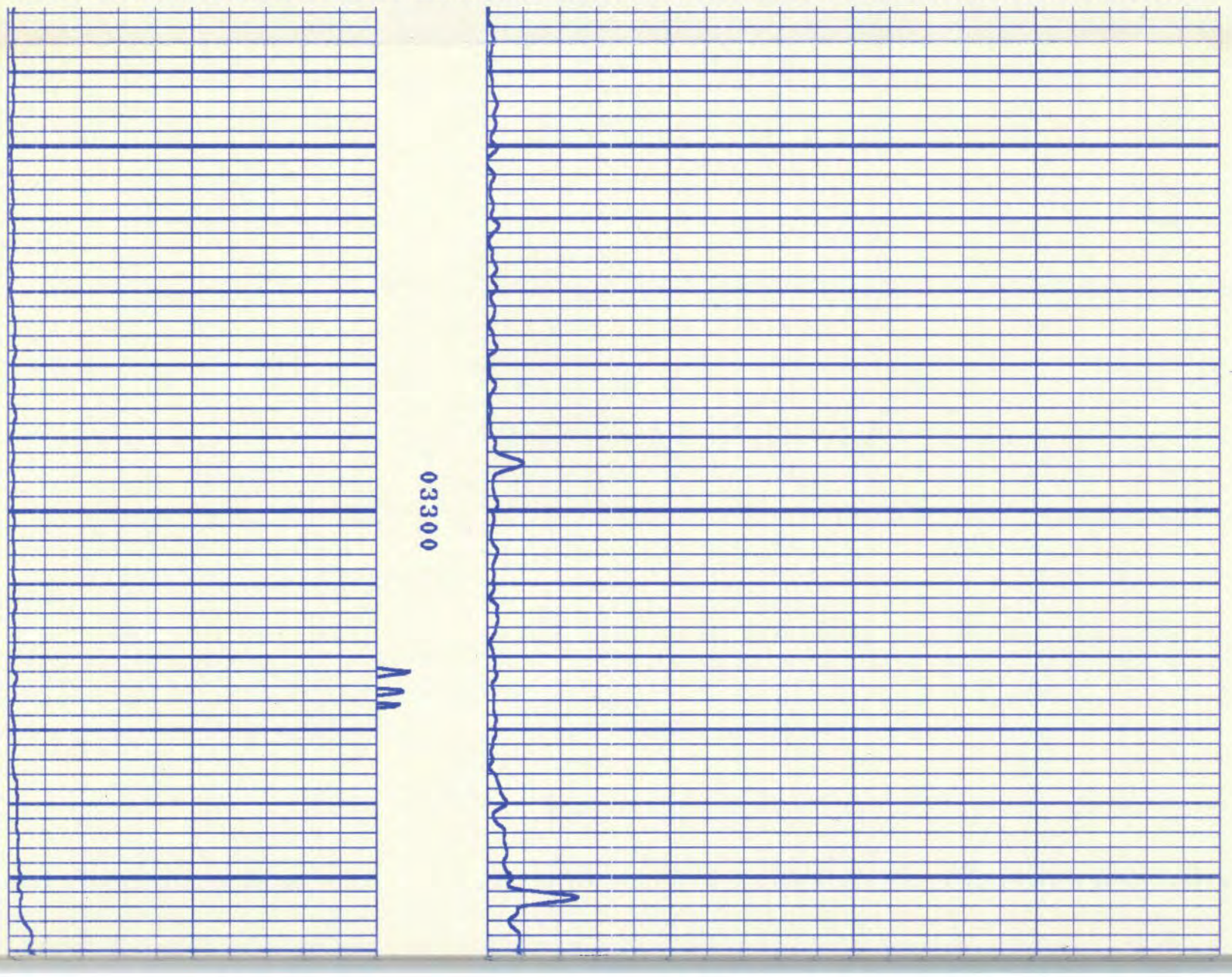

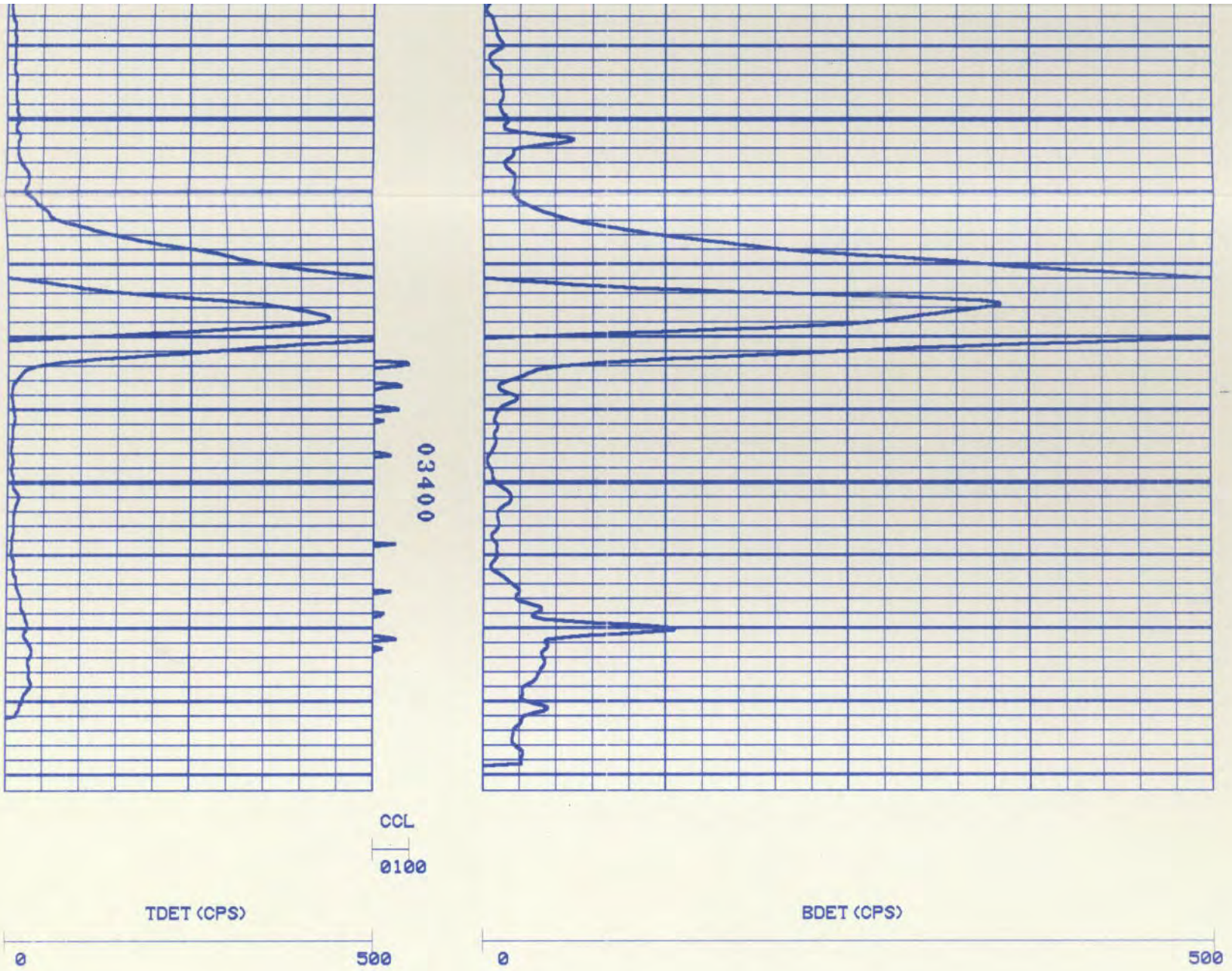

FILE: 12

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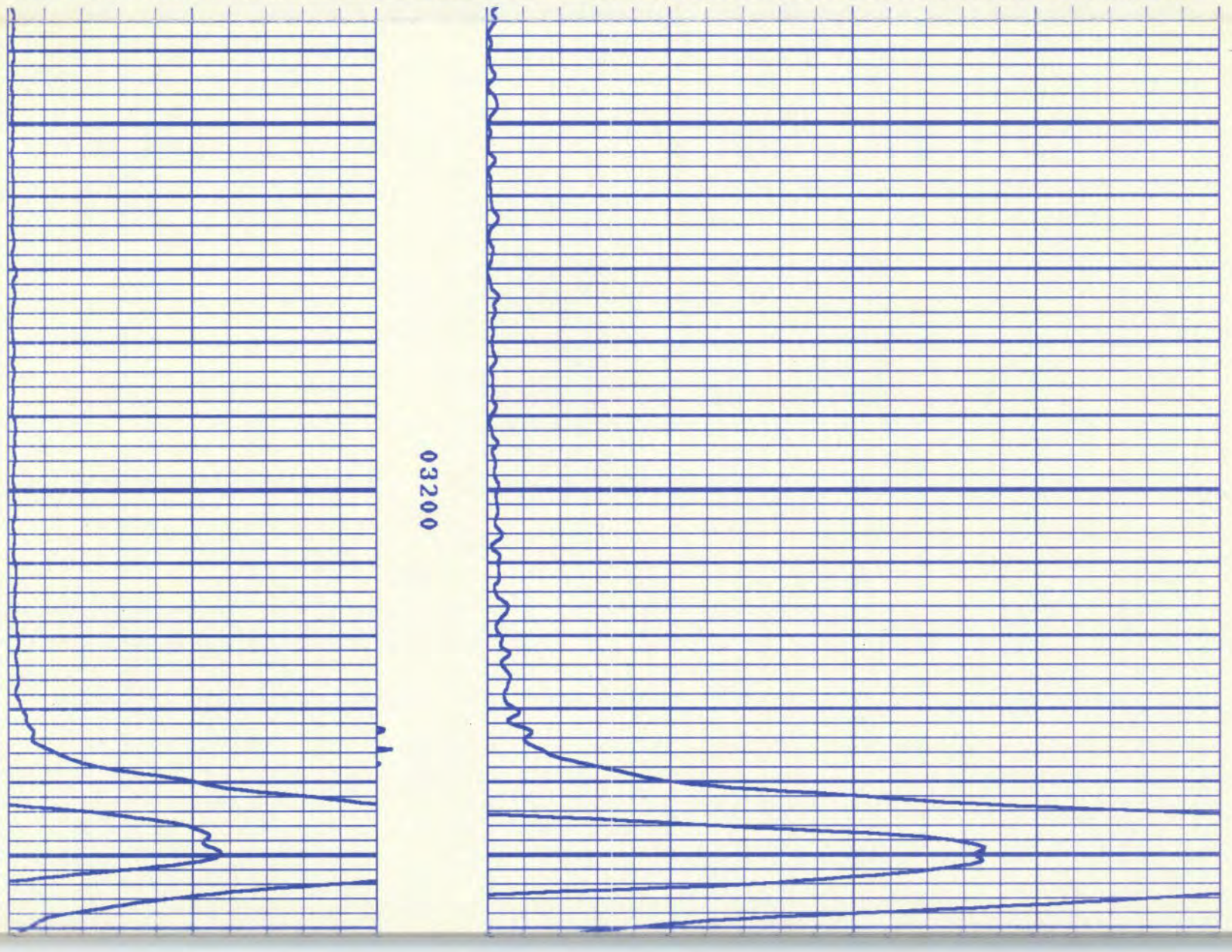

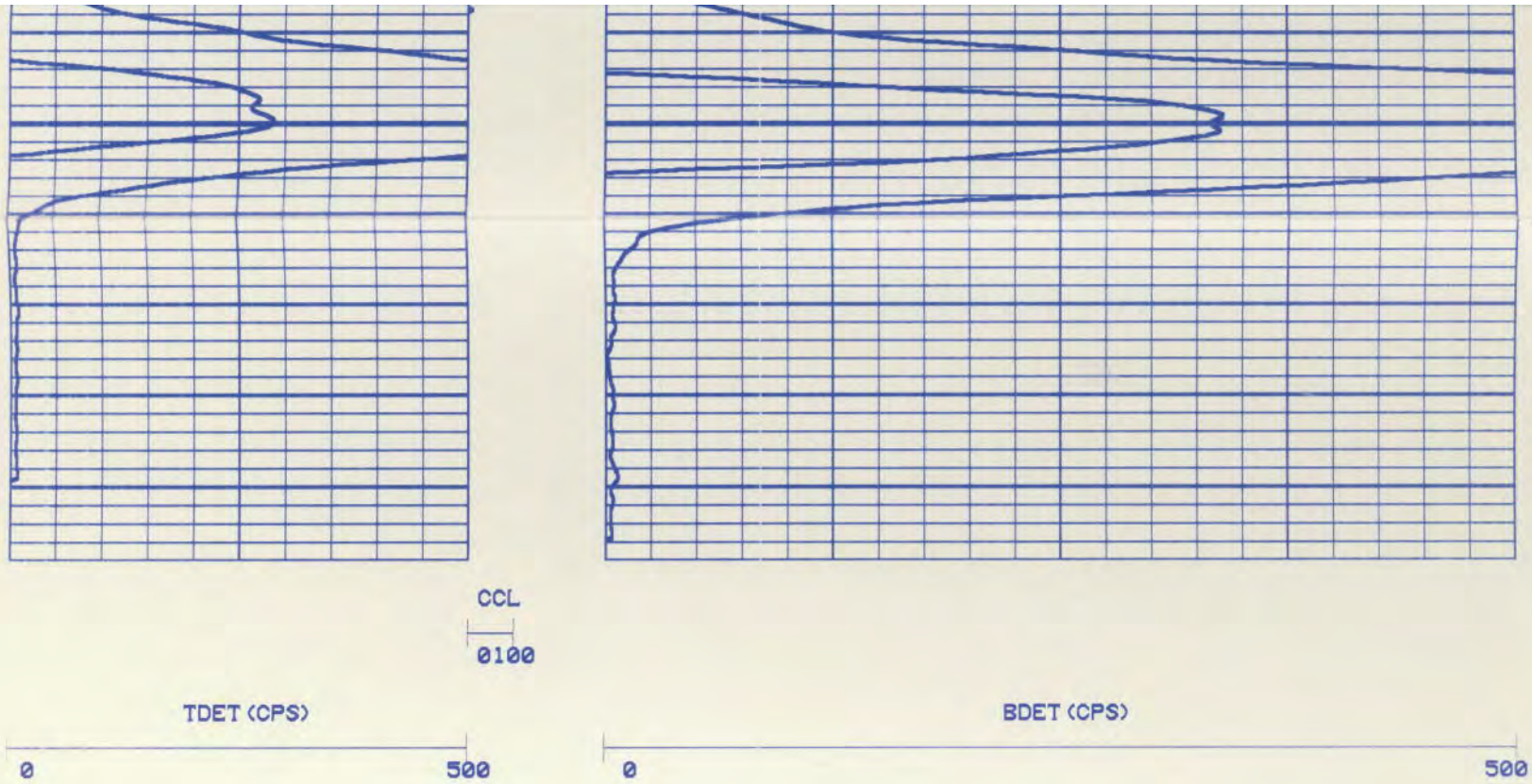

FILE: 11

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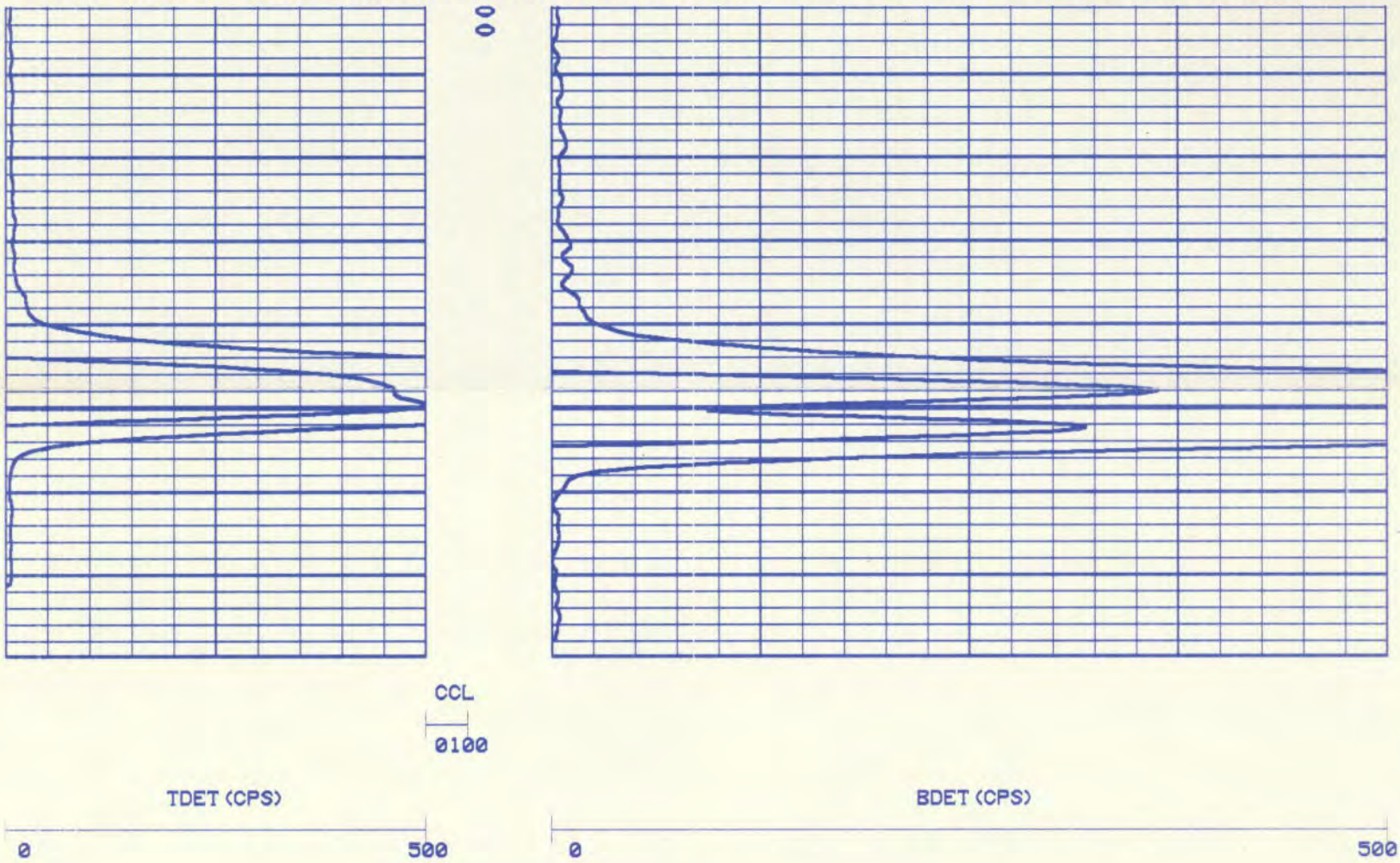
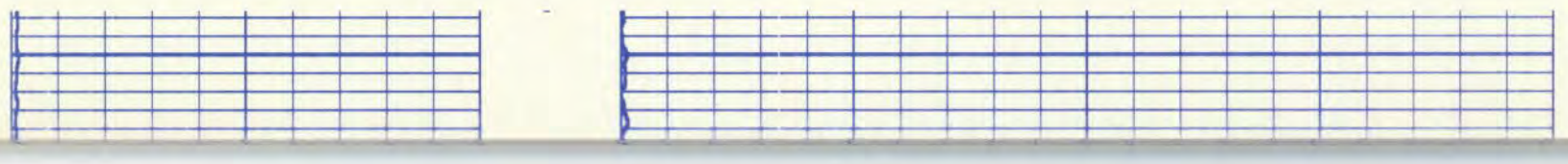


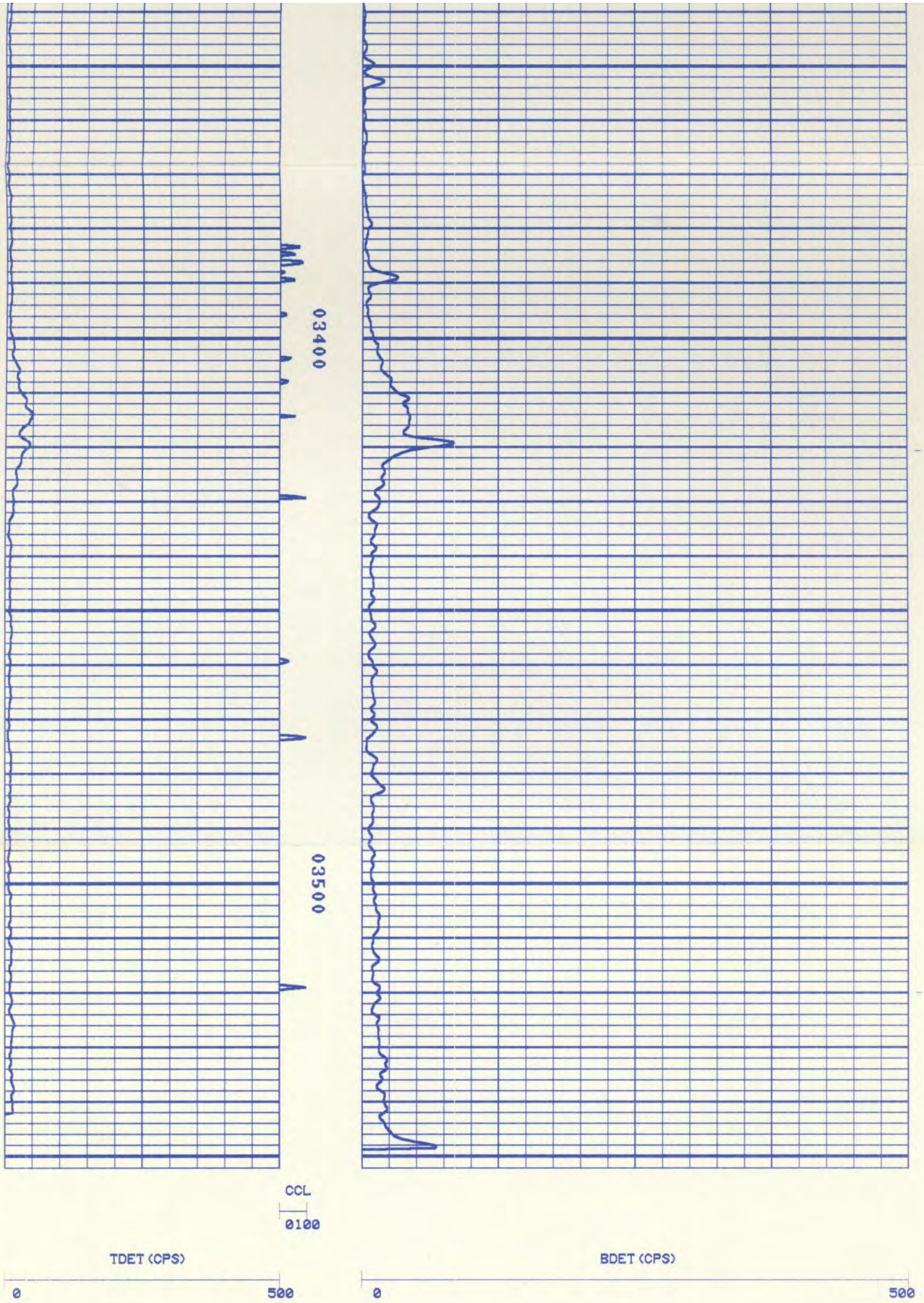
FILE: 10

****

CHASE DOWN NO. 1 FROM 3113



03200
03300



FILE: 9

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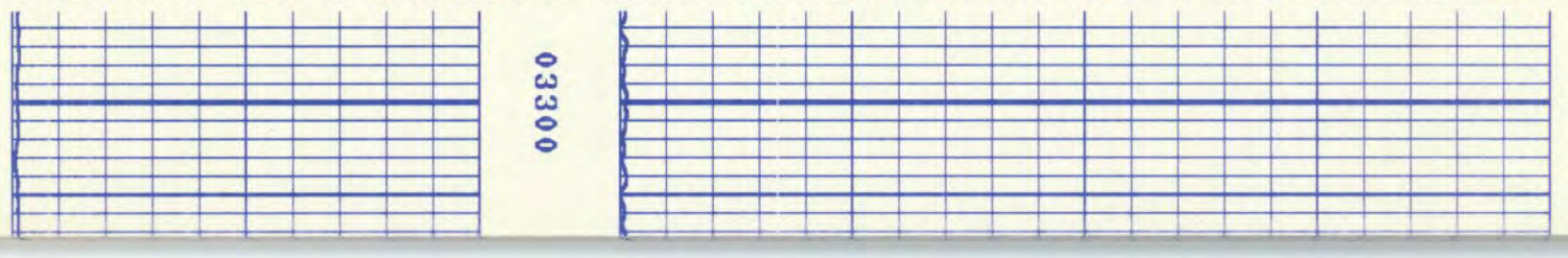
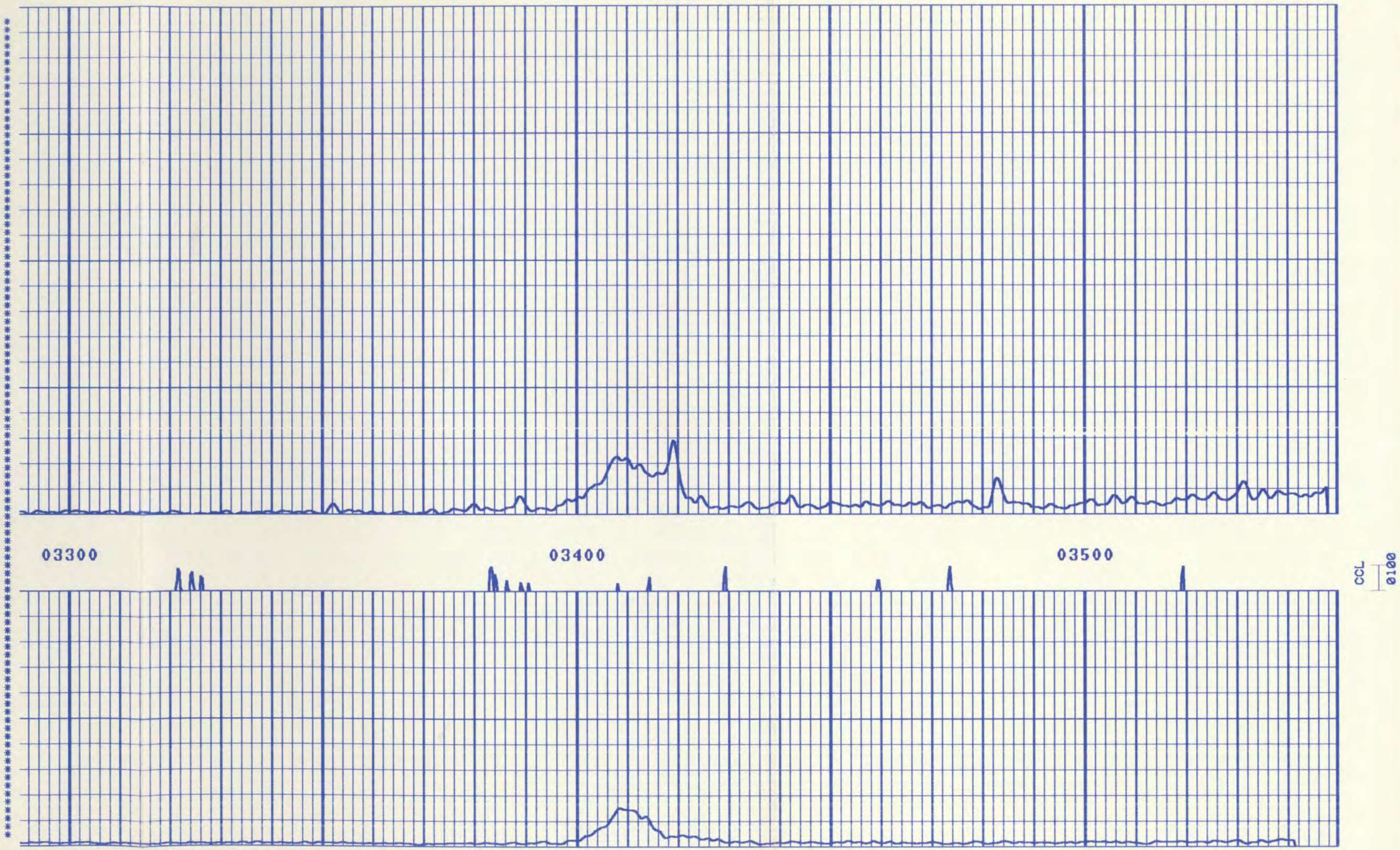
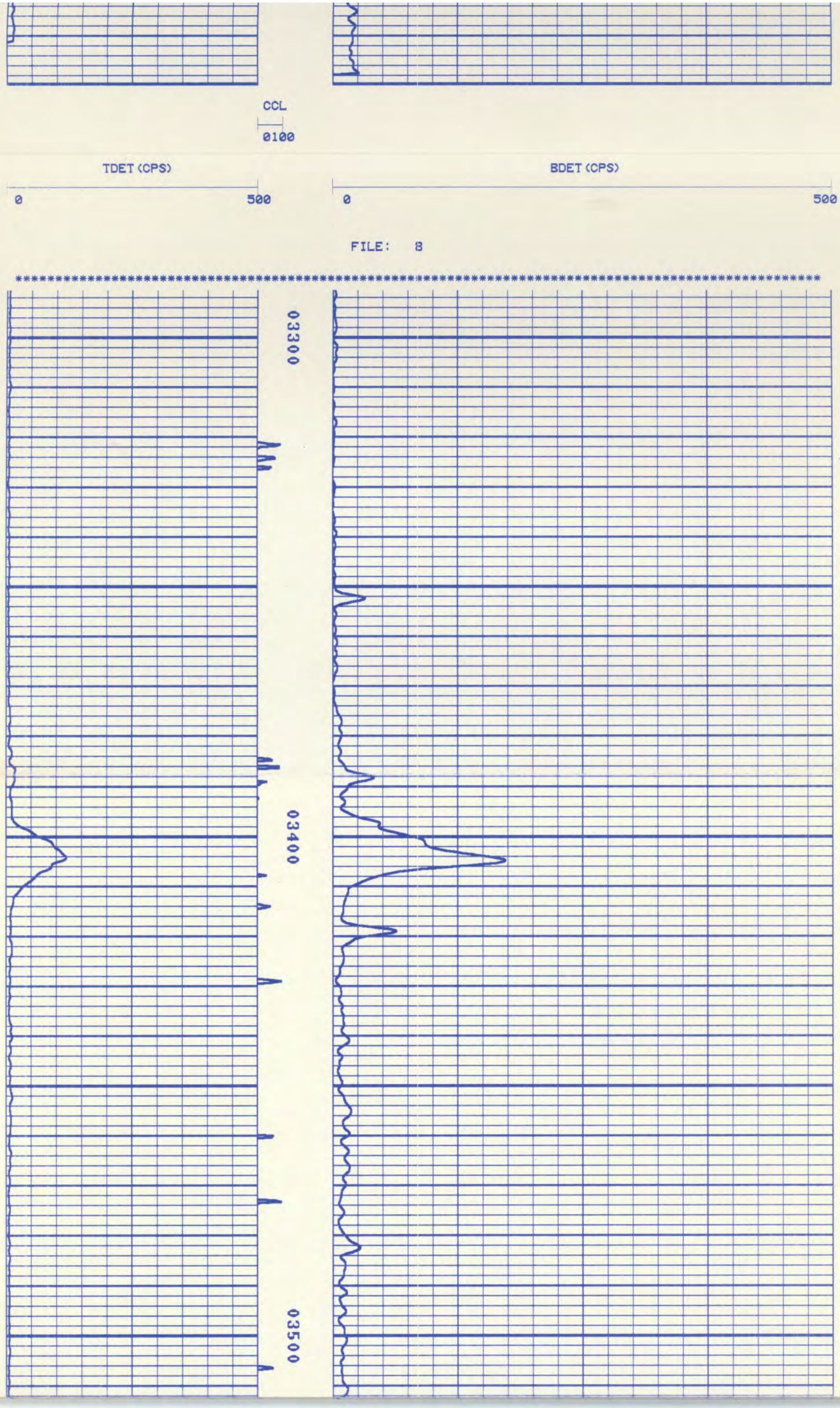
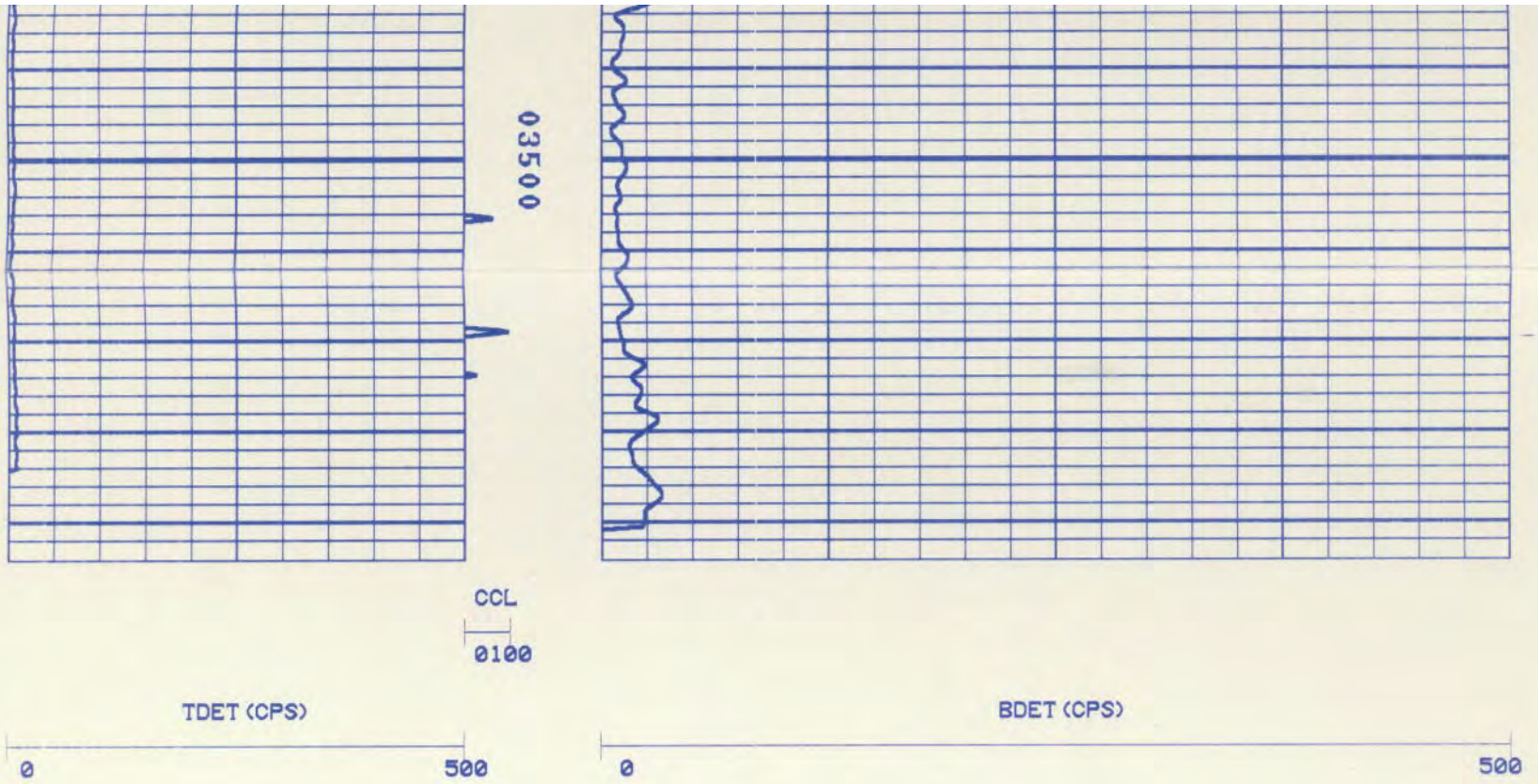



03300
03400
03500
CCL
0100


CCL
0100
TDET (CPS)
0
500
BDET (CPS)
0
500
FILE: 8
03300
03400
03500



FILE: 7

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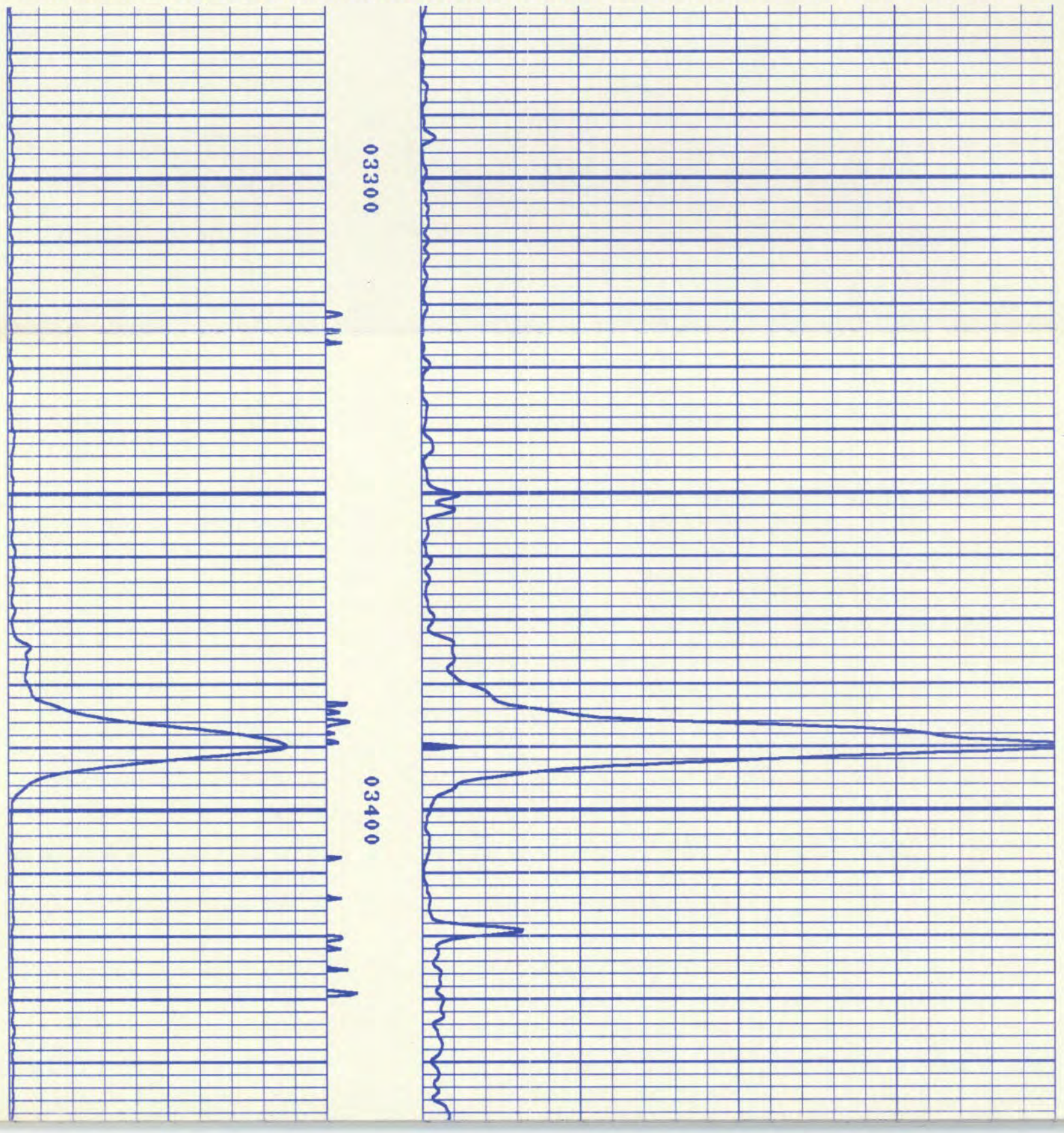
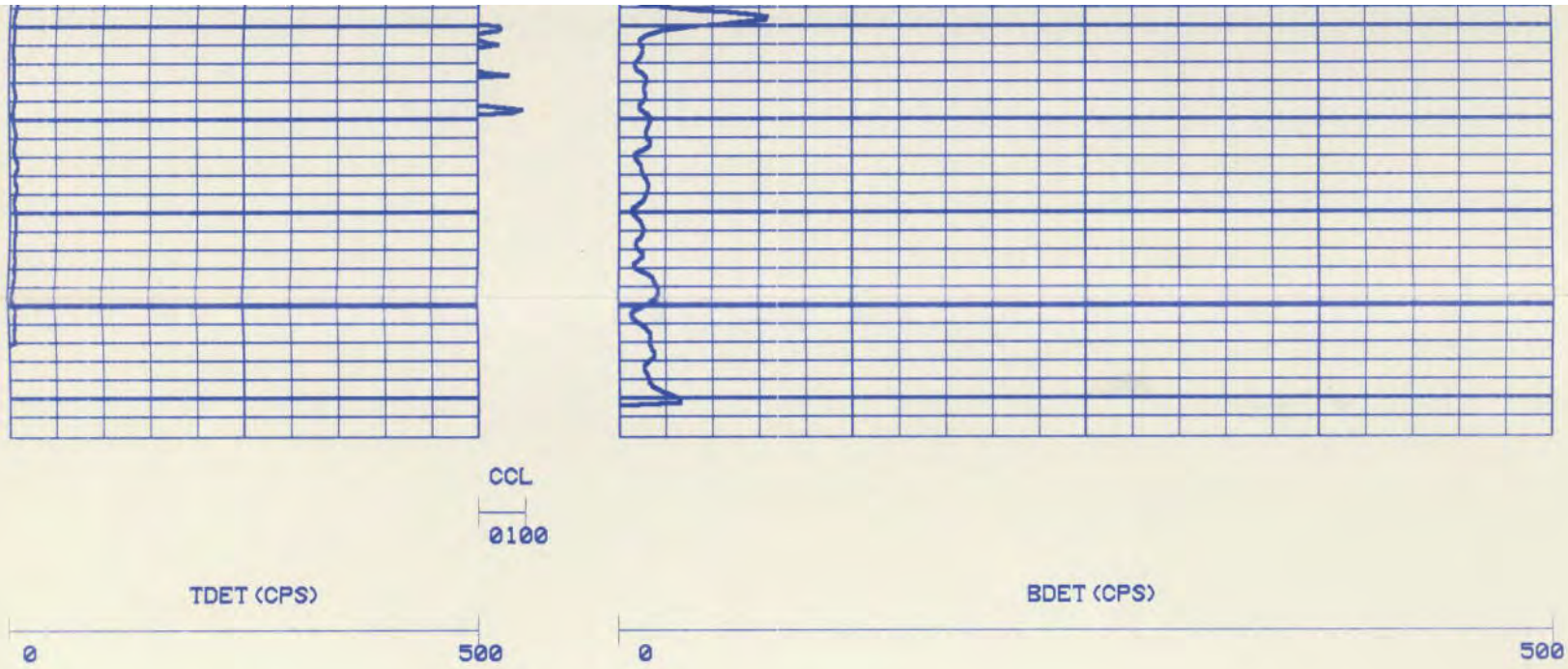
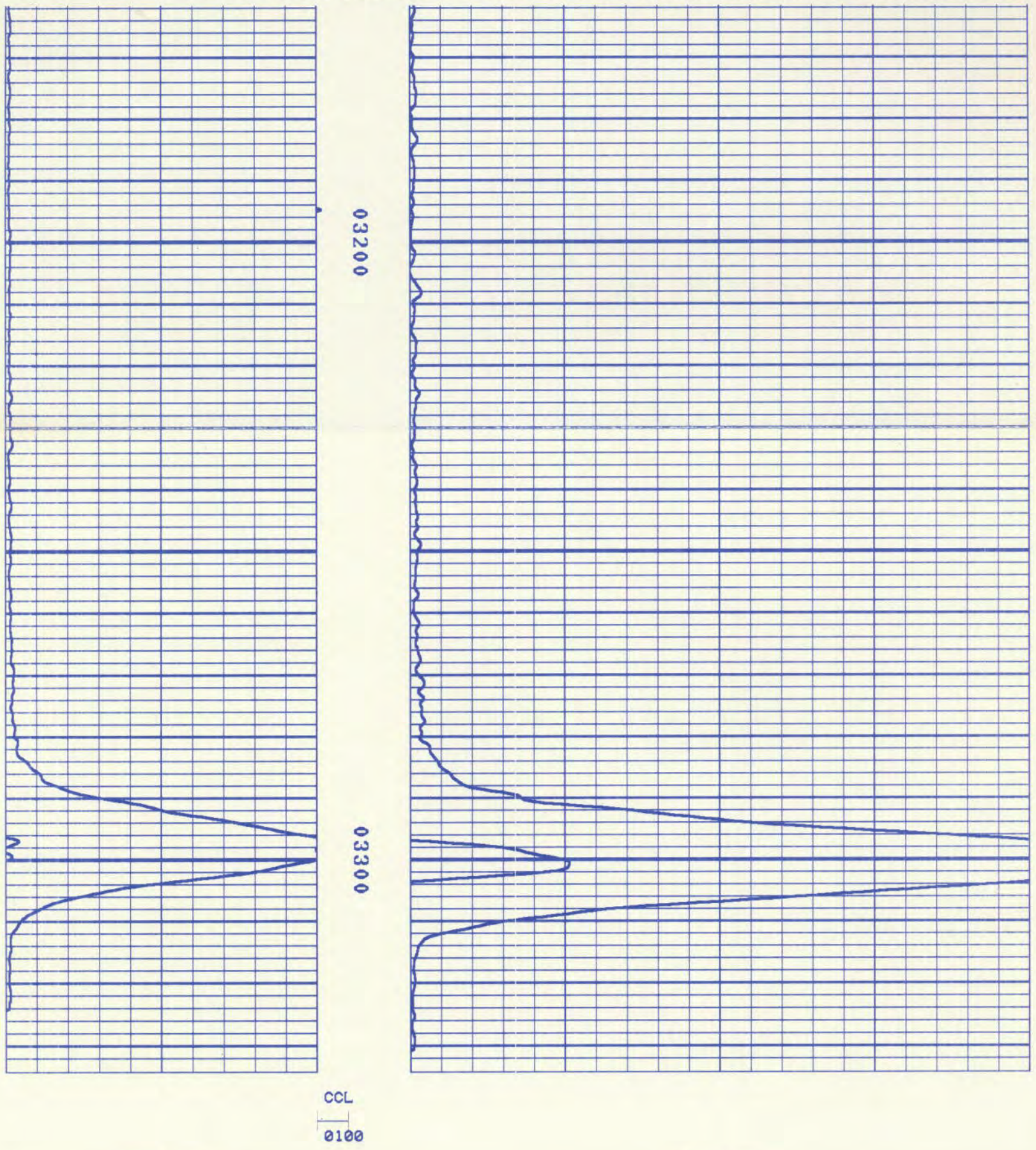
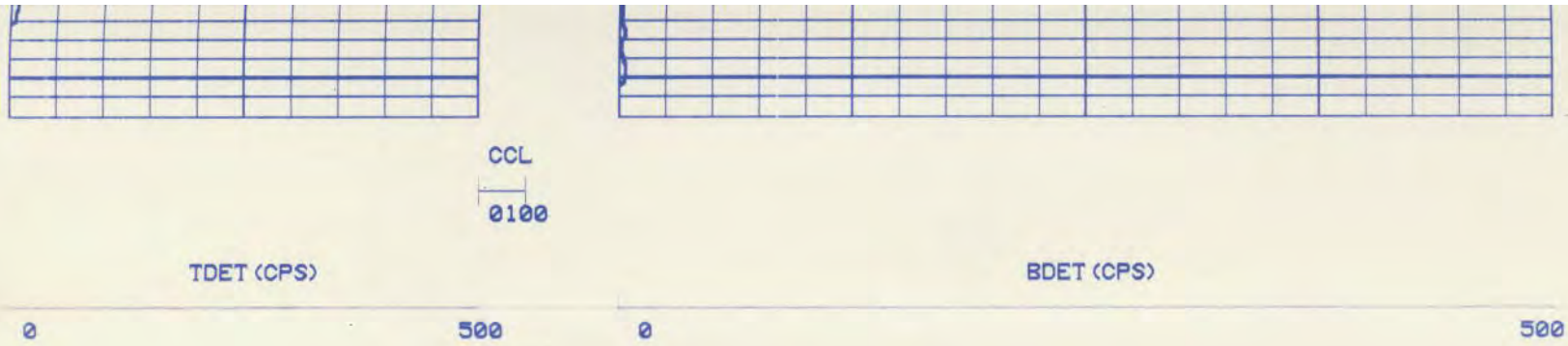



CCL
0100
TDET (CPS)
0
500
BDET (CPS)
0
500

FILE: 6

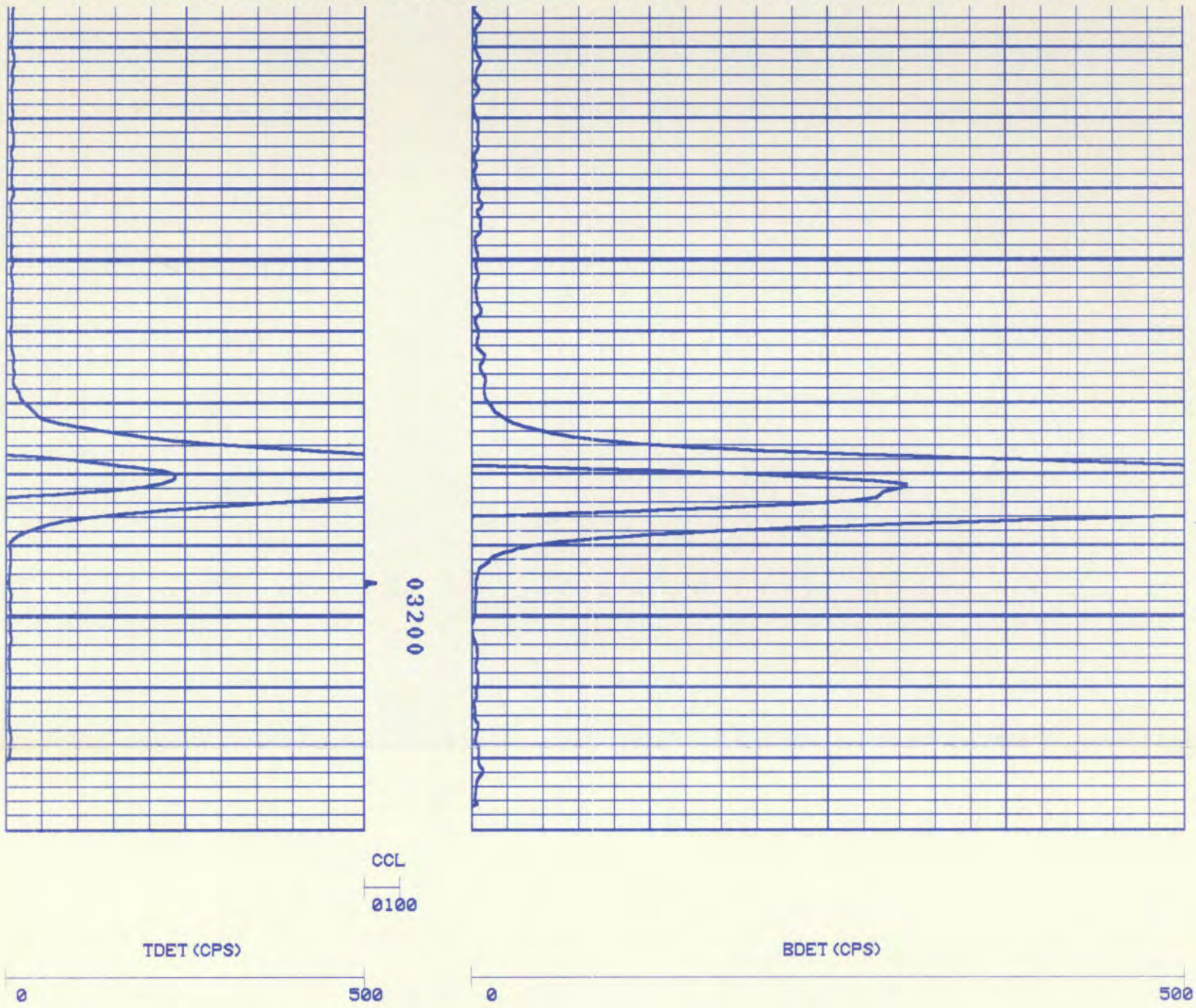
****


03200
03300
CCL
0100
TDET (CPS)
BDET (CPS)



FILE: 5

****



FILE: 4

****

MAIN BACKGROUND PASS

MAIN BACKGROUND PASS

****

FILE: 3

CURVE DELAY REPORT

CURVE	PHYS. DELAY	UNITS
TDET	6,6	FT,IN
BDET	0	FT,IN
CCL	16,6	FT,IN

PARAMETERS

*** NONE ***

DISPLAY SCALE CHANGES

*** NONE ***

COMPANY: HOECHST CELANESE CORP.

WELL NAME: WELL 1-A

SERVICE: F 150A FILE: 3 DATE: 03/25/94

REVISION: FSYS256 REV:G002 VER:2.0

RUN: 1

TRIP: 1

TIME: 10:54:37

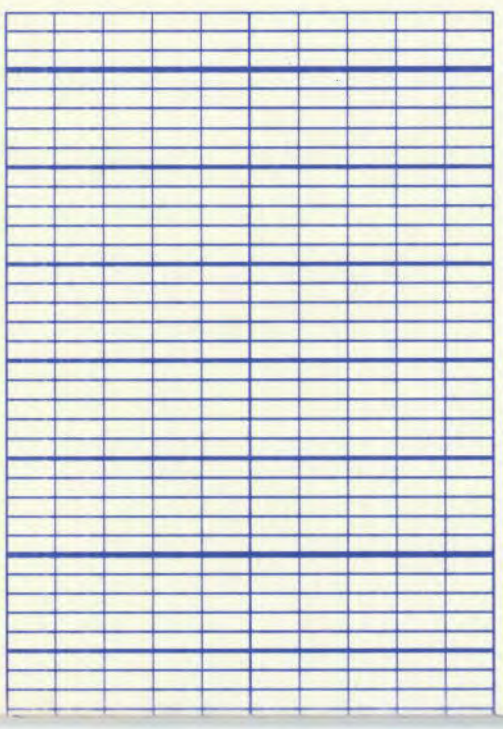
MODE: RECORD

CCL

0100

TDET (CPS)

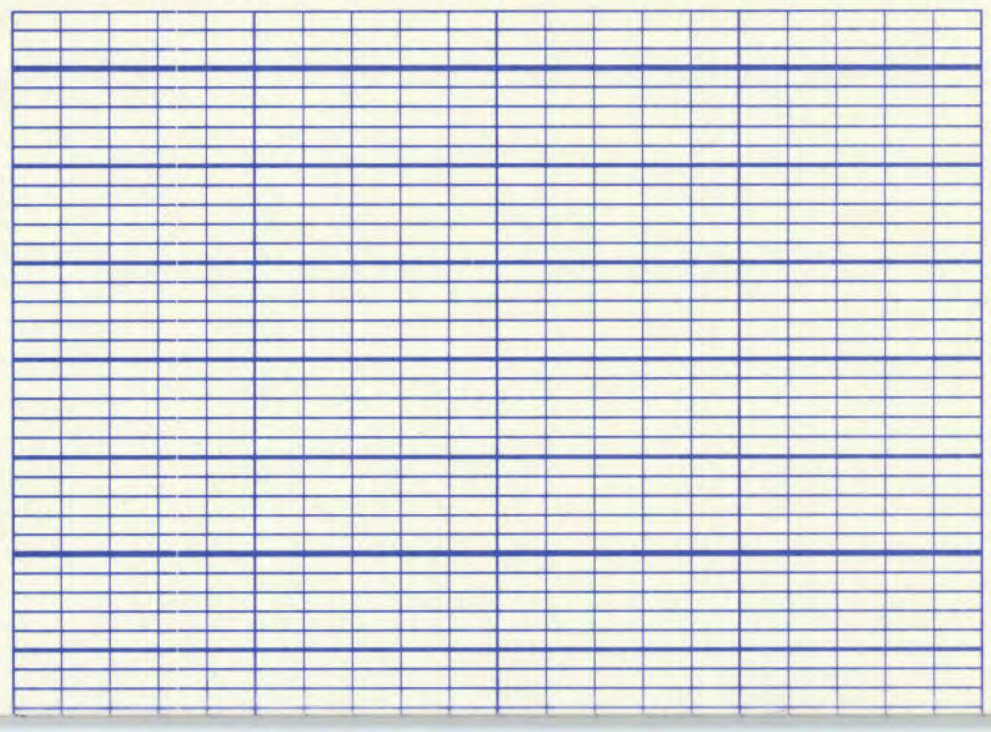
0 500

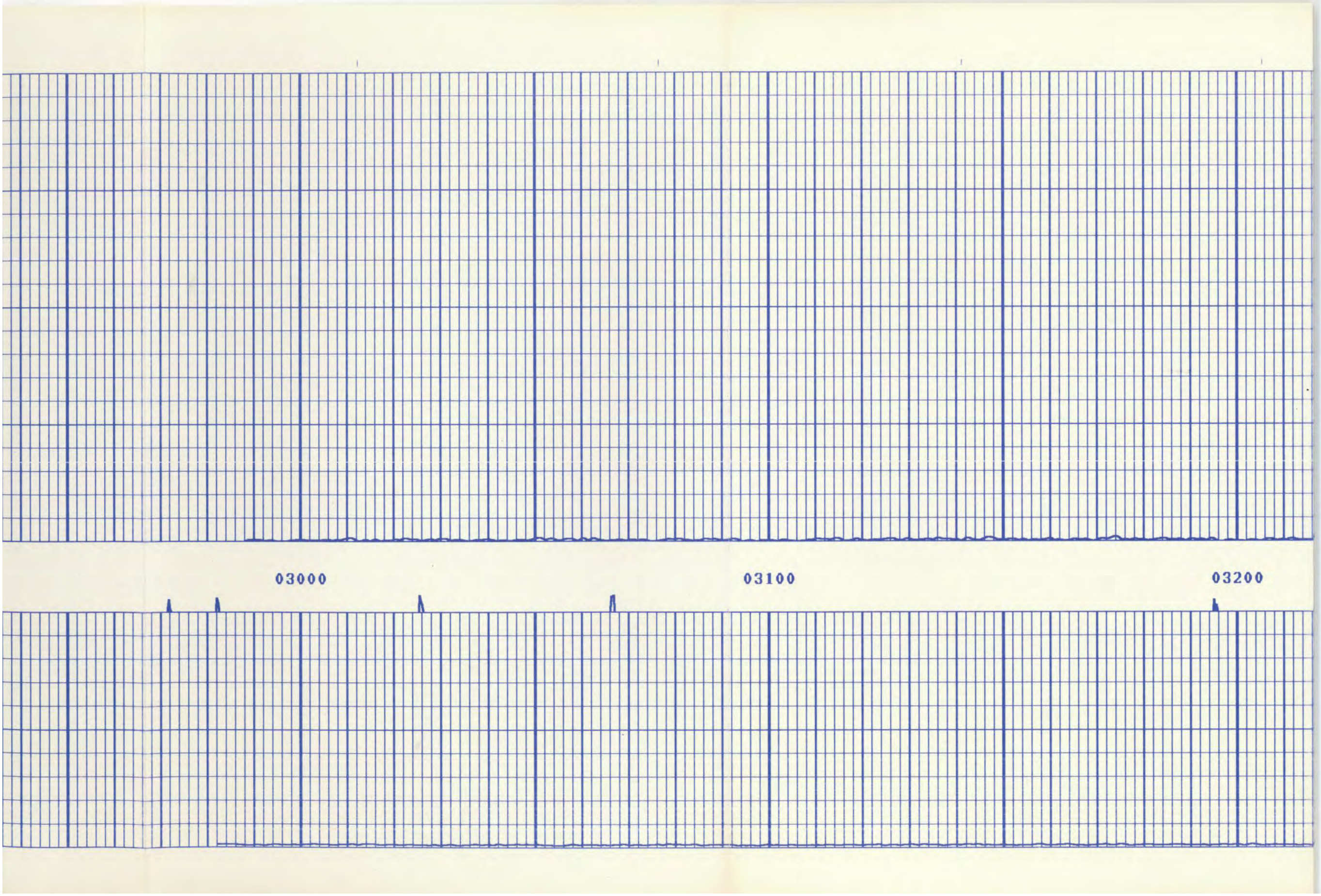


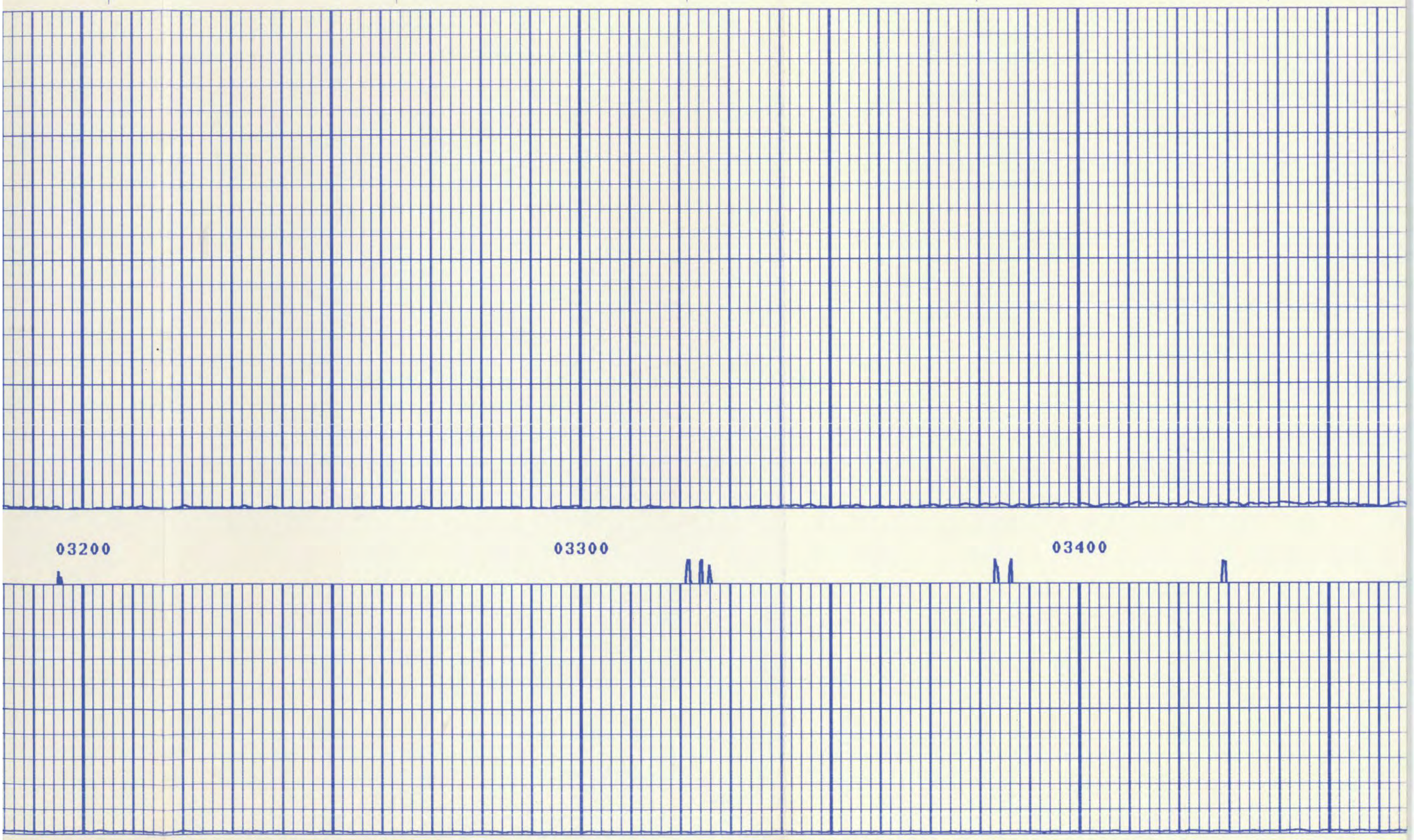
02900

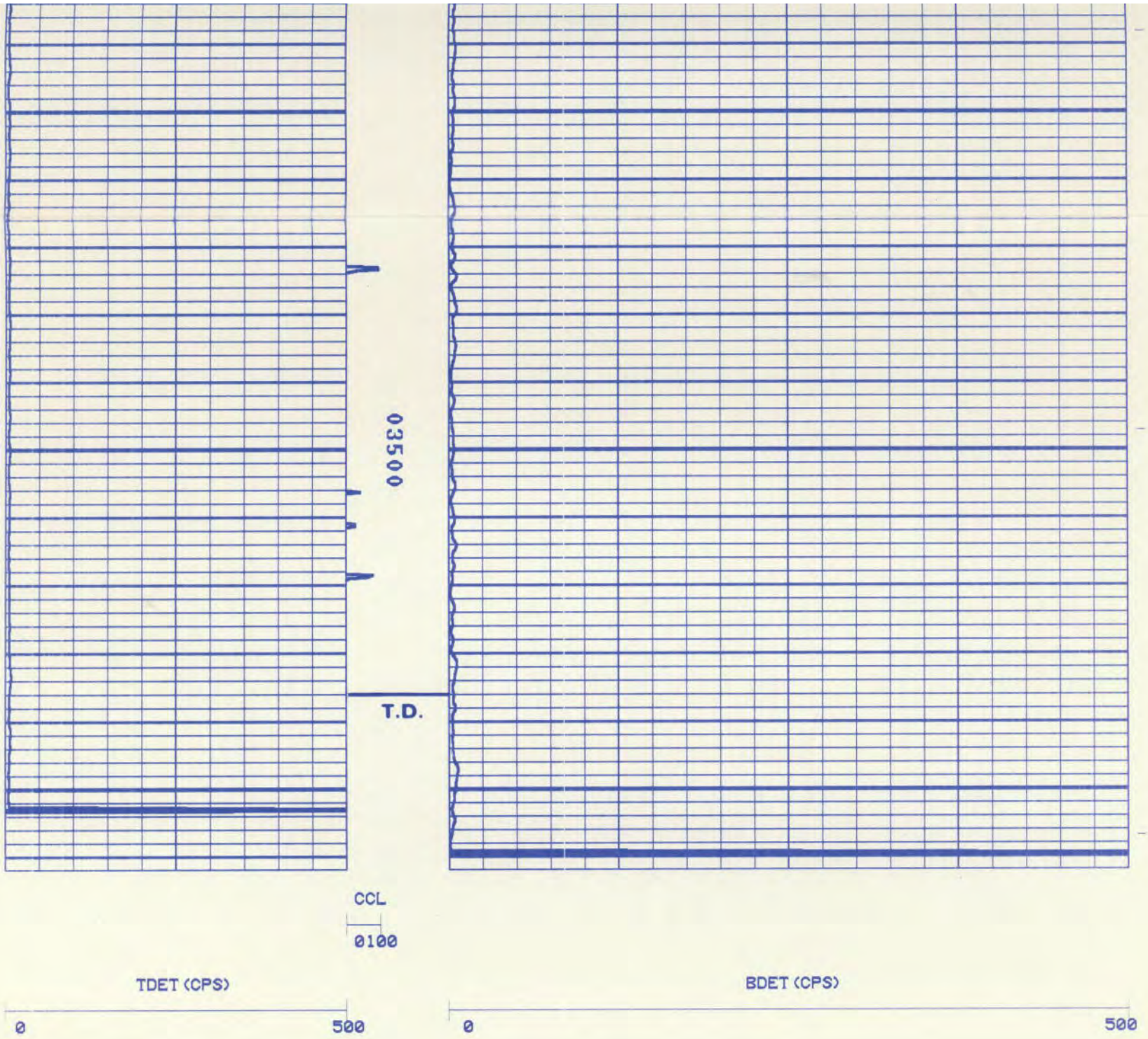
BDET (CPS)

0 500




03000
03100
03200


03200
03300
03400



FILE: 3

****

REPEAT SECTION BACKGROUND

****

FILE: 2

CURVE DELAY REPORT

CURVE	PHYS. DELAY	UNITS
TDET	6,6	FT,IN
BDET	0	FT,IN
CCL	16,6	FT,IN

PARAMETERS

*** NONE ***

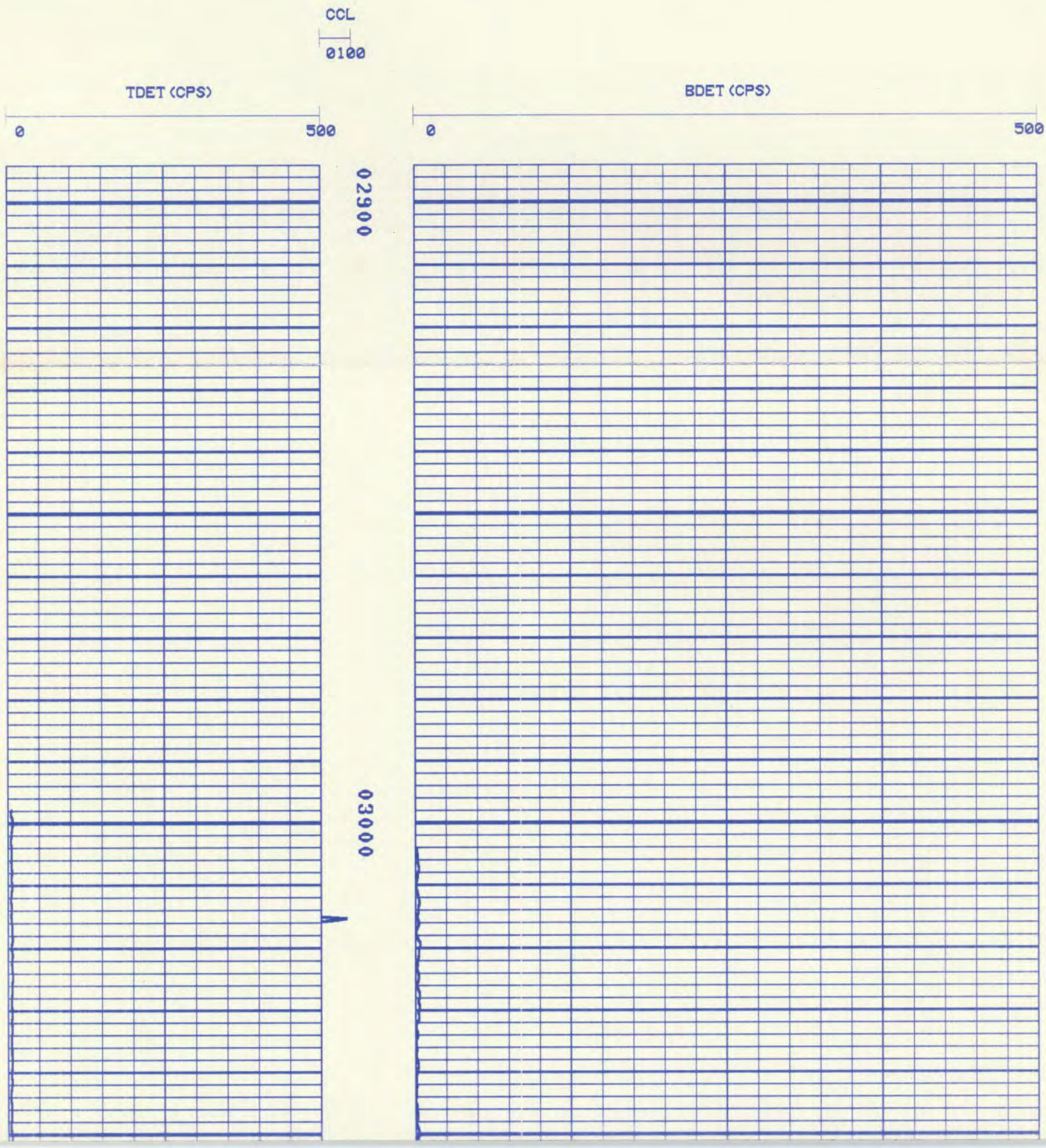
PARAMETERS

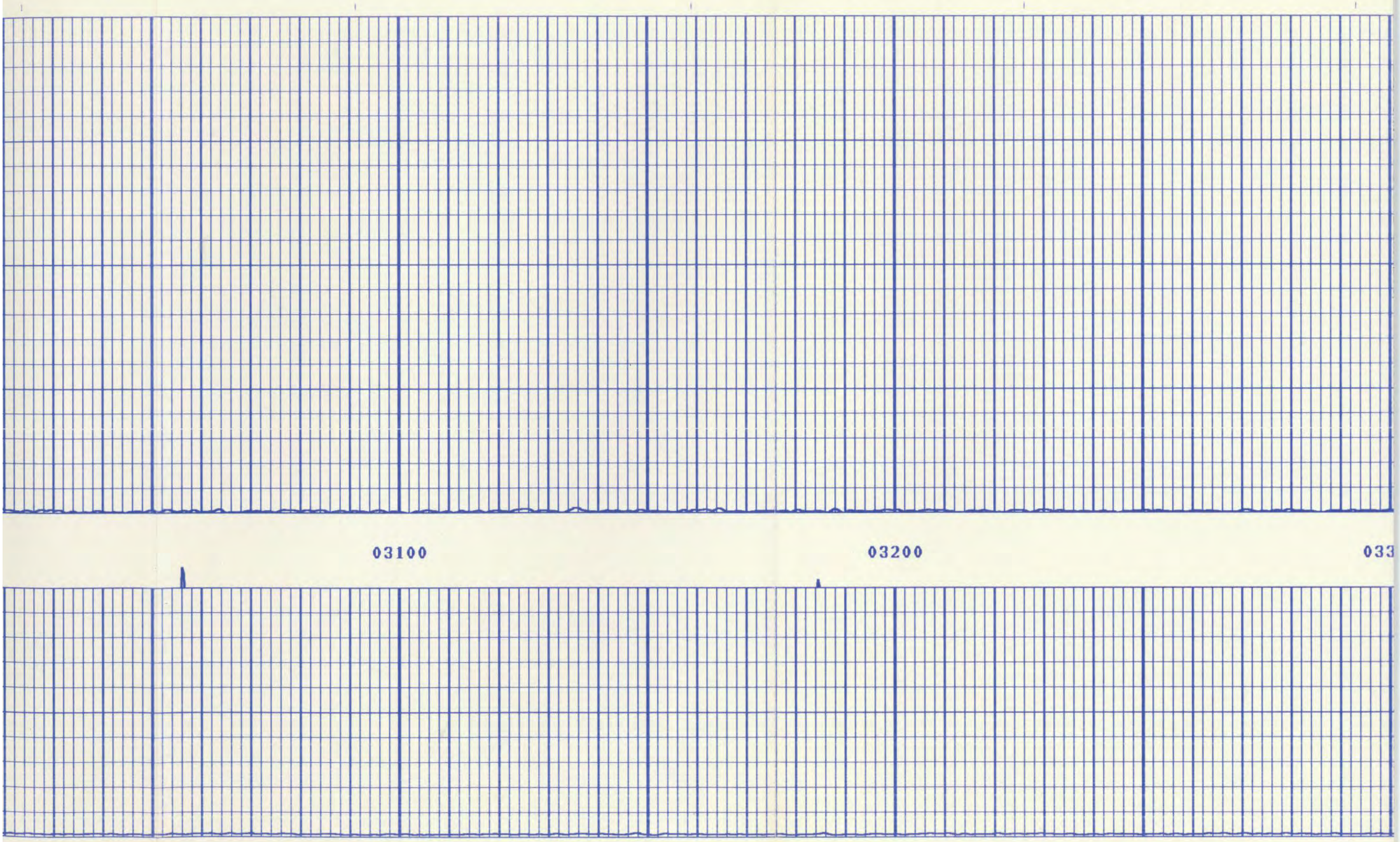
*** NONE ***

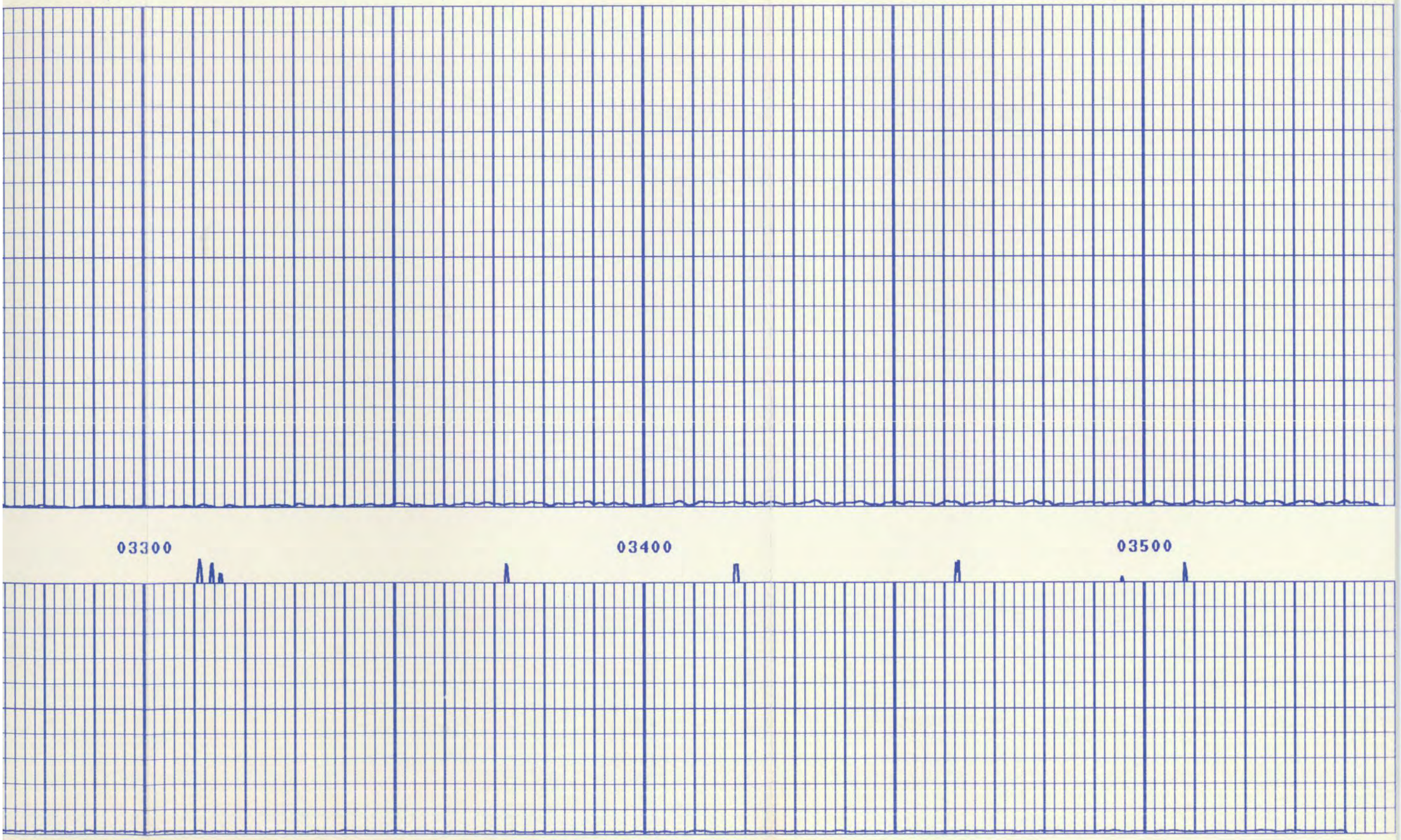
DISPLAY SCALE CHANGES

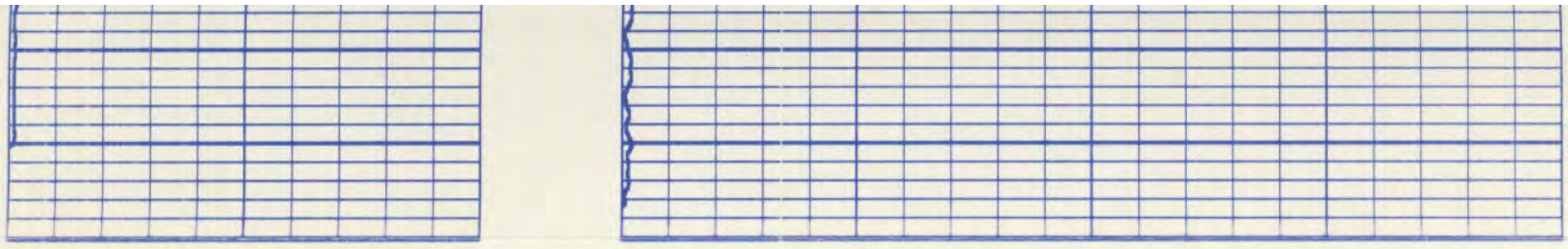
*** NONE ***

COMPANY:	HOECHST CELANESE CORP.			RUN:	1
WELL NAME:	WELL 1-A			TRIP:	1
SERVICE:	F 150A	FILE: 2	DATE: 03/25/94	TIME:	10:43:15
REVISION:	FSYS256 REV:G002 VER:2.0			MODE:	RECORD




03100
03200
033


03300
03400
03500



CCL

0100

TDET (CPS)

0 500

BDET (CPS)

0 500

FILE: 2

****

FILE: 1

****

GR TIE-IN LOG

****

FILE: 2

CURVE DELAY REPORT

CURVE	PHYS. DELAY	UNITS
RPS	0	FT,IN
TEMP	4,9	FT,IN
RDN	7,0	FT,IN
GR	0	FT,IN
CCL	7,6	FT,IN

PARAMETERS

*** NONE ***

DISPLAY SCALE CHANGES

*** NONE ***

COMPANY: HOECHST CELANESE CORP. RUN: 1

WELL NAME: WELL NO. 1-A TRIP: 1

SERVICE: F 159P FILE: 2 DATE: 03/25/94 TIME: 10:19:00

COMPANY: HOECHST CELANESE CORP.

RUN: 1

WELL NAME: WELL NO. 1-A

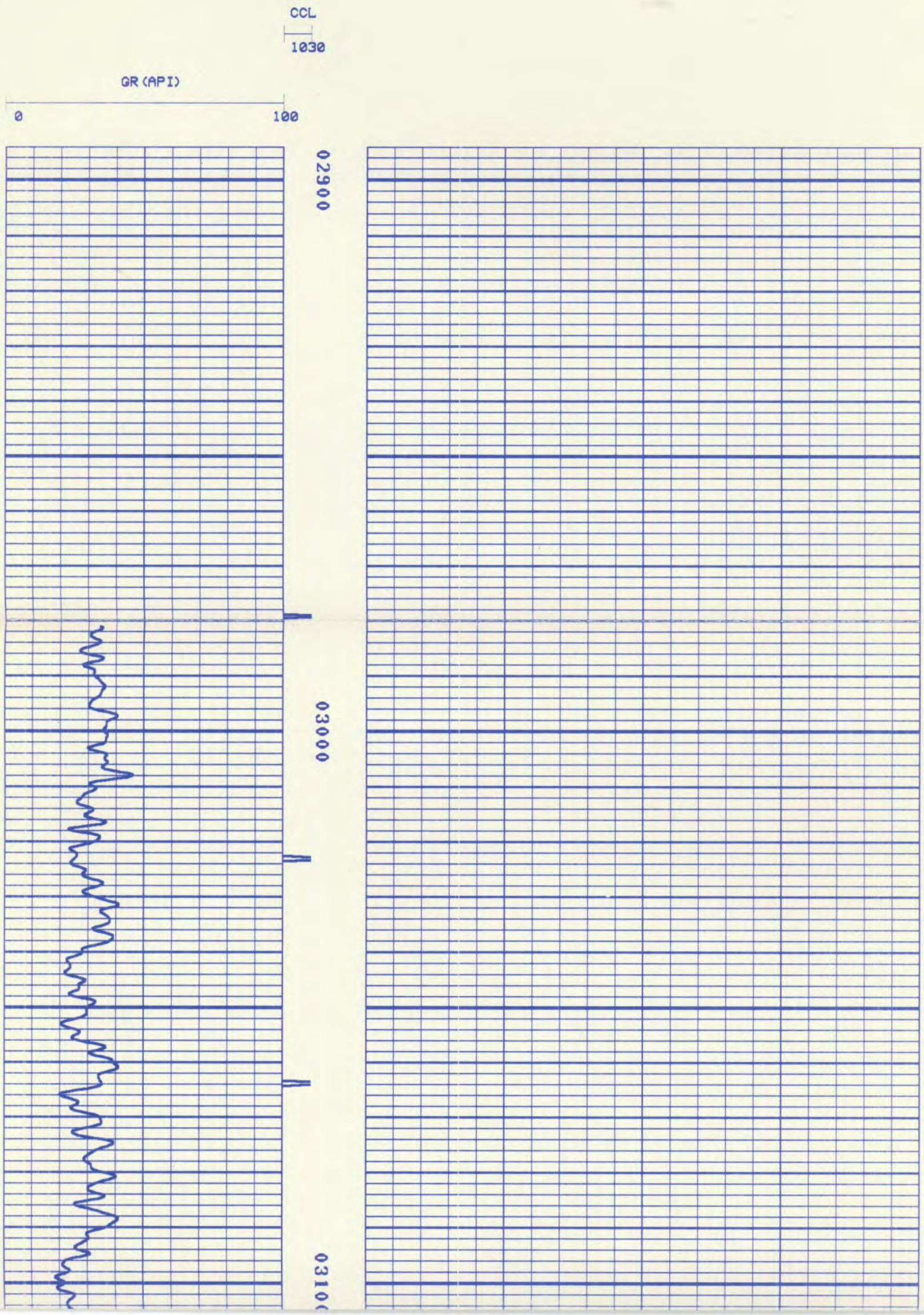
TRIP: 1

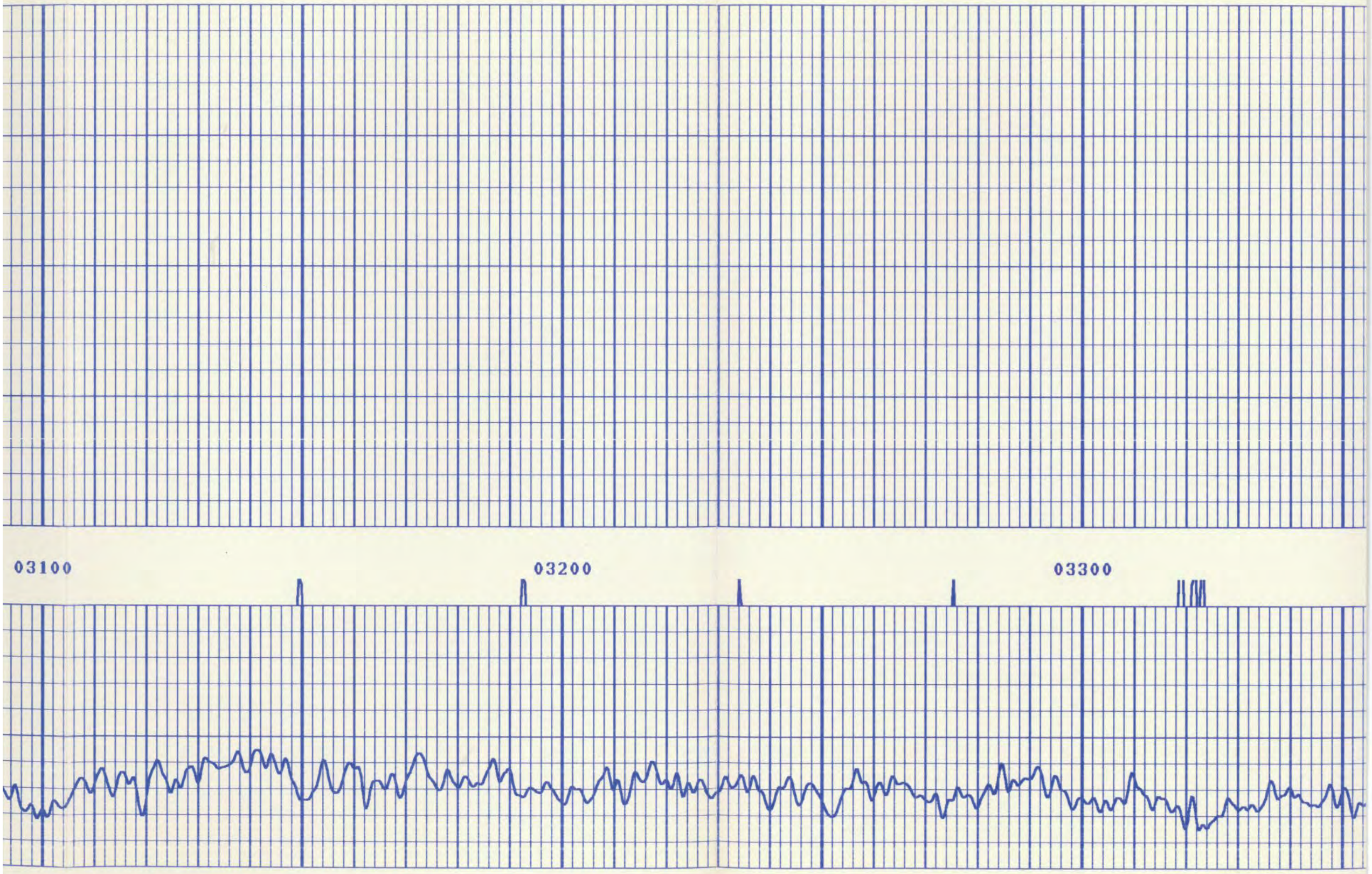
SERVICE: F 159P FILE: 2 DATE: 03/25/94

TIME: 10:19:00

REVISION: FSYS256 REV:G002 VER:2.0

MODE: RECORD

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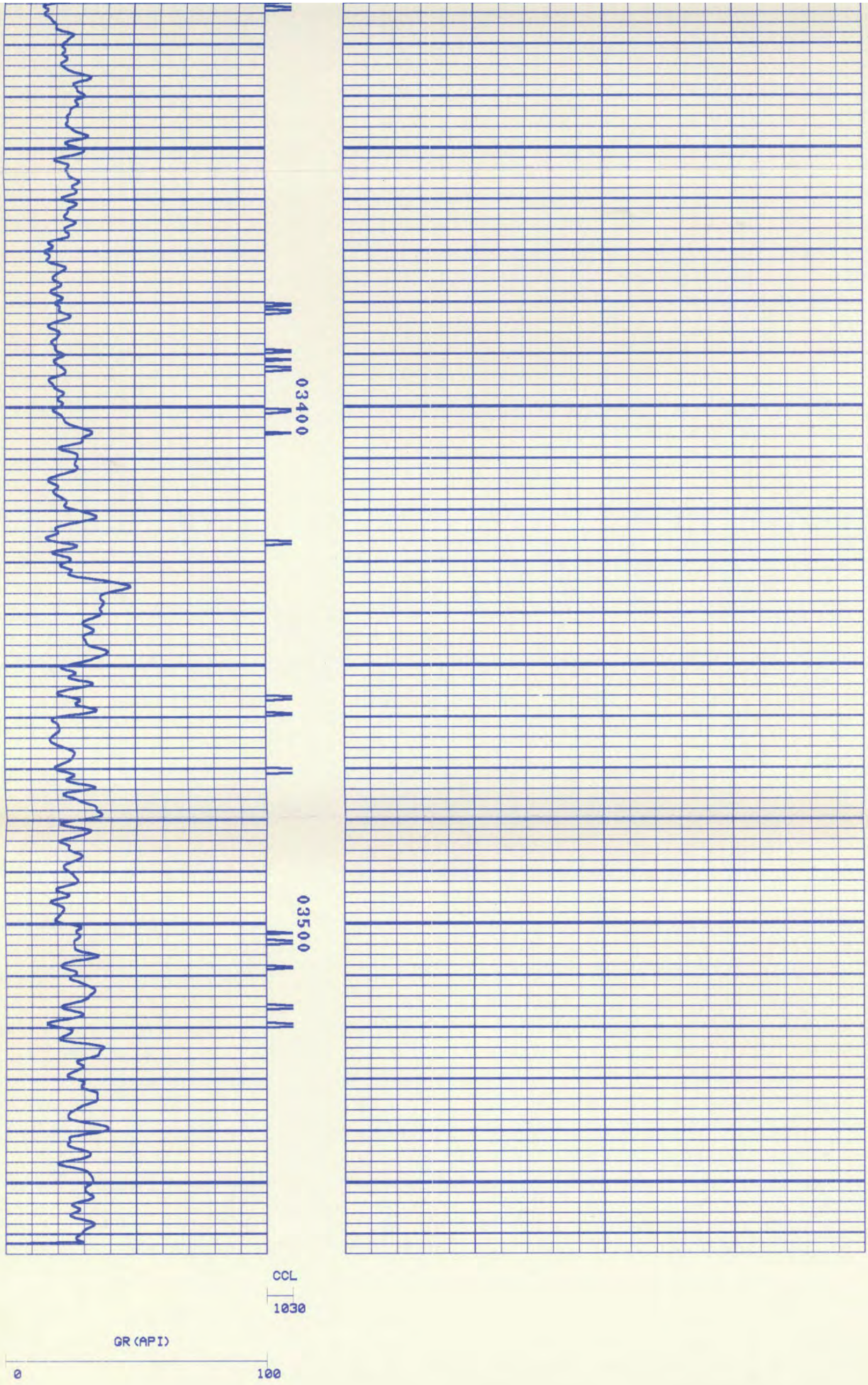

FILE: 2

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ECO Solutions, Inc.
Hoechst Celanese Chemical Group, Inc.
Pressure Falloff/MIT Testing

APPENDIX B

ANNULUS PRESSURE TEST PLOTS AND DATA

ECO Solutions, Inc.
Hoechst Celanese Chemical Group, Inc.
Pressure Falloff/MIT Testing

APPENDIX B

ANNULUS PRESSURE TEST PLOTS AND DATA

ECO Solutions, Inc.
Hoechst Celanese Chemical Group, Inc.
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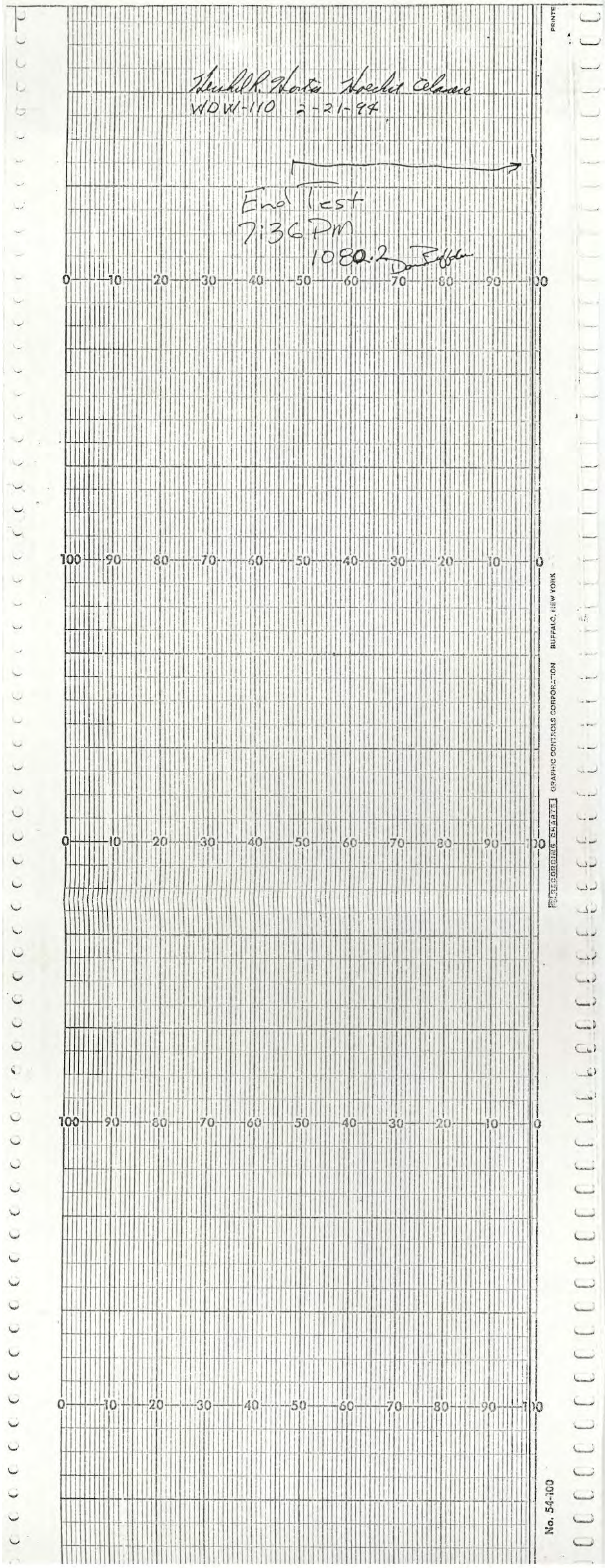
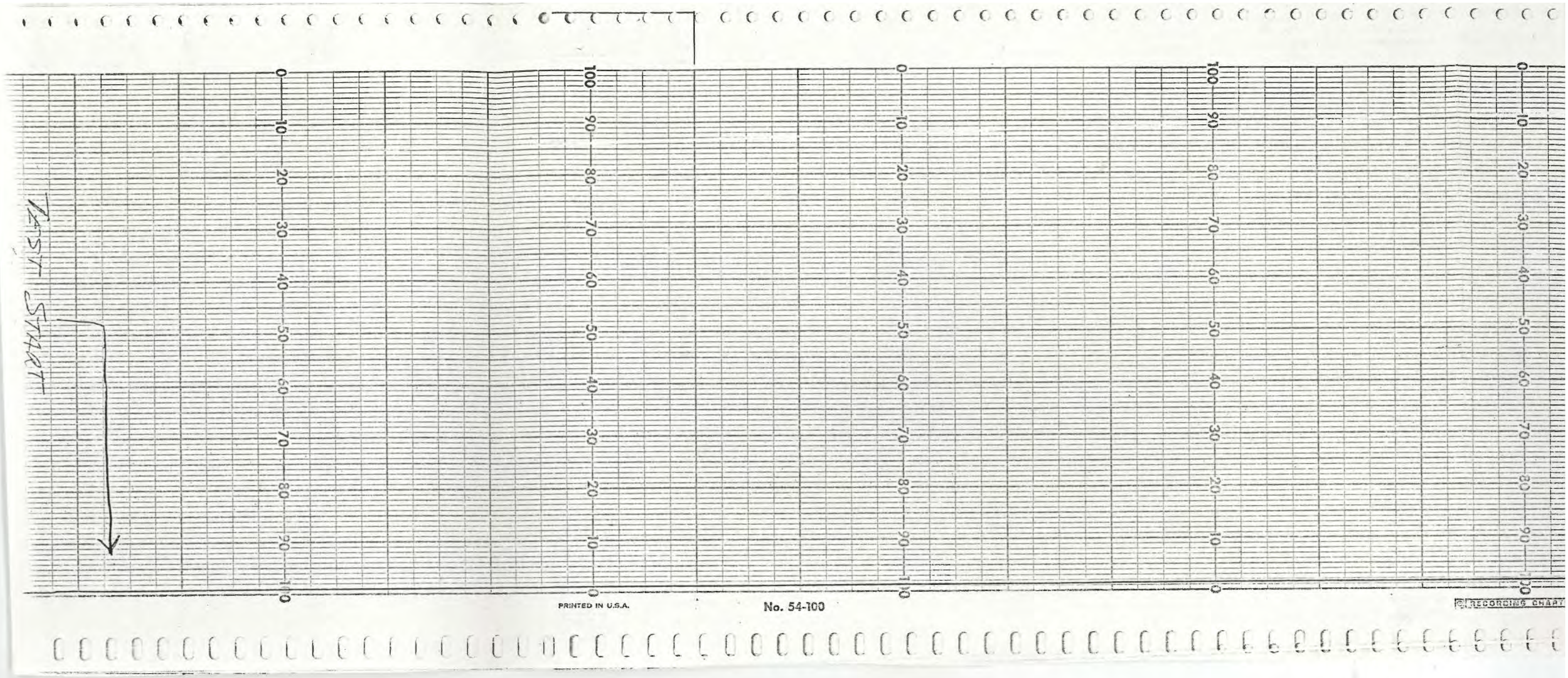
APPENDIX B

ANNULUS PRESSURE TEST PLOTS AND DATA

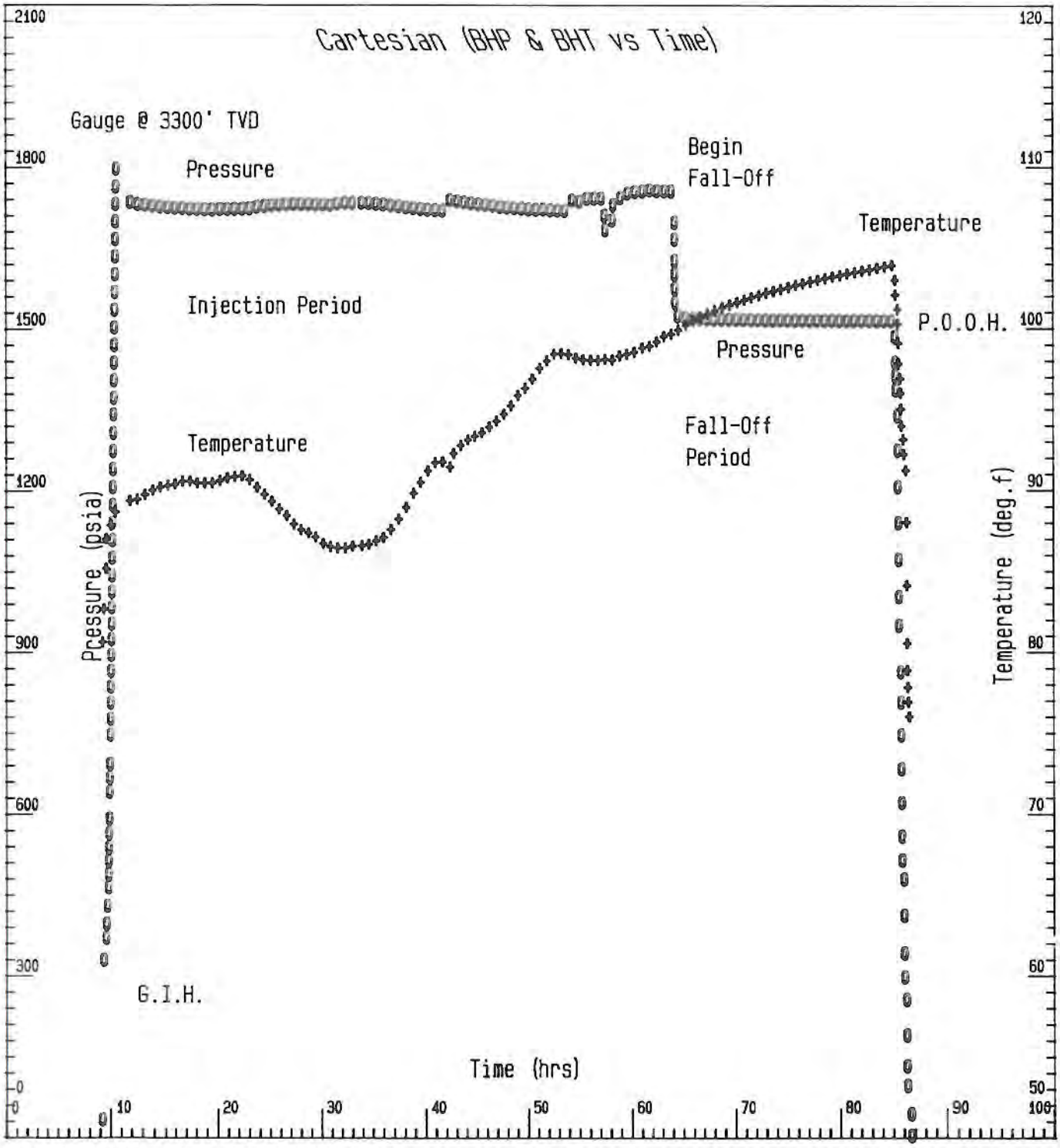

Werkhold R. Hortis Hoechst Celanese
WDW1-110 2-21-94
End Test
7:36 PM
1080.2
0 10 20 30 40 50 60 70 80 90 100
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
RECORDING CHARTS
GRAPHIC CONTROLS CORPORATION BUFFALO, NEW YORK
No. 54-100


FAST START
PRINTED IN U.S.A.
No. 54-100
RECORDING CHART

ECO Solutions, Inc.
Hoechst Celanese Chemical Group, Inc.
Pressure Falloff/MIT Testing

APPENDIX C

GENERAL FALLOFF PLOTS



Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A
Field: BAY CITY, TEXAS PLANT

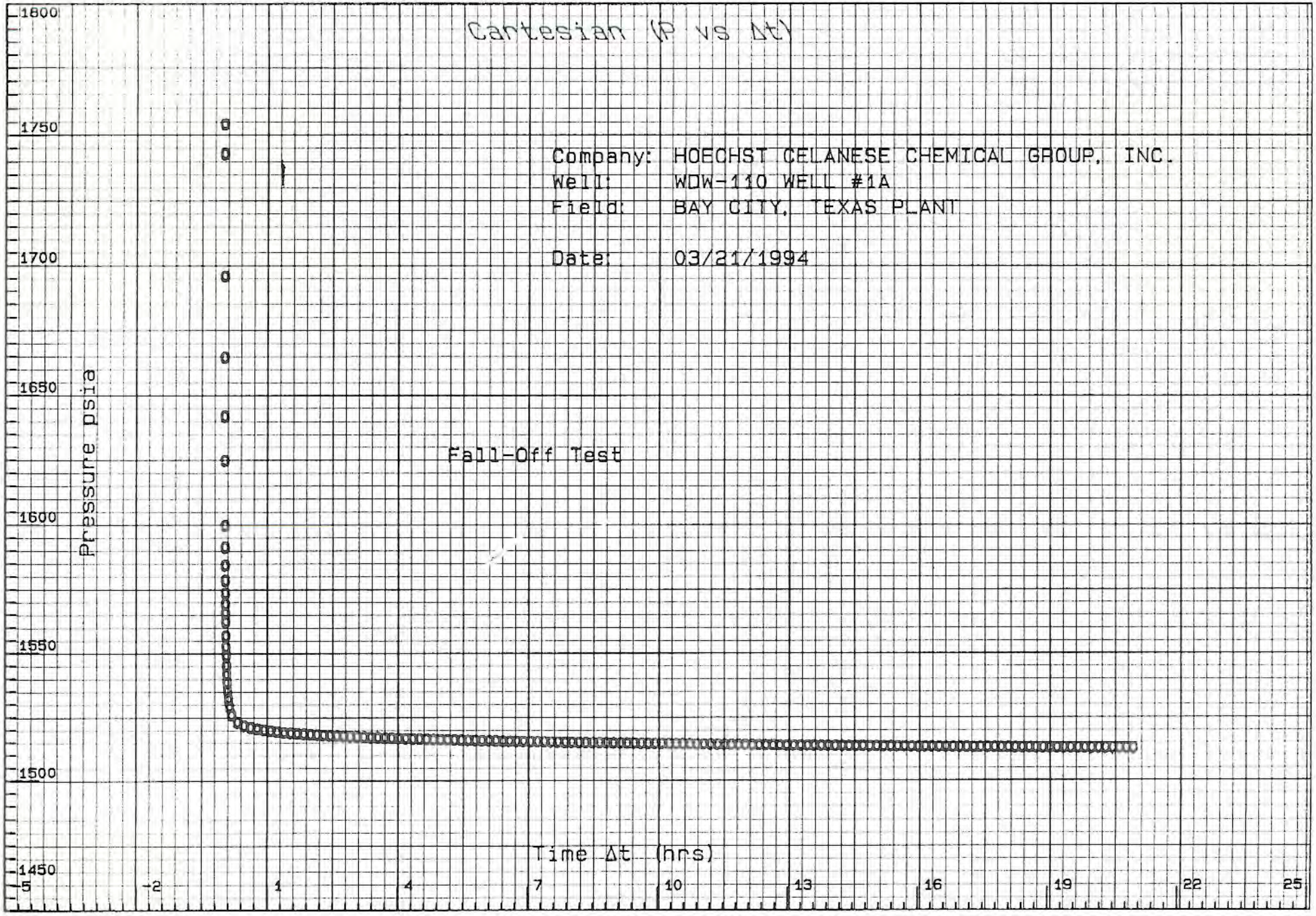
Date: 03/21/1994

Begin Time: 09:09:21 03/21/94
End Time: 14:44:20 03/24/94

Injection Pressure = 1754 psi
Shut-In Pressure = 1512 psi
Injection Rate = 280 GPM

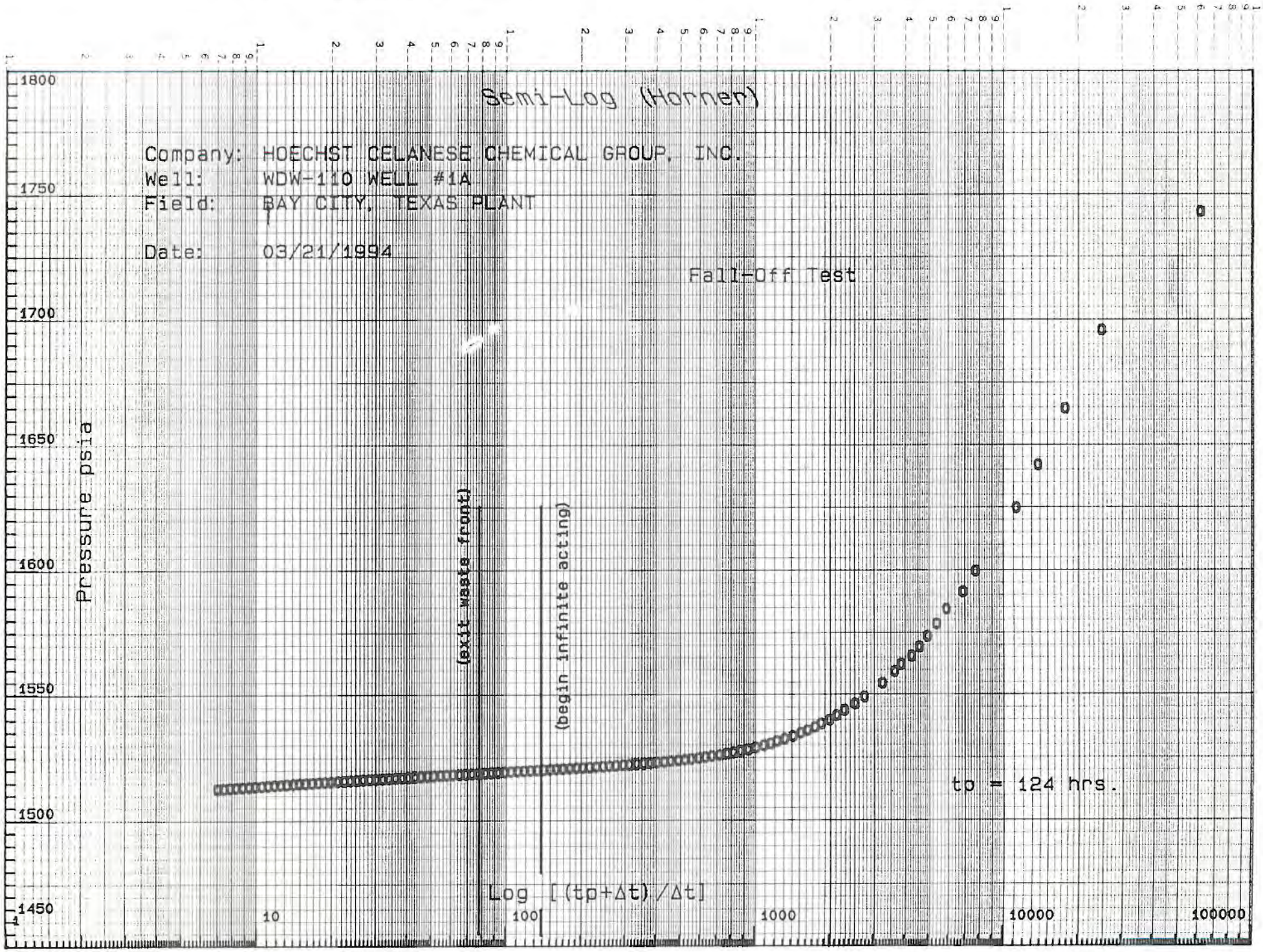
K+E 10 X 10 TO THE INCH • 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 0780



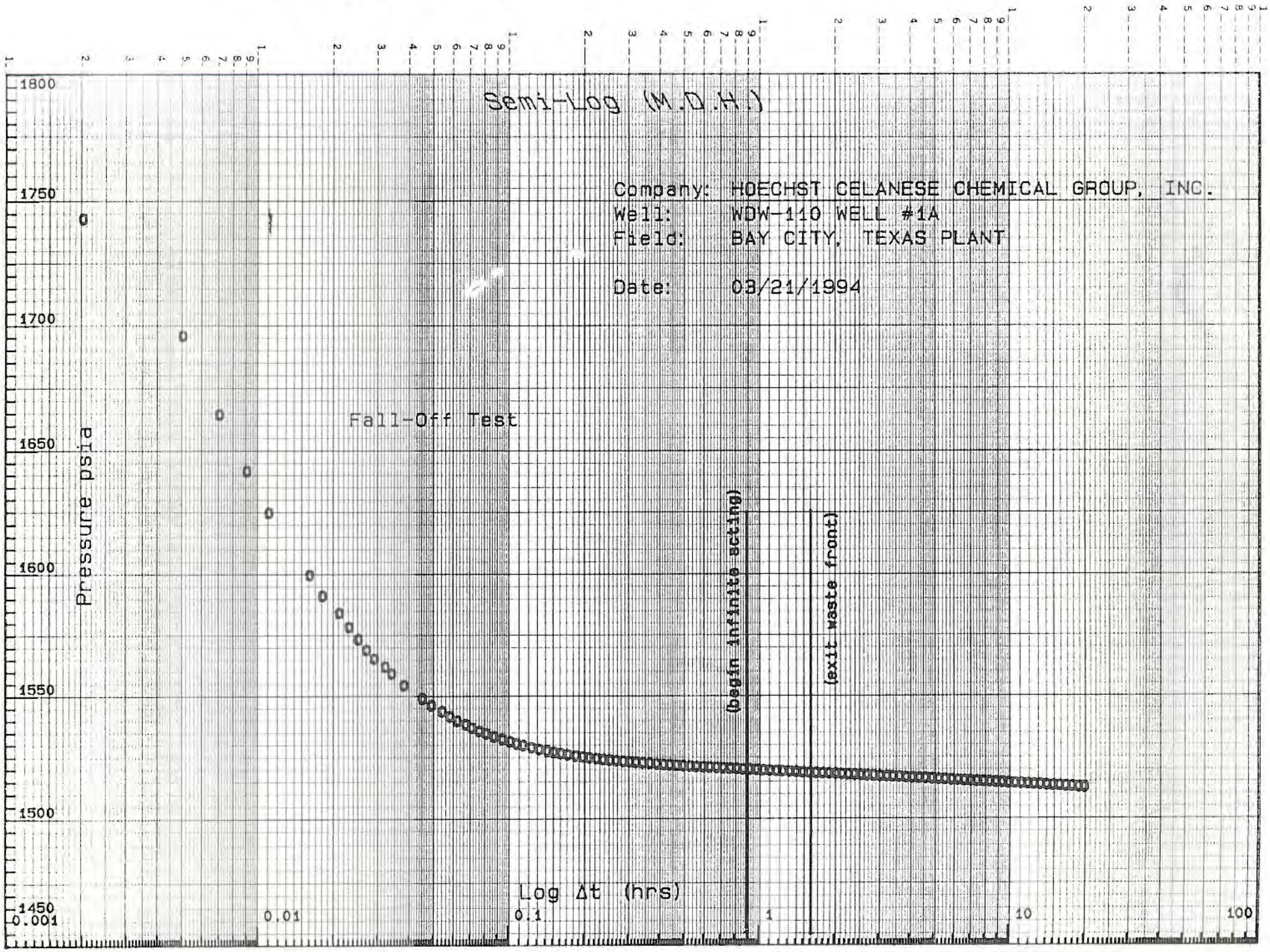
K•Σ SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 6210



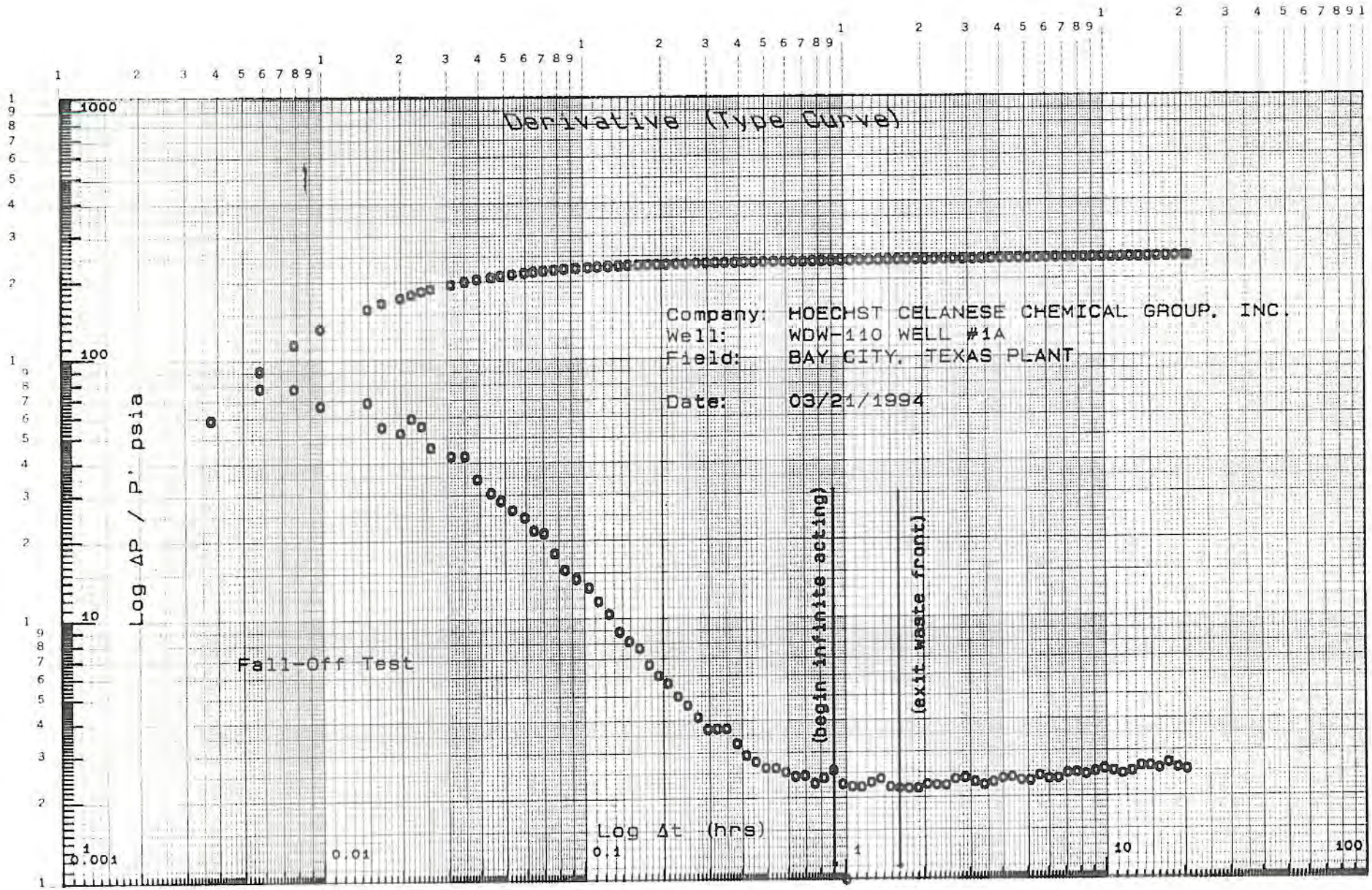
K•E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 6210



K+E LOGARITHMIC 3 x 5 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 7520



ECO Solutions, Inc.
Hoechst Celanese Chemical Group, Inc.
Pressure Falloff/MIT Testing

APPENDIX D

FALLOFF DATA

COMMENTS FOR DATA PRINTOUT

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	*Delta-P (PSI)
[Monday: Mar. 21, 1994]						
		Delta-P calculated with final injection pressure of 1754.13 psia prior to fall-off test.				
		Start up Data Acquisition System. GRC EPG-520 Gauge (S/N 69491).				
1	0	9: 9:25	0.0000	32.67	80.64	-1721.46
		Pressure up gauges in lubricator.				
27	0	9:14:16	0.0810	13.74	80.65	-1740.39
		Start in hole with gauges.				
41	0	9:27:43	0.3050	327.66	82.67	-1426.47
		Disconnected GRC gauge and power-up CCL.				
102	0	10:26:16	1.2810	1797.22	88.78	43.09
		Corrected WLM to depth of end of tubing. Tagged fill @ 3558.5 feet. Pull up to test depth of 3,300 feet, Disconnect CCL and power up GRC gauge. Injection rate is approximately				
103	0	11:46:26	2.6170	1734.90	89.39	-19.23
[Wednesday: Mar. 23, 1994]						
		Cut back on injection rate.				
1564	2	9:19:10	48.1626	1741.13	98.07	-13.00
		Stepping injection rate back up to 280 GPM.				
1583	2	9:55:35	48.7696	1662.84	98.00	-91.29
		Shut down injection, start fall-off test.				
1868	2	16:12:28	0.0000	1754.13	99.76	0.00
[Thursday: Mar. 24, 1994]						
		Drop downhole 10 feet, then pull out of hole making static gradient stops.				
3527	3	13:11:13	20.9790	1512.40	103.90	-241.73
		Leaving 3,000 feet.				
3543	3	13:26:34	21.2350	1381.99	101.50	-372.14

COMMENTS FOR DATA PRINTOUT

(continued)

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	*Delta-P (PSI)
[Thursday: Mar. 24, 1994]						
		Leaving 2,000 feet.				
3559	3	13:41:56	21.4910	948.17	97.10	-805.96
		Leaving 1,000 feet.				
3576	3	13:58:15	21.7630	513.93	93.29	-1240.20
		Leaving 500 feet.				
3589	3	14:10:44	21.9710	296.59	91.81	-1457.54
		Bleed off lubricator.				
3615	3	14:35:41	22.3870	80.60	75.51	-1673.53
		Shut down Data Acquisition System and rig down.				
3624	3	14:44:20	22.5310	13.31	75.32	-1740.82

ECO Solutions, Inc.	Report File:	WDW110#1.PAN
MECHANICAL INTEGRITY TEST	Analysis Date:	4/15/94
Fall-Off Test Analysis		

Reservoir Description
Fluid type : Water
Well orientation : Vertical
Number of wells : 1
Number of layers : 1

Layer Parameters Data

	Layer 1
Formation thickness	165.0 ft
Average formation porosity	0.33
Water saturation	1.0
Gas saturation	0.0
Formation compressibility	0.0 psi-1
Total system compressibility	6.0000e-6 psi-1
Layer pressure	1512.4 psia
Temperature	103.9 deg F

Well Parameters Data

	Well 1
Well radius	0.3 ft
Distance from observation to active well	0.0 ft
Wellbore storage coefficient	0.026 bbl/psi
Well offset - x direction	0.0 ft
Well offset - y direction	0.0 ft

Fluid Parameters Data

	Layer 1
Oil gravity	0.0 API
Gas gravity	0.0 sp grav
Gas-oil ratio	0.0 scf/STB
Water cut	0.0
Water salinity	0.0 ppm
Gas-oil ratio (solution)	0.0 scf/STB
Bubble-point pressure	0.0 psia
Oil density	0.00 lb/ft3
Oil viscosity	0.00 cp
Oil formation volume factor	0.00 RB/STB
Gas density	0.00 lb/ft3
Gas viscosity	cp

PanSystem - Copyright (C) 1993 Edinburgh Petroleum Services Ltd.

Fluid Parameters Data (cont)

	Layer 1
Gas formation volume factor	0.00 ft3/scf
Water density	0.00 lb/ft3
Water viscosity	0.5914 cp
Water formation volume factor	1.00 RB/STB
Oil compressibility	0.0 psi-1
Gas compressibility	0.0 psi-1
Water compressibility	0.0 psi-1

Layer 1 Correlations
Not Used

Layer Boundaries Data
Layer 1 Boundary Type : Infinitely acting

	Layer 1
L1	0.0 ft
L2	0.0 ft
L3	0.0 ft
L4	0.0 ft
Drainage area	0.0 acres
Dietz shape factor	0.0

Layer 1 Model Data
Layer 1 Model Type : Radial homogeneous

	Layer 1
Permeability	1050.0 md
Skin factor	43.0

PanSystem - Copyright (C) 1993 Edinburgh Petroleum Services Ltd.

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Monday: Mar. 21, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
		Start up Data Acquisition System.				
		GRC EPG-520 Gauge (S/N 69491).				
1	0	9: 9:25	0.0000	32.67	80.64	-1721.46
		Pressure up gauges in lubricator.				
27	0	9:14:16	0.0810	13.74	80.65	-1740.39
28	0	9:15:14	0.0970	15.43	80.71	-1738.70
34	0	9:20:59	0.1930	328.01	83.10	-1426.12
40	0	9:26:45	0.2890	327.69	82.77	-1426.44
		Start in hole with gauges.				
41	0	9:27:43	0.3050	327.66	82.67	-1426.47
46	0	9:32:31	0.3850	395.79	87.60	-1358.34
52	0	9:38:16	0.4810	429.30	87.80	-1324.83
58	0	9:44: 2	0.5770	463.37	87.84	-1290.76
64	0	9:49:47	0.6730	614.91	87.79	-1139.22
70	0	9:55:33	0.7690	776.32	87.82	-977.81
76	0	10: 1:19	0.8650	953.50	87.98	-800.63
82	0	10: 7: 4	0.9610	1140.78	88.11	-613.35
88	0	10:12:50	1.0570	1341.21	88.26	-412.92
94	0	10:18:35	1.1530	1535.52	88.49	-218.61
100	0	10:24:21	1.2490	1731.39	88.71	-22.74
		Disconnected GRC gauge and power-up CCL.				
102	0	10:26:16	1.2810	1797.22	88.78	43.09
		Corrected WLM to depth of end of tubing.				
		Tagged fill @ 3558.5' TVD. Pull up to test depth				
		of 3,300 feet, Disconnect CCL and power up GRC				
		gauge. Injection rate is approximatly 280 GPM.				
103	0	11:46:26	2.6170	1734.90	89.39	-19.23
109	0	11:52:11	2.7130	1733.02	89.38	-21.11
115	0	11:57:57	2.8090	1732.76	89.39	-21.37
121	0	12: 3:43	2.9050	1732.30	89.39	-21.83
127	0	12: 9:28	3.0010	1732.10	89.41	-22.03
133	0	12:15:14	3.0970	1731.71	89.44	-22.42
139	0	12:20:59	3.1930	1731.50	89.47	-22.63
145	0	12:26:45	3.2890	1731.08	89.46	-23.05
151	0	12:32:31	3.3850	1730.89	89.52	-23.24
157	0	12:38:16	3.4810	1730.49	89.57	-23.64
163	0	12:44: 2	3.5770	1730.29	89.62	-23.84
169	0	12:49:47	3.6730	1730.27	89.70	-23.86
175	0	12:55:33	3.7690	1730.32	89.72	-23.81
181	0	13: 1:19	3.8650	1730.22	89.76	-23.91
187	0	13: 7: 4	3.9610	1730.00	89.77	-24.13
193	0	13:12:50	4.0570	1729.74	89.77	-24.39
199	0	13:18:35	4.1530	1729.54	89.77	-24.59
205	0	13:24:21	4.2490	1729.26	89.81	-24.87
211	0	13:30: 7	4.3450	1729.13	89.89	-25.00
217	0	13:35:52	4.4410	1728.73	89.91	-25.40
222	0	13:42: 7	4.5450	1728.67	89.97	-25.46
225	0	13:47:52	4.6410	1728.44	90.01	-25.69
228	0	13:53:38	4.7370	1728.35	90.04	-25.78
231	0	13:59:23	4.8330	1728.10	90.07	-26.03

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Monday: Mar. 21, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
234	0	14: 5: 9	4.9290	1727.69	90.08	-26.44
237	0	14:10:55	5.0250	1727.64	90.07	-26.49
240	0	14:16:40	5.1210	1727.35	90.11	-26.78
243	0	14:22:26	5.2170	1727.31	90.17	-26.82
246	0	14:28:11	5.3130	1727.08	90.21	-27.05
249	0	14:33:57	5.4090	1727.00	90.23	-27.13
252	0	14:39:43	5.5050	1726.66	90.25	-27.47
255	0	14:45:28	5.6010	1726.45	90.24	-27.68
258	0	14:51:14	5.6970	1726.32	90.26	-27.81
261	0	14:56:59	5.7930	1726.13	90.28	-28.00
264	0	15: 2:45	5.8890	1725.89	90.31	-28.24
267	0	15: 8:31	5.9850	1725.79	90.32	-28.34
270	0	15:14:16	6.0810	1725.69	90.34	-28.44
273	0	15:20: 2	6.1770	1725.54	90.36	-28.59
276	0	15:25:47	6.2730	1725.44	90.34	-28.69
279	0	15:31:33	6.3690	1725.26	90.36	-28.87
282	0	15:37:19	6.4650	1725.14	90.37	-28.99
285	0	15:43: 4	6.5610	1725.07	90.37	-29.06
288	0	15:48:50	6.6570	1725.06	90.37	-29.07
291	0	15:54:35	6.7530	1724.91	90.42	-29.22
294	0	16: 0:21	6.8490	1724.75	90.43	-29.38
297	0	16: 6: 7	6.9450	1724.79	90.45	-29.34
300	0	16:11:52	7.0410	1724.56	90.48	-29.57
303	0	16:17:38	7.1370	1724.45	90.53	-29.68
306	0	16:23:23	7.2330	1724.35	90.56	-29.78
309	0	16:29: 9	7.3290	1724.23	90.57	-29.90
312	0	16:34:55	7.4250	1724.25	90.57	-29.88
315	0	16:40:40	7.5210	1724.12	90.59	-30.01
318	0	16:46:26	7.6170	1724.07	90.61	-30.06
321	0	16:52:11	7.7130	1723.95	90.62	-30.18
324	0	16:57:57	7.8090	1723.73	90.64	-30.40
327	0	17: 3:43	7.9050	1723.50	90.65	-30.63
330	0	17: 9:28	8.0010	1723.45	90.63	-30.68
333	0	17:15:14	8.0970	1723.33	90.62	-30.80
336	0	17:20:59	8.1930	1723.22	90.61	-30.91
339	0	17:26:45	8.2890	1723.11	90.61	-31.02
342	0	17:32:31	8.3850	1722.99	90.58	-31.14
345	0	17:38:16	8.4810	1722.90	90.55	-31.23
348	0	17:44: 2	8.5770	1722.64	90.53	-31.49
351	0	17:49:47	8.6730	1722.78	90.50	-31.35
354	0	17:55:33	8.7690	1722.50	90.50	-31.63
357	0	18: 1:19	8.8650	1722.57	90.50	-31.56
360	0	18: 7: 4	8.9610	1722.43	90.49	-31.70
363	0	18:12:50	9.0570	1722.16	90.49	-31.97
366	0	18:18:35	9.1530	1722.33	90.48	-31.80
369	0	18:24:21	9.2490	1722.00	90.47	-32.13
372	0	18:30: 7	9.3450	1722.21	90.47	-31.92
375	0	18:35:52	9.4410	1722.09	90.46	-32.04
378	0	18:41:38	9.5370	1722.03	90.48	-32.10
381	0	18:47:23	9.6330	1722.02	90.49	-32.11

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Monday: Mar. 21, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
384	0	18:53: 9	9.7290	1722.07	90.50	-32.06
387	0	18:58:55	9.8250	1721.83	90.49	-32.30
390	0	19: 4:40	9.9210	1721.98	90.49	-32.15
393	0	19:10:26	10.0170	1721.87	90.49	-32.26
396	0	19:16:11	10.1130	1721.80	90.49	-32.33
399	0	19:21:57	10.2090	1721.66	90.47	-32.47
402	0	19:27:43	10.3050	1721.64	90.48	-32.49
405	0	19:33:28	10.4010	1721.56	90.49	-32.57
408	0	19:39:14	10.4970	1721.62	90.51	-32.51
411	0	19:44:59	10.5930	1721.77	90.54	-32.36
414	0	19:50:45	10.6890	1721.72	90.56	-32.41
417	0	19:56:31	10.7850	1721.80	90.56	-32.33
420	0	20: 2:16	10.8810	1722.01	90.57	-32.12
423	0	20: 8: 2	10.9770	1722.11	90.62	-32.02
426	0	20:13:47	11.0730	1722.25	90.65	-31.88
429	0	20:19:33	11.1690	1722.31	90.68	-31.82
432	0	20:25:19	11.2650	1722.24	90.71	-31.89
435	0	20:31: 4	11.3610	1722.07	90.71	-32.06
438	0	20:36:50	11.4570	1722.25	90.73	-31.88
441	0	20:42:35	11.5530	1722.49	90.77	-31.64
444	0	20:48:21	11.6490	1722.31	90.79	-31.82
447	0	20:54: 7	11.7450	1722.34	90.80	-31.79
450	0	20:59:52	11.8410	1722.31	90.82	-31.82
453	0	21: 5:38	11.9370	1722.55	90.85	-31.58
456	0	21:11:23	12.0330	1722.41	90.86	-31.72
459	0	21:17: 9	12.1290	1722.43	90.84	-31.70
462	0	21:22:55	12.2250	1722.51	90.84	-31.62
465	0	21:28:40	12.3210	1722.62	90.85	-31.51
468	0	21:34:26	12.4170	1722.89	90.87	-31.24
471	0	21:40:11	12.5130	1722.84	90.89	-31.29
474	0	21:45:57	12.6090	1723.01	90.91	-31.12
477	0	21:51:43	12.7050	1722.96	90.92	-31.17
480	0	21:57:28	12.8010	1722.87	90.93	-31.26
483	0	22: 3:14	12.8970	1723.08	90.96	-31.05
486	0	22: 8:59	12.9930	1723.18	90.96	-30.95
489	0	22:14:45	13.0890	1722.97	90.97	-31.16
492	0	22:20:31	13.1850	1723.14	90.94	-30.99
495	0	22:26:16	13.2810	1723.19	90.92	-30.94
498	0	22:32: 2	13.3770	1723.20	90.90	-30.93
501	0	22:37:47	13.4730	1723.42	90.90	-30.71
504	0	22:43:33	13.5690	1723.13	90.87	-31.00
507	0	22:49:19	13.6650	1723.49	90.83	-30.64
510	0	22:55: 4	13.7610	1723.60	90.79	-30.53
513	0	23: 0:50	13.8570	1723.96	90.71	-30.17
516	0	23: 6:35	13.9530	1724.04	90.67	-30.09
519	0	23:12:21	14.0490	1724.38	90.63	-29.75
522	0	23:18: 7	14.1450	1726.87	90.53	-27.26
525	0	23:23:52	14.2410	1726.64	90.46	-27.49
528	0	23:29:38	14.3370	1726.86	90.39	-27.27
531	0	23:35:23	14.4330	1726.97	90.32	-27.16

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Monday: Mar. 21, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
534	0	23:41: 9	14.5290	1726.77	90.26	-27.36
537	0	23:46:55	14.6250	1726.73	90.22	-27.40
540	0	23:52:40	14.7210	1727.00	90.14	-27.13
543	0	23:58:26	14.8170	1727.12	90.06	-27.01
[Tuesday: Mar. 22, 1994]						
546	1	0: 4:11	14.9130	1727.26	90.01	-26.87
549	1	0: 9:57	15.0090	1727.46	89.96	-26.67
552	1	0:15:43	15.1050	1727.44	89.91	-26.69
555	1	0:21:28	15.2010	1727.84	89.82	-26.29
558	1	0:27:14	15.2970	1728.15	89.78	-25.98
561	1	0:32:59	15.3930	1728.39	89.74	-25.74
564	1	0:38:45	15.4890	1728.73	89.67	-25.40
567	1	0:44:31	15.5850	1728.73	89.60	-25.40
570	1	0:50:16	15.6810	1728.90	89.54	-25.23
573	1	0:56: 2	15.7770	1729.11	89.50	-25.02
576	1	1: 1:47	15.8730	1729.41	89.45	-24.72
579	1	1: 7:33	15.9690	1729.46	89.37	-24.67
582	1	1:13:19	16.0650	1729.66	89.32	-24.47
585	1	1:19: 4	16.1610	1729.68	89.21	-24.45
588	1	1:24:50	16.2570	1729.95	89.15	-24.18
591	1	1:30:35	16.3530	1730.02	89.10	-24.11
594	1	1:36:21	16.4490	1730.23	89.05	-23.90
597	1	1:42: 7	16.5450	1730.17	88.98	-23.96
600	1	1:47:52	16.6410	1730.34	88.91	-23.79
603	1	1:53:34	16.7359	1730.45	88.86	-23.68
606	1	1:59:34	16.8359	1730.48	88.81	-23.65
609	1	2: 5:34	16.9359	1730.81	88.76	-23.32
612	1	2:11:34	17.0359	1730.77	88.71	-23.36
615	1	2:17:34	17.1359	1730.87	88.62	-23.26
618	1	2:23:34	17.2359	1731.00	88.58	-23.13
621	1	2:29:34	17.3359	1730.87	88.53	-23.26
624	1	2:35:34	17.4359	1730.96	88.46	-23.17
627	1	2:41:34	17.5359	1730.95	88.41	-23.18
630	1	2:47:34	17.6359	1731.04	88.34	-23.09
633	1	2:53:34	17.7359	1731.00	88.28	-23.13
636	1	2:59:34	17.8359	1730.96	88.23	-23.17
639	1	3: 5:34	17.9359	1731.23	88.13	-22.90
642	1	3:11:34	18.0359	1731.40	88.05	-22.73
645	1	3:17:34	18.1359	1731.34	87.94	-22.79
648	1	3:23:34	18.2359	1731.53	87.88	-22.60
651	1	3:29:34	18.3359	1731.53	87.85	-22.60
654	1	3:35:34	18.4359	1731.46	87.79	-22.67
657	1	3:41:34	18.5359	1731.35	87.74	-22.78
660	1	3:47:34	18.6359	1731.28	87.69	-22.85
663	1	3:53:34	18.7359	1731.35	87.65	-22.78
666	1	3:59:34	18.8359	1731.24	87.59	-22.89
669	1	4: 5:34	18.9359	1731.19	87.52	-22.94
672	1	4:11:34	19.0359	1731.05	87.46	-23.08
675	1	4:17:34	19.1359	1731.01	87.44	-23.12
678	1	4:23:34	19.2359	1731.03	87.44	-23.10

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Tuesday: Mar. 22, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
681	1	4:29:34	19.3359	1731.01	87.43	-23.12
684	1	4:35:34	19.4359	1730.91	87.41	-23.22
687	1	4:41:34	19.5359	1730.90	87.39	-23.23
690	1	4:47:34	19.6359	1730.95	87.39	-23.18
693	1	4:53:34	19.7359	1730.87	87.36	-23.26
696	1	4:59:34	19.8359	1730.82	87.31	-23.31
699	1	5: 5:34	19.9359	1730.60	87.27	-23.53
702	1	5:11:34	20.0359	1730.59	87.23	-23.54
705	1	5:17:34	20.1359	1730.76	87.20	-23.37
708	1	5:23:34	20.2359	1730.56	87.14	-23.57
711	1	5:29:34	20.3359	1730.68	87.08	-23.45
714	1	5:35:34	20.4359	1730.59	87.02	-23.54
717	1	5:41:34	20.5359	1730.71	86.95	-23.42
720	1	5:47:34	20.6359	1730.75	86.90	-23.38
723	1	5:53:34	20.7359	1730.47	86.84	-23.66
726	1	5:59:34	20.8359	1730.60	86.80	-23.53
729	1	6: 5:34	20.9359	1730.69	86.74	-23.44
732	1	6:11:34	21.0359	1730.70	86.71	-23.43
735	1	6:17:34	21.1359	1730.90	86.68	-23.23
738	1	6:23:34	21.2359	1730.84	86.62	-23.29
741	1	6:29:34	21.3359	1730.44	86.59	-23.69
744	1	6:35:34	21.4359	1729.97	86.57	-24.16
747	1	6:41:34	21.5359	1729.80	86.55	-24.33
750	1	6:47:34	21.6359	1729.53	86.53	-24.60
753	1	6:53:34	21.7359	1729.46	86.53	-24.67
756	1	6:59:34	21.8359	1729.24	86.52	-24.89
759	1	7: 5:34	21.9359	1730.23	86.49	-23.90
762	1	7:11:34	22.0359	1730.71	86.49	-23.42
765	1	7:17:34	22.1359	1731.30	86.50	-22.83
768	1	7:23:34	22.2359	1731.74	86.47	-22.39
771	1	7:29:34	22.3359	1732.09	86.46	-22.04
774	1	7:35:34	22.4359	1732.86	86.45	-21.27
777	1	7:41:34	22.5359	1733.07	86.42	-21.06
780	1	7:47:34	22.6359	1733.31	86.43	-20.82
783	1	7:53:34	22.7359	1733.40	86.44	-20.73
786	1	7:59:34	22.8359	1733.77	86.42	-20.36
789	1	8: 5:34	22.9359	1734.29	86.40	-19.84
792	1	8:11:34	23.0359	1733.85	86.41	-20.28
795	1	8:17:34	23.1359	1733.70	86.46	-20.43
797	1	8:23:27	23.2340	1733.33	86.44	-20.80
800	1	8:29:13	23.3300	1733.19	86.43	-20.94
803	1	8:34:58	23.4260	1733.01	86.46	-21.12
806	1	8:40:44	23.5220	1733.20	86.51	-20.93
809	1	8:46:29	23.6180	1732.81	86.53	-21.32
812	1	8:52:15	23.7140	1732.65	86.56	-21.48
815	1	8:58: 1	23.8100	1733.10	86.56	-21.03
818	1	9: 3:46	23.9060	1734.15	86.56	-19.98
821	1	9: 9:32	24.0020	1734.15	86.50	-19.98
824	1	9:15:17	24.0980	1734.53	86.49	-19.60
827	1	9:21: 3	24.1940	1734.06	86.50	-20.07

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Tuesday: Mar. 22, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
830	1	9:26:49	24.2900	1734.07	86.53	-20.06
832	1	9:52:15	24.7140	1733.64	86.59	-20.49
835	1	9:58: 1	24.8100	1733.41	86.62	-20.72
838	1	10: 3:46	24.9060	1733.22	86.62	-20.91
841	1	10: 9:32	25.0020	1733.25	86.62	-20.88
844	1	10:15:17	25.0980	1733.22	86.63	-20.91
847	1	10:21: 3	25.1940	1732.91	86.63	-21.22
850	1	10:26:49	25.2900	1732.98	86.63	-21.15
853	1	10:32:34	25.3860	1732.02	86.67	-22.11
856	1	10:38:20	25.4820	1732.96	86.68	-21.17
859	1	10:44: 5	25.5780	1732.61	86.70	-21.52
862	1	10:49:51	25.6740	1732.46	86.77	-21.67
865	1	10:55:37	25.7700	1732.29	86.82	-21.84
868	1	11: 1:22	25.8660	1732.02	86.85	-22.11
871	1	11: 7: 8	25.9620	1731.88	86.86	-22.25
874	1	11:12:53	26.0580	1731.69	86.88	-22.44
877	1	11:18:39	26.1540	1731.57	86.89	-22.56
880	1	11:24:25	26.2500	1731.43	86.90	-22.70
883	1	11:30:10	26.3460	1731.34	86.88	-22.79
886	1	11:35:56	26.4420	1731.07	86.93	-23.06
889	1	11:41:41	26.5380	1731.03	86.93	-23.10
892	1	11:47:27	26.6340	1730.74	86.93	-23.39
895	1	11:53:13	26.7300	1730.59	87.01	-23.54
898	1	11:58:58	26.8260	1730.40	87.10	-23.73
901	1	12: 4:44	26.9220	1730.31	87.18	-23.82
904	1	12:10:29	27.0180	1730.04	87.21	-24.09
907	1	12:16:15	27.1140	1729.88	87.24	-24.25
910	1	12:22: 1	27.2100	1729.68	87.27	-24.45
913	1	12:27:46	27.3060	1729.42	87.42	-24.71
916	1	12:33:32	27.4020	1729.08	87.44	-25.05
919	1	12:39:17	27.4980	1728.89	87.56	-25.24
922	1	12:45: 3	27.5940	1728.70	87.58	-25.43
925	1	12:50:49	27.6900	1728.28	87.61	-25.85
928	1	12:56:34	27.7860	1728.20	87.71	-25.93
931	1	13: 2:20	27.8820	1727.98	87.83	-26.15
934	1	13: 8: 5	27.9780	1727.70	87.86	-26.43
937	1	13:13:51	28.0740	1727.41	87.89	-26.72
940	1	13:19:37	28.1700	1727.33	88.11	-26.80
943	1	13:25:22	28.2660	1727.06	88.26	-27.07
946	1	13:31: 8	28.3620	1726.78	88.34	-27.35
949	1	13:36:53	28.4580	1726.49	88.39	-27.64
952	1	13:42:39	28.5540	1726.21	88.47	-27.92
955	1	13:48:25	28.6500	1726.10	88.60	-28.03
958	1	13:54:10	28.7460	1725.83	88.83	-28.30
961	1	13:59:56	28.8420	1725.60	88.88	-28.53
964	1	14: 5:41	28.9380	1725.06	88.97	-29.07
967	1	14:11:27	29.0340	1724.86	89.16	-29.27
970	1	14:17:13	29.1300	1724.77	89.17	-29.36
973	1	14:22:58	29.2260	1724.43	89.29	-29.70
976	1	14:28:44	29.3220	1724.42	89.38	-29.71

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Tuesday: Mar. 22, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
979	1	14:34:29	29.4180	1723.98	89.43	-30.15
982	1	14:40:15	29.5140	1723.98	89.64	-30.15
985	1	14:46: 1	29.6100	1723.96	89.77	-30.17
988	1	14:51:46	29.7060	1723.52	89.91	-30.61
991	1	14:57:32	29.8020	1723.39	89.96	-30.74
994	1	15: 3:17	29.8980	1723.15	90.08	-30.98
997	1	15: 9: 3	29.9940	1722.84	90.18	-31.29
1000	1	15:14:49	30.0900	1722.69	90.28	-31.44
1003	1	15:20:34	30.1860	1722.54	90.45	-31.59
1006	1	15:26:20	30.2820	1722.40	90.53	-31.73
1009	1	15:32: 5	30.3780	1722.17	90.55	-31.96
1012	1	15:37:51	30.4740	1721.94	90.65	-32.19
1015	1	15:43:37	30.5700	1721.62	90.79	-32.51
1018	1	15:49:22	30.6660	1721.47	90.86	-32.66
1021	1	15:55: 8	30.7620	1721.40	90.99	-32.73
1024	1	16: 0:53	30.8580	1721.06	91.06	-33.07
1027	1	16: 6:39	30.9540	1720.82	91.13	-33.31
1030	1	16:12:25	31.0500	1720.55	91.24	-33.58
1033	1	16:18:10	31.1460	1720.48	91.34	-33.65
1036	1	16:23:56	31.2420	1720.23	91.42	-33.90
1039	1	16:29:41	31.3380	1720.03	91.48	-34.10
1042	1	16:35:27	31.4340	1720.03	91.57	-34.10
1045	1	16:41:13	31.5300	1720.00	91.63	-34.13
1048	1	16:46:58	31.6260	1719.85	91.69	-34.28
1051	1	16:52:44	31.7220	1720.15	91.72	-33.98
1054	1	16:58:29	31.8180	1719.89	91.81	-34.24
1057	1	17: 4:15	31.9140	1719.79	91.87	-34.34
1060	1	17:10: 1	32.0100	1719.70	91.92	-34.43
1063	1	17:15:46	32.1060	1719.47	92.00	-34.66
1066	1	17:21:32	32.2020	1719.37	92.06	-34.76
1069	1	17:27:17	32.2980	1719.16	92.05	-34.97
1072	1	17:33: 3	32.3940	1719.27	91.93	-34.86
1075	1	17:38:49	32.4900	1719.11	91.74	-35.02
1078	1	17:44:34	32.5860	1719.36	91.77	-34.77
1081	1	17:50:20	32.6820	1719.40	91.93	-34.73
1084	1	17:56: 5	32.7780	1719.72	91.36	-34.41
1087	1	18: 1:51	32.8740	1724.02	91.07	-30.11
1090	1	18: 7:37	32.9700	1727.85	91.27	-26.28
1093	1	18:13:22	33.0660	1733.90	91.38	-20.23
1096	1	18:19: 8	33.1620	1738.06	91.48	-16.07
1099	1	18:24:53	33.2580	1738.39	91.87	-15.74
1102	1	18:30:39	33.3540	1737.85	92.12	-16.28
1105	1	18:36:25	33.4500	1737.32	92.24	-16.81
1108	1	18:42:10	33.5460	1737.83	92.33	-16.30
1111	1	18:47:56	33.6420	1737.24	92.43	-16.89
1114	1	18:53:41	33.7380	1736.80	92.49	-17.33
1117	1	18:59:27	33.8340	1736.27	92.55	-17.86
1120	1	19: 5:13	33.9300	1735.79	92.63	-18.34
1123	1	19:10:58	34.0260	1735.63	92.67	-18.50
1126	1	19:16:44	34.1220	1735.62	92.73	-18.51

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Tuesday: Mar. 22, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1129	1	19:22:29	34.2180	1735.07	92.80	-19.06
1132	1	19:28:15	34.3140	1734.79	92.83	-19.34
1135	1	19:34: 1	34.4100	1734.72	92.89	-19.41
1138	1	19:39:46	34.5060	1734.45	92.96	-19.68
1141	1	19:45:32	34.6020	1733.96	92.99	-20.17
1144	1	19:51:17	34.6980	1733.57	93.06	-20.56
1147	1	19:57: 3	34.7940	1733.32	93.11	-20.81
1150	1	20: 2:49	34.8900	1733.02	93.12	-21.11
1153	1	20: 8:34	34.9860	1733.07	93.19	-21.06
1156	1	20:14:20	35.0820	1732.82	93.24	-21.31
1159	1	20:20: 5	35.1780	1732.48	93.30	-21.65
1162	1	20:25:51	35.2740	1732.50	93.32	-21.63
1165	1	20:31:37	35.3700	1731.93	93.35	-22.20
1168	1	20:37:22	35.4660	1731.70	93.36	-22.43
1171	1	20:43: 8	35.5620	1731.59	93.35	-22.54
1174	1	20:48:53	35.6580	1731.21	93.38	-22.92
1177	1	20:54:39	35.7540	1731.00	93.39	-23.13
1180	1	21: 0:25	35.8500	1730.60	93.39	-23.53
1183	1	21: 6:10	35.9460	1730.45	93.41	-23.68
1186	1	21:11:56	36.0420	1730.11	93.43	-24.02
1189	1	21:17:41	36.1380	1730.33	93.47	-23.80
1192	1	21:23:27	36.2340	1730.07	93.55	-24.06
1195	1	21:29:13	36.3300	1729.84	93.59	-24.29
1198	1	21:34:58	36.4260	1730.46	93.68	-23.67
1201	1	21:40:44	36.5220	1729.92	93.72	-24.21
1204	1	21:46:29	36.6180	1729.71	93.79	-24.42
1207	1	21:52:15	36.7140	1729.46	93.80	-24.67
1210	1	21:58: 1	36.8100	1729.28	93.83	-24.85
1213	1	22: 3:46	36.9060	1729.19	93.88	-24.94
1216	1	22: 9:32	37.0020	1728.95	93.95	-25.18
1219	1	22:15:17	37.0980	1728.82	93.99	-25.31
1222	1	22:21: 3	37.1940	1728.56	94.04	-25.57
1225	1	22:26:49	37.2900	1728.12	94.05	-26.01
1228	1	22:32:34	37.3860	1728.07	94.07	-26.06
1231	1	22:38:20	37.4820	1727.88	94.17	-26.25
1234	1	22:44: 5	37.5780	1726.43	94.20	-27.70
1237	1	22:49:51	37.6740	1726.32	94.31	-27.81
1240	1	22:55:37	37.7700	1725.97	94.29	-28.16
1243	1	23: 1:22	37.8660	1725.95	94.27	-28.18
1245	1	23: 7: 1	37.9600	1725.81	94.35	-28.32
1248	1	23:12:43	38.0550	1725.68	94.46	-28.45
1251	1	23:18:28	38.1510	1725.56	94.55	-28.57
1254	1	23:24:17	38.2480	1725.18	94.55	-28.95
1257	1	23:29:59	38.3430	1725.20	94.61	-28.93
1260	1	23:35:49	38.4400	1725.06	94.73	-29.07
1263	1	23:41:31	38.5350	1725.05	94.80	-29.08
1266	1	23:47:20	38.6320	1724.87	94.86	-29.26
1269	1	23:53: 5	38.7280	1724.63	94.86	-29.50
1272	1	23:58:47	38.8230	1724.47	95.02	-29.66
[Wednesday: Mar. 23, 1994]						
1275	2	0: 4:37	38.9200	1724.34	95.07	-29.79

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Wednesday: Mar. 23, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1278	2	0:10:19	39.0150	1724.19	95.19	-29.94
1281	2	0:16: 4	39.1110	1724.18	95.27	-29.95
1284	2	0:21:53	39.2080	1724.03	95.21	-30.10
1287	2	0:27:35	39.3030	1723.88	95.40	-30.25
1290	2	0:33:25	39.4000	1723.65	95.53	-30.48
1293	2	0:39: 7	39.4950	1723.56	95.63	-30.57
1296	2	0:44:56	39.5920	1723.24	95.69	-30.89
1299	2	0:50:41	39.6880	1723.28	95.76	-30.85
1302	2	0:56:23	39.7830	1722.97	95.82	-31.16
1305	2	1: 2:13	39.8800	1722.99	95.92	-31.14
1308	2	1: 7:55	39.9750	1722.73	95.98	-31.40
1311	2	1:13:44	40.0720	1722.59	96.02	-31.54
1314	2	1:19:29	40.1680	1722.38	96.04	-31.75
1317	2	1:25:11	40.2630	1722.35	96.14	-31.78
1320	2	1:31: 1	40.3600	1722.20	96.22	-31.93
1323	2	1:36:43	40.4550	1721.96	96.29	-32.17
1326	2	1:42:32	40.5520	1721.81	96.34	-32.32
1329	2	1:48:17	40.6480	1721.63	96.44	-32.50
1332	2	1:53:59	40.7430	1721.41	96.49	-32.72
1335	2	1:59:49	40.8400	1721.48	96.61	-32.65
1338	2	2: 5:31	40.9350	1721.20	96.65	-32.93
1341	2	2:11:20	41.0320	1721.23	96.64	-32.90
1344	2	2:17: 5	41.1280	1721.07	96.80	-33.06
1347	2	2:22:47	41.2230	1720.95	96.89	-33.18
1350	2	2:28:37	41.3200	1720.75	96.96	-33.38
1353	2	2:34:19	41.4150	1720.52	97.05	-33.61
1356	2	2:40: 8	41.5120	1720.42	97.12	-33.71
1359	2	2:45:53	41.6080	1720.28	97.23	-33.85
1362	2	2:51:35	41.7030	1720.12	97.32	-34.01
1365	2	2:57:25	41.8000	1720.04	97.38	-34.09
1368	2	3: 3: 7	41.8950	1720.02	97.49	-34.11
1371	2	3: 8:56	41.9920	1719.92	97.58	-34.21
1374	2	3:14:41	42.0880	1719.72	97.67	-34.41
1377	2	3:20:23	42.1830	1719.61	97.73	-34.52
1380	2	3:26:13	42.2800	1721.66	97.81	-32.47
1383	2	3:31:55	42.3750	1720.87	97.85	-33.26
1386	2	3:37:44	42.4720	1720.53	97.89	-33.60
1389	2	3:43:29	42.5680	1720.25	97.96	-33.88
1392	2	3:49:11	42.6630	1719.90	98.03	-34.23
1395	2	3:55: 1	42.7600	1719.82	98.13	-34.31
1398	2	4: 0:43	42.8550	1719.69	98.18	-34.44
1401	2	4: 6:32	42.9520	1719.46	98.24	-34.67
1404	2	4:12:17	43.0480	1719.26	98.35	-34.87
1407	2	4:17:59	43.1430	1719.11	98.39	-35.02
1410	2	4:23:49	43.2400	1719.57	98.41	-34.56
1413	2	4:29:31	43.3350	1719.09	98.43	-35.04
1416	2	4:35:20	43.4320	1718.95	98.46	-35.18
1419	2	4:41: 5	43.5280	1718.89	98.46	-35.24
1422	2	4:46:47	43.6230	1718.85	98.47	-35.28
1425	2	4:52:37	43.7200	1718.79	98.46	-35.34

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Wednesday: Mar. 23, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1428	2	4:58:19	43.8150	1718.60	98.47	-35.53
1431	2	5: 4: 8	43.9120	1718.45	98.47	-35.68
1434	2	5: 9:53	44.0080	1718.43	98.48	-35.70
1437	2	5:15:35	44.1030	1718.38	98.49	-35.75
1440	2	5:21:25	44.2000	1718.25	98.51	-35.88
1443	2	5:27: 7	44.2950	1718.15	98.50	-35.98
1446	2	5:32:56	44.3920	1718.18	98.50	-35.95
1449	2	5:38:41	44.4880	1718.42	98.49	-35.71
1452	2	5:44:23	44.5830	1719.09	98.46	-35.04
1455	2	5:50:13	44.6800	1724.63	98.44	-29.50
1458	2	5:55:55	44.7750	1733.08	98.41	-21.05
1461	2	6: 1:44	44.8720	1735.95	98.38	-18.18
1464	2	6: 7:29	44.9680	1737.75	98.34	-16.38
1467	2	6:13:11	45.0630	1738.04	98.31	-16.09
1470	2	6:19: 1	45.1600	1737.70	98.27	-16.43
1473	2	6:24:43	45.2550	1736.98	98.25	-17.15
1476	2	6:30:32	45.3520	1736.90	98.23	-17.23
1479	2	6:36:17	45.4480	1736.43	98.20	-17.70
1482	2	6:41:59	45.5430	1736.08	98.18	-18.05
1485	2	6:47:49	45.6400	1735.71	98.14	-18.42
1488	2	6:53:31	45.7350	1735.30	98.13	-18.83
1491	2	6:59:20	45.8320	1735.00	98.10	-19.13
1494	2	7: 5: 5	45.9280	1734.75	98.09	-19.38
1497	2	7:10:45	46.0223	1734.38	98.10	-19.75
1500	2	7:16:30	46.1182	1734.39	98.08	-19.74
1503	2	7:22:15	46.2140	1734.33	98.09	-19.80
1506	2	7:28: 0	46.3098	1735.93	98.09	-18.20
1509	2	7:33:45	46.4057	1737.70	98.09	-16.43
1512	2	7:39:30	46.5015	1740.25	98.13	-13.88
1515	2	7:45:15	46.5973	1741.04	98.12	-13.09
1518	2	7:51: 0	46.6932	1740.54	98.08	-13.59
1521	2	7:56:45	46.7890	1740.03	98.04	-14.10
1524	2	8: 2:30	46.8848	1740.36	98.06	-13.77
1527	2	8: 8:15	46.9807	1739.64	98.04	-14.49
1530	2	8:14: 0	47.0765	1739.18	98.05	-14.95
1533	2	8:19:45	47.1723	1740.31	98.10	-13.82
1536	2	8:25:30	47.2682	1741.41	98.06	-12.72
1539	2	8:31:15	47.3640	1741.26	98.06	-12.87
1542	2	8:37: 0	47.4598	1740.75	98.05	-13.38
1545	2	8:42:45	47.5557	1740.47	98.05	-13.66
1548	2	8:48:30	47.6515	1740.40	98.07	-13.73
1551	2	8:54:15	47.7473	1740.34	98.07	-13.79
1554	2	9: 0: 0	47.8432	1740.81	98.06	-13.32
1557	2	9: 5:45	47.9390	1741.02	98.06	-13.11
1560	2	9:11:30	48.0348	1740.68	98.06	-13.45
1563	2	9:17:15	48.1307	1741.07	98.05	-13.06
		Cut back on injection rate.				
1564	2	9:19:10	48.1626	1741.13	98.07	-13.00
1566	2	9:23: 0	48.2265	1708.96	98.10	-45.17
1569	2	9:28:45	48.3223	1682.25	98.11	-71.88

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1572	2	9:34:30	48.4182	1665.50	98.09	-88.63
1575	2	9:40:15	48.5140	1665.46	98.05	-88.67
1578	2	9:46: 0	48.6098	1664.70	98.00	-89.43
1581	2	9:51:45	48.7057	1663.45	97.98	-90.68
		Stepping injection rate back up to 280 GPM.				
1583	2	9:55:35	48.7696	1662.84	98.00	-91.29
1584	2	9:57:30	48.8015	1664.06	98.01	-90.07
1587	2	10: 3:15	48.8973	1697.34	98.01	-56.79
1590	2	10: 9: 0	48.9932	1696.34	98.07	-57.79
1593	2	10:14:45	49.0890	1729.02	98.11	-25.11
1596	2	10:20:30	49.1848	1736.87	98.24	-17.26
1599	2	10:26:15	49.2807	1736.17	98.25	-17.96
1602	2	10:32: 0	49.3765	1736.83	98.37	-17.30
1605	2	10:37:45	49.4723	1738.40	98.28	-15.73
1608	2	10:43:30	49.5682	1739.87	98.27	-14.26
1611	2	10:49:15	49.6640	1741.10	98.31	-13.03
1614	2	10:55: 0	49.7598	1741.77	98.32	-12.36
1617	2	11: 0:45	49.8557	1742.04	98.35	-12.09
1620	2	11: 6:30	49.9515	1742.65	98.36	-11.48
1623	2	11:12:15	50.0473	1743.98	98.35	-10.15
1626	2	11:18: 0	50.1432	1745.84	98.39	-8.29
1629	2	11:23:45	50.2390	1747.14	98.40	-6.99
1632	2	11:29:30	50.3348	1748.20	98.42	-5.93
1635	2	11:35:15	50.4307	1749.62	98.44	-4.51
1638	2	11:41: 0	50.5265	1750.87	98.48	-3.26
1641	2	11:46:45	50.6223	1752.37	98.52	-1.76
1644	2	11:52:30	50.7182	1753.43	98.56	-0.70
1647	2	11:58:15	50.8140	1753.86	98.57	-0.27
1650	2	12: 4: 0	50.9098	1753.15	98.54	-0.98
1653	2	12: 9:45	51.0057	1752.98	98.54	-1.15
1656	2	12:15:30	51.1015	1753.19	98.56	-0.94
1659	2	12:21:15	51.1973	1753.06	98.58	-1.07
1662	2	12:27: 0	51.2932	1753.78	98.62	-0.35
1665	2	12:32:45	51.3890	1753.66	98.65	-0.47
1668	2	12:38:30	51.4848	1753.54	98.71	-0.59
1671	2	12:44:15	51.5807	1753.35	98.75	-0.78
1674	2	13: 1:29	51.8680	1754.14	98.81	0.01
1678	2	13: 8:23	51.9830	1754.34	98.83	0.21
1681	2	13:14: 5	52.0780	1754.85	98.85	0.72
1684	2	13:19:55	52.1750	1755.49	98.85	1.36
1687	2	13:25:40	52.2710	1756.03	98.87	1.90
1690	2	13:31:26	52.3670	1756.28	98.92	2.15
1693	2	13:37:11	52.4630	1756.64	98.93	2.51
1696	2	13:42:53	52.5580	1756.26	98.92	2.13
1699	2	13:48:43	52.6550	1755.73	98.96	1.60
1702	2	13:54:28	52.7510	1755.27	99.00	1.14
1705	2	14: 0:10	52.8460	1755.01	99.04	0.88
1708	2	14: 5:59	52.9430	1754.97	99.06	0.84
1711	2	14:11:41	53.0380	1754.53	99.14	0.40
1714	2	14:17:31	53.1350	1754.58	99.14	0.45

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1717	2	14:23:16	53.2310	1754.68	99.18	0.55
1720	2	14:28:58	53.3260	1754.59	99.20	0.46
1723	2	14:34:47	53.4230	1754.56	99.23	0.43
1726	2	14:40:29	53.5180	1754.57	99.25	0.44
1729	2	14:46:19	53.6150	1754.30	99.30	0.17
1732	2	14:52: 4	53.7110	1754.22	99.36	0.09
1735	2	14:57:50	53.8070	1754.17	99.47	0.04
1738	2	15: 3:35	53.9030	1754.24	99.46	0.11
1741	2	15: 9:17	53.9980	1754.37	99.52	0.24
1744	2	15:15: 7	54.0950	1754.09	99.56	-0.04
1747	2	15:20:52	54.1910	1754.01	99.57	-0.12
1750	2	15:26:34	54.2860	1753.87	99.59	-0.26
1753	2	15:32:23	54.3830	1753.73	99.63	-0.40
1756	2	15:38: 5	54.4780	1753.73	99.66	-0.40
1759	2	15:43:55	54.5750	1753.66	99.67	-0.47
1762	2	15:49:40	54.6710	1753.55	99.68	-0.58
1765	2	15:55:26	54.7670	1753.66	99.70	-0.47
1786	2	16: 0:39	54.8540	1753.93	99.71	-0.20
1821	2	16: 5:41	54.9380	1754.23	99.73	0.10
1825	2	16: 6:21	54.9490	1754.23	99.74	0.10
1826	2	16: 6:28	54.9510	1754.20	99.74	0.07
1827	2	16: 6:35	54.9530	1754.20	99.74	0.07
1828	2	16: 6:46	54.9560	1754.20	99.74	0.07
1829	2	16: 6:53	54.9580	1754.19	99.74	0.06
1830	2	16: 7: 1	54.9600	1754.20	99.75	0.07
1831	2	16: 7: 8	54.9620	1754.22	99.75	0.09
1832	2	16: 7:19	54.9650	1754.22	99.75	0.09
1833	2	16: 7:26	54.9670	1754.22	99.75	0.09
1834	2	16: 7:33	54.9690	1754.25	99.75	0.12
1835	2	16: 7:40	54.9710	1754.26	99.75	0.13
1836	2	16: 7:55	54.9750	1754.22	99.75	0.09
1837	2	16: 8: 5	54.9780	1754.23	99.76	0.10
1838	2	16: 8:13	54.9800	1754.25	99.76	0.12
1839	2	16: 8:20	54.9820	1754.22	99.76	0.09
1840	2	16: 8:27	54.9840	1754.23	99.76	0.10
1841	2	16: 8:38	54.9870	1754.22	99.76	0.09
1842	2	16: 8:45	54.9890	1754.20	99.76	0.07
1843	2	16: 8:52	54.9910	1754.20	99.76	0.07
1844	2	16: 8:59	54.9930	1754.19	99.76	0.06
1845	2	16: 9: 7	54.9950	1754.17	99.76	0.04
1846	2	16: 9:17	54.9980	1754.16	99.76	0.03
1847	2	16: 9:25	55.0000	1754.13	99.76	0.00
1848	2	16: 9:32	55.0020	1754.16	99.76	0.03
1849	2	16: 9:50	55.0070	1754.14	99.76	0.01
1850	2	16: 9:57	55.0090	1754.19	99.76	0.06
1851	2	16:10: 8	55.0120	1754.19	99.76	0.06
1852	2	16:10:15	55.0140	1754.16	99.76	0.03
1853	2	16:10:22	55.0160	1754.13	99.76	0.00
1854	2	16:10:29	55.0180	1754.13	99.76	0.00
1855	2	16:10:37	55.0200	1754.13	99.76	0.00

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Wednesday: Mar. 23, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1856	2	16:10:47	55.0230	1754.15	99.76	0.02
1857	2	16:10:55	55.0250	1754.13	99.76	0.00
1858	2	16:11: 2	55.0270	1754.09	99.76	-0.04
1859	2	16:11: 9	55.0290	1754.10	99.76	-0.03
1860	2	16:11:20	55.0320	1754.11	99.76	-0.02
1861	2	16:11:34	55.0360	1754.10	99.76	-0.03
1862	2	16:11:41	55.0380	1754.12	99.76	-0.01
1863	2	16:11:49	55.0400	1754.13	99.77	0.00
1864	2	16:11:56	55.0420	1754.13	99.77	0.00
1865	2	16:12: 7	55.0450	1754.13	99.76	0.00
1866	2	16:12:14	55.0470	1754.13	99.76	0.00
1867	2	16:12:21	55.0490	1754.13	99.76	0.00
		Shut down injection, start fall-off test.				
1868	2	16:12:28	0.0000	1754.13	99.76	0.00
1869	2	16:12:35	0.0020	1742.92	99.76	-11.21
1870	2	16:12:46	0.0050	1695.81	99.76	-58.32
1871	2	16:12:53	0.0070	1664.54	99.76	-89.59
1872	2	16:13: 1	0.0090	1641.77	99.76	-112.36
1873	2	16:13: 8	0.0110	1624.70	99.75	-129.43
1874	2	16:13:26	0.0160	1599.58	99.75	-154.55
1875	2	16:13:33	0.0180	1591.18	99.74	-162.95
1876	2	16:13:44	0.0210	1584.20	99.74	-169.93
1877	2	16:13:51	0.0230	1578.35	99.74	-175.78
1878	2	16:13:58	0.0250	1573.35	99.74	-180.78
1879	2	16:14: 5	0.0270	1569.07	99.74	-185.06
1880	2	16:14:13	0.0290	1565.35	99.74	-188.78
1881	2	16:14:23	0.0320	1562.08	99.74	-192.05
1882	2	16:14:31	0.0340	1559.22	99.75	-194.91
1883	2	16:14:38	0.0360	1556.68	99.75	-197.45
1884	2	16:14:45	0.0380	1554.41	99.75	-199.72
1885	2	16:14:52	0.0400	1552.36	99.75	-201.77
1886	2	16:15:10	0.0450	1548.90	99.75	-205.23
1887	2	16:15:17	0.0470	1547.52	99.75	-206.61
1888	2	16:15:25	0.0490	1546.12	99.75	-208.01
1889	2	16:15:32	0.0510	1544.84	99.75	-209.29
1890	2	16:15:43	0.0540	1543.66	99.75	-210.47
1891	2	16:15:50	0.0560	1542.60	99.76	-211.53
1892	2	16:15:57	0.0580	1541.59	99.76	-212.54
1893	2	16:16: 4	0.0600	1540.67	99.76	-213.46
1894	2	16:16:11	0.0620	1539.81	99.76	-214.32
1895	2	16:16:22	0.0650	1539.01	99.76	-215.12
1896	2	16:16:29	0.0670	1538.29	99.76	-215.84
1897	2	16:16:37	0.0690	1537.59	99.76	-216.54
1898	2	16:16:44	0.0710	1536.92	99.77	-217.21
1899	2	16:17: 2	0.0760	1535.62	99.76	-218.51
1900	2	16:17: 9	0.0780	1535.10	99.77	-219.03
1901	2	16:17:20	0.0810	1534.59	99.77	-219.54
1902	2	16:17:27	0.0830	1534.12	99.77	-220.01
1903	2	16:17:34	0.0850	1533.68	99.77	-220.45
1904	2	16:17:41	0.0870	1533.31	99.77	-220.82

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1905	2	16:17:49	0.0890	1532.93	99.78	-221.20
1906	2	16:17:59	0.0920	1532.58	99.78	-221.55
1907	2	16:18: 7	0.0940	1532.21	99.78	-221.92
1908	2	16:18:14	0.0960	1531.86	99.78	-222.27
1909	2	16:18:21	0.0980	1531.55	99.78	-222.58
1910	2	16:18:32	0.1010	1531.30	99.78	-222.83
1911	2	16:18:46	0.1050	1530.65	99.78	-223.48
1912	2	16:18:53	0.1070	1530.34	99.79	-223.79
1913	2	16:19: 1	0.1090	1530.12	99.79	-224.01
1914	2	16:19: 8	0.1110	1529.87	99.79	-224.26
1915	2	16:19:19	0.1140	1529.65	99.79	-224.48
1916	2	16:19:26	0.1160	1529.43	99.79	-224.70
1917	2	16:19:33	0.1180	1529.23	99.79	-224.90
1918	2	16:19:40	0.1200	1529.03	99.80	-225.10
1919	2	16:19:51	0.1230	1528.80	99.80	-225.33
1920	2	16:19:58	0.1250	1528.60	99.80	-225.53
1921	2	16:20: 5	0.1270	1528.42	99.80	-225.71
1922	2	16:20:16	0.1300	1528.25	99.80	-225.88
1923	2	16:20:23	0.1320	1528.07	99.80	-226.06
1924	2	16:20:41	0.1370	1527.73	99.81	-226.40
1925	2	16:20:49	0.1390	1527.58	99.81	-226.55
1926	2	16:20:59	0.1420	1527.42	99.81	-226.71
1927	2	16:21: 7	0.1440	1527.27	99.81	-226.86
1928	2	16:21:14	0.1460	1527.14	99.81	-226.99
1929	2	16:21:25	0.1490	1527.03	99.81	-227.10
1930	2	16:21:32	0.1510	1526.88	99.81	-227.25
1931	2	16:21:43	0.1540	1526.76	99.81	-227.37
1932	2	16:21:50	0.1560	1526.63	99.81	-227.50
1933	2	16:21:57	0.1580	1526.52	99.81	-227.61
1934	2	16:22: 8	0.1610	1526.40	99.82	-227.73
1935	2	16:22:15	0.1630	1526.30	99.82	-227.83
1936	2	16:22:29	0.1670	1526.06	99.82	-228.07
1937	2	16:22:40	0.1700	1525.98	99.82	-228.15
1938	2	16:22:47	0.1720	1525.88	99.82	-228.25
1939	2	16:22:58	0.1750	1525.77	99.82	-228.36
1940	2	16:23: 5	0.1770	1525.70	99.83	-228.43
1941	2	16:23:16	0.1800	1525.60	99.83	-228.53
1942	2	16:23:23	0.1820	1525.51	99.83	-228.62
1943	2	16:23:34	0.1850	1525.41	99.83	-228.72
1944	2	16:23:41	0.1870	1525.33	99.83	-228.80
1945	2	16:23:49	0.1890	1525.28	99.83	-228.85
1946	2	16:23:59	0.1920	1525.21	99.83	-228.92
1947	2	16:24: 7	0.1940	1525.12	99.83	-229.01
1948	2	16:24:17	0.1970	1525.05	99.84	-229.08
1949	2	16:24:32	0.2010	1524.90	99.84	-229.23
1950	2	16:24:43	0.2040	1524.82	99.84	-229.31
1951	2	16:24:50	0.2060	1524.76	99.85	-229.37
1952	2	16:25: 1	0.2090	1524.69	99.85	-229.44
1953	2	16:25: 8	0.2110	1524.63	99.85	-229.50
1954	2	16:25:19	0.2140	1524.57	99.85	-229.56

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Wednesday: Mar. 23, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
1955	2	16:25:26	0.2160	1524.53	99.85	-229.60
1956	2	16:25:37	0.2190	1524.45	99.85	-229.68
1957	2	16:25:44	0.2210	1524.40	99.85	-229.73
1958	2	16:25:55	0.2240	1524.34	99.86	-229.79
1959	2	16:26: 2	0.2260	1524.29	99.85	-229.84
1960	2	16:26: 9	0.2280	1524.24	99.86	-229.89
1961	2	16:26:27	0.2330	1524.12	99.86	-230.01
1962	2	16:26:38	0.2360	1524.08	99.86	-230.05
1963	2	16:26:45	0.2380	1524.02	99.86	-230.11
1964	2	16:26:52	0.2400	1523.98	99.86	-230.15
1965	2	16:27: 3	0.2430	1523.93	99.87	-230.20
1966	2	16:27:14	0.2460	1523.88	99.87	-230.25
1967	2	16:27:21	0.2480	1523.83	99.87	-230.30
1968	2	16:27:28	0.2500	1523.80	99.87	-230.33
1969	2	16:27:39	0.2530	1523.74	99.87	-230.39
1970	2	16:27:50	0.2560	1523.69	99.87	-230.44
1971	2	16:27:57	0.2580	1523.67	99.87	-230.46
1972	2	16:28: 8	0.2610	1523.63	99.87	-230.50
1973	2	16:28:15	0.2630	1523.57	99.88	-230.56
1974	2	16:28:33	0.2680	1523.48	99.88	-230.65
1975	2	16:28:44	0.2710	1523.44	99.87	-230.69
1976	2	16:28:51	0.2730	1523.41	99.88	-230.72
1977	2	16:29: 2	0.2760	1523.37	99.88	-230.76
1978	2	16:29: 9	0.2780	1523.34	99.88	-230.79
1979	2	16:29:20	0.2810	1523.30	99.88	-230.83
1980	2	16:29:27	0.2830	1523.28	99.88	-230.85
1981	2	16:29:38	0.2860	1523.24	99.88	-230.89
1982	2	16:29:45	0.2880	1523.21	99.89	-230.92
1983	2	16:29:56	0.2910	1523.17	99.89	-230.96
1984	2	16:30: 3	0.2930	1523.15	99.89	-230.98
1985	2	16:30:10	0.2950	1523.11	99.89	-231.02
1986	2	16:30:32	0.3010	1523.01	99.89	-231.12
1987	2	16:30:39	0.3030	1523.01	99.89	-231.12
1988	2	16:30:46	0.3050	1522.98	99.89	-231.15
1989	2	16:30:57	0.3080	1522.94	99.89	-231.19
1990	2	16:31: 8	0.3110	1522.92	99.90	-231.21
1991	2	16:31:15	0.3130	1522.88	99.90	-231.25
1992	2	16:31:26	0.3160	1522.86	99.90	-231.27
1993	2	16:31:33	0.3180	1522.83	99.90	-231.30
1994	2	16:31:44	0.3210	1522.81	99.90	-231.32
1995	2	16:31:51	0.3230	1522.78	99.90	-231.35
1996	2	16:32: 2	0.3260	1522.75	99.91	-231.38
1997	2	16:32: 9	0.3280	1522.72	99.91	-231.41
1998	2	16:32:20	0.3310	1522.69	99.91	-231.44
1999	2	16:32:38	0.3360	1522.63	99.91	-231.50
2000	2	16:32:45	0.3380	1522.62	99.91	-231.51
2001	2	16:32:56	0.3410	1522.57	99.91	-231.56
2002	2	16:33: 3	0.3430	1522.56	99.92	-231.57
2003	2	16:33:25	0.3490	1522.48	99.92	-231.65
2004	2	16:33:39	0.3530	1522.44	99.92	-231.69

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Wednesday: Mar. 23, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2005	2	16:33:53	0.3570	1522.40	99.92	-231.73
2006	2	16:34: 8	0.3610	1522.35	99.93	-231.78
2007	2	16:34:22	0.3650	1522.32	99.92	-231.81
2008	2	16:34:37	0.3690	1522.28	99.93	-231.85
2009	2	16:34:51	0.3730	1522.25	99.93	-231.88
2010	2	16:35: 5	0.3770	1522.21	99.93	-231.92
2011	2	16:35:23	0.3820	1522.16	99.93	-231.97
2012	2	16:35:38	0.3860	1522.12	99.93	-232.01
2013	2	16:35:52	0.3900	1522.09	99.94	-232.04
2014	2	16:36: 7	0.3940	1522.07	99.94	-232.06
2015	2	16:36:21	0.3980	1522.03	99.94	-232.10
2016	2	16:36:35	0.4020	1522.00	99.94	-232.13
2017	2	16:36:46	0.4050	1521.97	99.94	-232.16
2018	2	16:37: 4	0.4100	1521.94	99.94	-232.19
2019	2	16:37:19	0.4140	1521.92	99.94	-232.21
2020	2	16:37:33	0.4180	1521.88	99.95	-232.25
2021	2	16:37:47	0.4220	1521.86	99.95	-232.27
2022	2	16:38: 2	0.4260	1521.83	99.95	-232.30
2023	2	16:38:16	0.4300	1521.80	99.95	-232.33
2024	2	16:38:34	0.4350	1521.77	99.95	-232.36
2025	2	16:38:49	0.4390	1521.74	99.96	-232.39
2026	2	16:39: 3	0.4430	1521.71	99.96	-232.42
2027	2	16:39:17	0.4470	1521.69	99.96	-232.44
2028	2	16:39:32	0.4510	1521.67	99.96	-232.46
2029	2	16:39:46	0.4550	1521.65	99.97	-232.48
2030	2	16:40: 1	0.4590	1521.62	99.96	-232.51
2031	2	16:40:15	0.4630	1521.60	99.97	-232.53
2032	2	16:40:29	0.4670	1521.58	99.97	-232.55
2033	2	16:40:44	0.4710	1521.56	99.97	-232.57
2034	2	16:40:58	0.4750	1521.54	99.98	-232.59
2035	2	16:41:13	0.4790	1521.52	99.98	-232.61
2036	2	16:41:31	0.4840	1521.47	99.98	-232.66
2037	2	16:41:45	0.4880	1521.47	99.99	-232.66
2038	2	16:41:59	0.4920	1521.44	99.99	-232.69
2039	2	16:42:14	0.4960	1521.43	99.99	-232.70
2040	2	16:42:28	0.5000	1521.40	99.99	-232.73
2041	2	16:42:43	0.5040	1521.38	99.99	-232.75
2042	2	16:42:57	0.5080	1521.36	100.00	-232.77
2043	2	16:43:11	0.5120	1521.34	100.00	-232.79
2044	2	16:43:26	0.5160	1521.33	100.00	-232.80
2045	2	16:43:40	0.5200	1521.30	100.00	-232.83
2046	2	16:43:55	0.5240	1521.28	100.00	-232.85
2047	2	16:44: 9	0.5280	1521.26	100.01	-232.87
2048	2	16:44:23	0.5320	1521.24	100.01	-232.89
2049	2	16:44:41	0.5370	1521.21	100.01	-232.92
2050	2	16:44:56	0.5410	1521.19	100.01	-232.94
2051	2	16:45:10	0.5450	1521.17	100.01	-232.96
2052	2	16:45:25	0.5490	1521.15	100.02	-232.98
2053	2	16:45:39	0.5530	1521.14	100.02	-232.99
2054	2	16:45:53	0.5570	1521.12	100.02	-233.01

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2055	2	16:46: 8	0.5610	1521.10	100.02	-233.03
2056	2	16:46:22	0.5650	1521.08	100.02	-233.05
2057	2	16:46:37	0.5690	1521.06	100.03	-233.07
2058	2	16:46:51	0.5730	1521.04	100.03	-233.09
2059	2	16:47: 5	0.5770	1521.03	100.03	-233.10
2060	2	16:47:20	0.5810	1521.01	100.03	-233.12
2061	2	16:47:38	0.5860	1520.98	100.04	-233.15
2062	2	16:47:52	0.5900	1520.97	100.04	-233.16
2063	2	16:48: 7	0.5940	1520.95	100.04	-233.18
2064	2	16:48:21	0.5980	1520.94	100.04	-233.19
2065	2	16:48:35	0.6020	1520.92	100.04	-233.21
2066	2	16:48:50	0.6060	1520.91	100.04	-233.22
2067	2	16:49: 4	0.6100	1520.89	100.04	-233.24
2068	2	16:49:19	0.6140	1520.87	100.04	-233.26
2069	2	16:49:33	0.6180	1520.85	100.05	-233.28
2070	2	16:49:47	0.6220	1520.84	100.05	-233.29
2071	2	16:50: 2	0.6260	1520.83	100.05	-233.30
2072	2	16:50:16	0.6300	1520.82	100.06	-233.31
2073	2	16:50:31	0.6340	1520.81	100.06	-233.32
2074	2	16:50:49	0.6390	1520.77	100.06	-233.36
2075	2	16:51: 7	0.6440	1520.76	100.06	-233.37
2076	2	16:51:17	0.6470	1520.74	100.06	-233.39
2077	2	16:51:32	0.6510	1520.73	100.07	-233.40
2078	2	16:51:50	0.6560	1520.71	100.07	-233.42
2079	2	16:52: 1	0.6590	1520.70	100.07	-233.43
2080	2	16:52:19	0.6640	1520.69	100.07	-233.44
2081	2	16:52:29	0.6670	1520.67	100.07	-233.46
2082	2	16:52:44	0.6710	1520.65	100.07	-233.48
2083	2	16:53: 2	0.6760	1520.64	100.08	-233.49
2084	2	16:53:13	0.6790	1520.63	100.08	-233.50
2085	2	16:53:31	0.6840	1520.61	100.08	-233.52
2086	2	16:53:45	0.6880	1520.59	100.08	-233.54
2087	2	16:53:59	0.6920	1520.58	100.08	-233.55
2088	2	16:54:14	0.6960	1520.56	100.08	-233.57
2089	2	16:54:28	0.7000	1520.55	100.09	-233.58
2090	2	16:54:43	0.7040	1520.53	100.09	-233.60
2091	2	16:54:57	0.7080	1520.52	100.09	-233.61
2092	2	16:55:11	0.7120	1520.51	100.09	-233.62
2093	2	16:55:26	0.7160	1520.50	100.09	-233.63
2094	2	16:55:40	0.7200	1520.48	100.10	-233.65
2095	2	16:55:55	0.7240	1520.46	100.10	-233.67
2096	2	16:56: 9	0.7280	1520.45	100.10	-233.68
2097	2	16:56:23	0.7320	1520.44	100.10	-233.69
2098	2	16:56:38	0.7360	1520.43	100.10	-233.70
2099	2	16:56:59	0.7420	1520.41	100.10	-233.72
2100	2	16:57:14	0.7460	1520.39	100.11	-233.74
2101	2	16:57:28	0.7500	1520.39	100.11	-233.74
2102	2	16:57:43	0.7540	1520.37	100.11	-233.76
2103	2	16:57:57	0.7580	1520.35	100.11	-233.78
2104	2	16:58:11	0.7620	1520.35	100.11	-233.78

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2105	2	16:58:26	0.7660	1520.34	100.11	-233.79
2106	2	16:58:40	0.7700	1520.32	100.12	-233.81
2107	2	16:58:55	0.7740	1520.32	100.12	-233.81
2108	2	16:59: 9	0.7780	1520.31	100.12	-233.82
2109	2	16:59:23	0.7820	1520.30	100.12	-233.83
2110	2	16:59:38	0.7860	1520.28	100.12	-233.85
2111	2	16:59:52	0.7900	1520.27	100.12	-233.86
2112	2	17: 0: 7	0.7940	1520.25	100.13	-233.88
2113	2	17: 0:25	0.7990	1520.24	100.13	-233.89
2114	2	17: 0:35	0.8020	1520.23	100.13	-233.90
2115	2	17: 0:53	0.8070	1520.22	100.13	-233.91
2116	2	17: 1: 8	0.8110	1520.21	100.13	-233.92
2117	2	17: 1:19	0.8140	1520.20	100.13	-233.93
2118	2	17: 1:37	0.8190	1520.18	100.14	-233.95
2119	2	17: 1:47	0.8220	1520.18	100.14	-233.95
2120	2	17: 2: 5	0.8270	1520.16	100.14	-233.97
2121	2	17: 2:20	0.8310	1520.16	100.14	-233.97
2122	2	17: 2:31	0.8340	1520.14	100.15	-233.99
2123	2	17: 2:49	0.8390	1520.13	100.15	-234.00
2124	2	17: 3: 7	0.8440	1520.11	100.15	-234.02
2125	2	17: 3:35	0.8520	1520.08	100.15	-234.05
2126	2	17: 3:57	0.8580	1520.05	100.16	-234.08
2127	2	17: 4:19	0.8640	1520.03	100.16	-234.10
2128	2	17: 4:40	0.8700	1520.02	100.16	-234.11
2129	2	17: 5: 2	0.8760	1520.00	100.17	-234.13
2130	2	17: 5:23	0.8820	1519.98	100.17	-234.15
2131	2	17: 5:45	0.8880	1519.96	100.17	-234.17
2132	2	17: 6: 7	0.8940	1519.95	100.17	-234.18
2133	2	17: 6:28	0.9000	1519.93	100.18	-234.20
2134	2	17: 6:50	0.9060	1519.92	100.18	-234.21
2135	2	17: 7:11	0.9120	1519.90	100.18	-234.23
2136	2	17: 7:33	0.9180	1519.89	100.18	-234.24
2137	2	17: 7:55	0.9240	1519.87	100.18	-234.26
2138	2	17: 8:16	0.9300	1519.85	100.19	-234.28
2139	2	17: 8:38	0.9360	1519.84	100.19	-234.29
2140	2	17: 8:59	0.9420	1519.82	100.19	-234.31
2141	2	17: 9:21	0.9480	1519.81	100.19	-234.32
2142	2	17: 9:43	0.9540	1519.80	100.20	-234.33
2143	2	17:10: 4	0.9600	1519.78	100.20	-234.35
2144	2	17:10:26	0.9660	1519.77	100.20	-234.36
2145	2	17:10:47	0.9720	1519.75	100.21	-234.38
2146	2	17:11: 9	0.9780	1519.74	100.21	-234.39
2147	2	17:11:31	0.9840	1519.72	100.21	-234.41
2148	2	17:11:52	0.9900	1519.71	100.21	-234.42
2149	2	17:12:17	0.9970	1519.70	100.21	-234.43
2150	2	17:12:39	1.0030	1519.68	100.22	-234.45
2151	2	17:13: 1	1.0090	1519.67	100.22	-234.46
2152	2	17:13:22	1.0150	1519.66	100.22	-234.47
2153	2	17:13:44	1.0210	1519.64	100.22	-234.49
2154	2	17:14: 5	1.0270	1519.63	100.23	-234.50

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2155	2	17:14:27	1.0330	1519.62	100.23	-234.51
2156	2	17:14:49	1.0390	1519.60	100.23	-234.53
2157	2	17:15:10	1.0450	1519.60	100.23	-234.53
2158	2	17:15:32	1.0510	1519.58	100.23	-234.55
2159	2	17:15:53	1.0570	1519.57	100.23	-234.56
2160	2	17:16:15	1.0630	1519.56	100.24	-234.57
2161	2	17:16:37	1.0690	1519.53	100.24	-234.60
2162	2	17:16:58	1.0750	1519.53	100.24	-234.60
2163	2	17:17:20	1.0810	1519.52	100.25	-234.61
2164	2	17:17:41	1.0870	1519.50	100.25	-234.63
2165	2	17:18: 3	1.0930	1519.49	100.25	-234.64
2166	2	17:18:25	1.0990	1519.48	100.25	-234.65
2167	2	17:18:46	1.1050	1519.46	100.25	-234.67
2168	2	17:19: 8	1.1110	1519.46	100.26	-234.67
2169	2	17:19:29	1.1170	1519.44	100.26	-234.69
2170	2	17:19:51	1.1230	1519.43	100.26	-234.70
2171	2	17:20:13	1.1290	1519.42	100.26	-234.71
2172	2	17:20:34	1.1350	1519.41	100.27	-234.72
2173	2	17:20:56	1.1410	1519.40	100.27	-234.73
2174	2	17:21:21	1.1480	1519.38	100.27	-234.75
2175	2	17:21:43	1.1540	1519.37	100.28	-234.76
2176	2	17:22: 4	1.1600	1519.36	100.28	-234.77
2177	2	17:22:26	1.1660	1519.35	100.28	-234.78
2178	2	17:22:47	1.1720	1519.34	100.28	-234.79
2179	2	17:23: 9	1.1780	1519.33	100.29	-234.80
2180	2	17:23:31	1.1840	1519.32	100.29	-234.81
2181	2	17:23:52	1.1900	1519.30	100.29	-234.83
2182	2	17:24:14	1.1960	1519.30	100.29	-234.83
2183	2	17:24:35	1.2020	1519.28	100.29	-234.85
2184	2	17:24:57	1.2080	1519.27	100.30	-234.86
2185	2	17:25:19	1.2140	1519.26	100.30	-234.87
2186	2	17:25:40	1.2200	1519.28	100.30	-234.85
2187	2	17:26: 2	1.2260	1519.24	100.31	-234.89
2188	2	17:26:23	1.2320	1519.23	100.31	-234.90
2189	2	17:26:45	1.2380	1519.22	100.31	-234.91
2190	2	17:27: 7	1.2440	1519.20	100.31	-234.93
2191	2	17:27:28	1.2500	1519.20	100.32	-234.93
2192	2	17:27:50	1.2560	1519.19	100.32	-234.94
2193	2	17:28:11	1.2620	1519.18	100.32	-234.95
2194	2	17:28:33	1.2680	1519.16	100.32	-234.97
2195	2	17:28:55	1.2740	1519.16	100.32	-234.97
2196	2	17:29:16	1.2800	1519.15	100.33	-234.98
2197	2	17:29:38	1.2860	1519.13	100.33	-235.00
2198	2	17:29:59	1.2920	1519.12	100.33	-235.01
2199	2	17:30:21	1.2980	1519.11	100.33	-235.02
2200	2	17:30:43	1.3040	1519.10	100.33	-235.03
2201	2	17:31: 4	1.3100	1519.09	100.33	-235.04
2202	2	17:31:26	1.3160	1519.08	100.34	-235.05
2203	2	17:31:47	1.3220	1519.07	100.34	-235.06
2204	2	17:32: 9	1.3280	1519.06	100.34	-235.07

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2205	2	17:32:31	1.3340	1519.05	100.34	-235.08
2206	2	17:32:52	1.3400	1519.04	100.34	-235.09
2207	2	17:33:32	1.3510	1519.01	100.35	-235.12
2208	2	17:34: 1	1.3590	1518.99	100.35	-235.14
2209	2	17:34:29	1.3670	1518.98	100.35	-235.15
2210	2	17:34:58	1.3750	1518.96	100.36	-235.17
2211	2	17:35:27	1.3830	1518.94	100.36	-235.19
2212	2	17:35:56	1.3910	1518.94	100.36	-235.19
2213	2	17:36:25	1.3990	1518.93	100.36	-235.20
2214	2	17:36:53	1.4070	1518.91	100.37	-235.22
2215	2	17:37:22	1.4150	1518.90	100.37	-235.23
2216	2	17:37:51	1.4230	1518.89	100.37	-235.24
2217	2	17:38:20	1.4310	1518.88	100.38	-235.25
2218	2	17:38:49	1.4390	1518.87	100.38	-235.26
2219	2	17:39:17	1.4470	1518.86	100.38	-235.27
2220	2	17:39:46	1.4550	1518.84	100.39	-235.29
2221	2	17:40:15	1.4630	1518.83	100.39	-235.30
2222	2	17:40:44	1.4710	1518.81	100.39	-235.32
2223	2	17:41:13	1.4790	1518.80	100.40	-235.33
2224	2	17:41:41	1.4870	1518.79	100.40	-235.34
2225	2	17:42:10	1.4950	1518.78	100.40	-235.35
2226	2	17:42:39	1.5030	1518.77	100.41	-235.36
2227	2	17:43: 8	1.5110	1518.75	100.41	-235.38
2228	2	17:43:37	1.5190	1518.75	100.41	-235.38
2229	2	17:44: 5	1.5270	1518.73	100.41	-235.40
2230	2	17:44:34	1.5350	1518.72	100.41	-235.41
2231	2	17:45: 3	1.5430	1518.71	100.42	-235.42
2232	2	17:45:32	1.5510	1518.70	100.42	-235.43
2233	2	17:46: 1	1.5590	1518.69	100.42	-235.44
2234	2	17:46:29	1.5670	1518.68	100.43	-235.45
2235	2	17:46:58	1.5750	1518.67	100.43	-235.46
2236	2	17:47:27	1.5830	1518.65	100.43	-235.48
2237	2	17:47:56	1.5910	1518.64	100.44	-235.49
2238	2	17:48:25	1.5990	1518.63	100.44	-235.50
2239	2	17:48:53	1.6070	1518.62	100.44	-235.51
2240	2	17:49:22	1.6150	1518.61	100.44	-235.52
2241	2	17:49:51	1.6230	1518.59	100.44	-235.54
2242	2	17:50:20	1.6310	1518.58	100.45	-235.55
2243	2	17:50:49	1.6390	1518.58	100.45	-235.55
2244	2	17:51:17	1.6470	1518.56	100.45	-235.57
2245	2	17:51:46	1.6550	1518.55	100.45	-235.58
2246	2	17:52:15	1.6630	1518.54	100.46	-235.59
2247	2	17:52:44	1.6710	1518.53	100.46	-235.60
2248	2	17:53:13	1.6790	1518.53	100.46	-235.60
2249	2	17:53:41	1.6870	1518.52	100.47	-235.61
2250	2	17:54:10	1.6950	1518.51	100.47	-235.62
2251	2	17:54:39	1.7030	1518.49	100.47	-235.64
2252	2	17:55: 8	1.7110	1518.48	100.47	-235.65
2253	2	17:55:37	1.7190	1518.47	100.48	-235.66
2254	2	17:56: 5	1.7270	1518.46	100.48	-235.67

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2255	2	17:56:34	1.7350	1518.45	100.48	-235.68
2256	2	17:57: 3	1.7430	1518.44	100.49	-235.69
2257	2	17:57:32	1.7510	1518.43	100.49	-235.70
2258	2	17:58: 1	1.7590	1518.43	100.49	-235.70
2259	2	17:58:29	1.7670	1518.42	100.49	-235.71
2260	2	17:58:58	1.7750	1518.40	100.50	-235.73
2261	2	17:59:27	1.7830	1518.39	100.50	-235.74
2262	2	17:59:56	1.7910	1518.38	100.50	-235.75
2263	2	18: 0:25	1.7990	1518.38	100.50	-235.75
2264	2	18: 0:53	1.8070	1518.36	100.51	-235.77
2265	2	18: 1:22	1.8150	1518.35	100.51	-235.78
2266	2	18: 1:51	1.8230	1518.35	100.51	-235.78
2267	2	18: 2:20	1.8310	1518.34	100.52	-235.79
2268	2	18: 2:49	1.8390	1518.33	100.52	-235.80
2269	2	18: 3:17	1.8470	1518.32	100.52	-235.81
2270	2	18: 3:46	1.8550	1518.31	100.53	-235.82
2271	2	18: 4:15	1.8630	1518.30	100.53	-235.83
2272	2	18: 4:44	1.8710	1518.29	100.53	-235.84
2273	2	18: 5:13	1.8790	1518.28	100.53	-235.85
2274	2	18: 5:41	1.8870	1518.27	100.54	-235.86
2275	2	18: 6:10	1.8950	1518.26	100.54	-235.87
2276	2	18: 6:39	1.9030	1518.25	100.54	-235.88
2277	2	18: 7: 8	1.9110	1518.24	100.55	-235.89
2278	2	18: 7:37	1.9190	1518.23	100.55	-235.90
2279	2	18: 8: 5	1.9270	1518.22	100.55	-235.91
2280	2	18: 8:34	1.9350	1518.21	100.55	-235.92
2281	2	18: 9: 3	1.9430	1518.20	100.56	-235.93
2282	2	18: 9:32	1.9510	1518.20	100.56	-235.93
2283	2	18:10: 1	1.9590	1518.19	100.56	-235.94
2284	2	18:10:29	1.9670	1518.18	100.56	-235.95
2285	2	18:10:58	1.9750	1518.17	100.57	-235.96
2286	2	18:11:27	1.9830	1518.15	100.57	-235.98
2287	2	18:11:56	1.9910	1518.15	100.57	-235.98
2288	2	18:12:25	1.9990	1518.14	100.57	-235.99
2289	2	18:12:53	2.0070	1518.13	100.57	-236.00
2290	2	18:13:22	2.0150	1518.13	100.58	-236.00
2291	2	18:13:51	2.0230	1518.12	100.58	-236.01
2292	2	18:14:20	2.0310	1518.11	100.58	-236.02
2293	2	18:14:49	2.0390	1518.10	100.59	-236.03
2294	2	18:15:17	2.0470	1518.09	100.59	-236.04
2295	2	18:15:46	2.0550	1518.08	100.60	-236.05
2296	2	18:16:15	2.0630	1518.07	100.60	-236.06
2297	2	18:16:44	2.0710	1518.06	100.60	-236.07
2298	2	18:17:13	2.0790	1518.05	100.60	-236.08
2299	2	18:17:41	2.0870	1518.04	100.61	-236.09
2300	2	18:18:10	2.0950	1518.04	100.61	-236.09
2301	2	18:18:39	2.1030	1518.03	100.61	-236.10
2302	2	18:19: 8	2.1110	1518.02	100.61	-236.11
2303	2	18:19:37	2.1190	1518.01	100.62	-236.12
2304	2	18:20: 5	2.1270	1518.00	100.62	-236.13

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2305	2	18:20:34	2.1350	1517.99	100.62	-236.14
2306	2	18:21: 3	2.1430	1517.98	100.62	-236.15
2307	2	18:21:32	2.1510	1517.97	100.63	-236.16
2308	2	18:22: 1	2.1590	1517.97	100.63	-236.16
2309	2	18:22:29	2.1670	1517.96	100.63	-236.17
2310	2	18:22:58	2.1750	1517.95	100.63	-236.18
2311	2	18:23:27	2.1830	1517.95	100.63	-236.18
2312	2	18:23:56	2.1910	1517.93	100.64	-236.20
2313	2	18:24:25	2.1990	1517.93	100.64	-236.20
2314	2	18:24:53	2.2070	1517.92	100.64	-236.21
2315	2	18:25:22	2.2150	1517.91	100.64	-236.22
2316	2	18:25:51	2.2230	1517.90	100.65	-236.23
2317	2	18:26:20	2.2310	1517.89	100.65	-236.24
2318	2	18:26:49	2.2390	1517.88	100.65	-236.25
2319	2	18:27:17	2.2470	1517.88	100.66	-236.25
2320	2	18:27:46	2.2550	1517.87	100.66	-236.26
2321	2	18:28:15	2.2630	1517.86	100.66	-236.27
2322	2	18:28:44	2.2710	1517.85	100.66	-236.28
2323	2	18:29:13	2.2790	1517.83	100.66	-236.30
2324	2	18:29:41	2.2870	1517.83	100.66	-236.30
2325	2	18:30:10	2.2950	1517.82	100.67	-236.31
2326	2	18:30:39	2.3030	1517.81	100.67	-236.32
2327	2	18:31: 8	2.3110	1517.81	100.67	-236.32
2328	2	18:31:37	2.3190	1517.80	100.67	-236.33
2329	2	18:32: 5	2.3270	1517.80	100.67	-236.33
2330	2	18:32:34	2.3350	1517.79	100.67	-236.34
2331	2	18:33: 3	2.3430	1517.78	100.68	-236.35
2332	2	18:33:32	2.3510	1517.77	100.68	-236.36
2333	2	18:34: 1	2.3590	1517.76	100.68	-236.37
2334	2	18:34:29	2.3670	1517.75	100.68	-236.38
2335	2	18:34:58	2.3750	1517.75	100.69	-236.38
2336	2	18:35:27	2.3830	1517.73	100.69	-236.40
2337	2	18:35:56	2.3910	1517.74	100.69	-236.39
2338	2	18:36:25	2.3990	1517.73	100.69	-236.40
2339	2	18:36:53	2.4070	1517.73	100.70	-236.40
2340	2	18:37:22	2.4150	1517.71	100.70	-236.42
2341	2	18:37:51	2.4230	1517.71	100.71	-236.42
2342	2	18:38:20	2.4310	1517.70	100.71	-236.43
2343	2	18:38:49	2.4390	1517.69	100.71	-236.44
2344	2	18:39:17	2.4470	1517.68	100.71	-236.45
2345	2	18:39:46	2.4550	1517.68	100.72	-236.45
2346	2	18:40:15	2.4630	1517.67	100.72	-236.46
2347	2	18:40:44	2.4710	1517.66	100.72	-236.47
2348	2	18:41:13	2.4790	1517.66	100.72	-236.47
2349	2	18:41:41	2.4870	1517.64	100.73	-236.49
2350	2	18:42:10	2.4950	1517.64	100.73	-236.49
2351	2	18:42:39	2.5030	1517.63	100.73	-236.50
2352	2	18:43: 8	2.5110	1517.63	100.73	-236.50
2353	2	18:43:37	2.5190	1517.62	100.74	-236.51
2354	2	18:44: 5	2.5270	1517.61	100.74	-236.52

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2355	2	18:44:34	2.5350	1517.60	100.74	-236.53
2356	2	18:45: 3	2.5430	1517.59	100.74	-236.54
2357	2	18:45:32	2.5510	1517.59	100.74	-236.54
2358	2	18:46: 1	2.5590	1517.58	100.75	-236.55
2359	2	18:46:29	2.5670	1517.57	100.75	-236.56
2360	2	18:46:58	2.5750	1517.57	100.75	-236.56
2361	2	18:47:27	2.5830	1517.56	100.76	-236.57
2362	2	18:47:56	2.5910	1517.56	100.76	-236.57
2363	2	18:48:25	2.5990	1517.55	100.76	-236.58
2364	2	18:48:53	2.6070	1517.55	100.76	-236.58
2365	2	18:49:22	2.6150	1517.54	100.76	-236.59
2366	2	18:49:51	2.6230	1517.53	100.77	-236.60
2367	2	18:50:20	2.6310	1517.52	100.77	-236.61
2368	2	18:50:49	2.6390	1517.51	100.77	-236.62
2369	2	18:51:17	2.6470	1517.51	100.78	-236.62
2370	2	18:51:46	2.6550	1517.50	100.78	-236.63
2371	2	18:52:15	2.6630	1517.49	100.78	-236.64
2372	2	18:52:44	2.6710	1517.48	100.78	-236.65
2373	2	18:53:13	2.6790	1517.48	100.79	-236.65
2374	2	18:53:41	2.6870	1517.48	100.79	-236.65
2375	2	18:54:10	2.6950	1517.47	100.79	-236.66
2376	2	18:54:39	2.7030	1517.46	100.79	-236.67
2377	2	18:55: 8	2.7110	1517.45	100.79	-236.68
2378	2	18:55:37	2.7190	1517.44	100.79	-236.69
2379	2	18:56: 5	2.7270	1517.44	100.80	-236.69
2380	2	18:56:34	2.7350	1517.43	100.80	-236.70
2381	2	18:57: 3	2.7430	1517.43	100.80	-236.70
2382	2	18:57:32	2.7510	1517.42	100.81	-236.71
2383	2	18:58: 1	2.7590	1517.41	100.81	-236.72
2384	2	18:58:29	2.7670	1517.41	100.81	-236.72
2385	2	18:58:58	2.7750	1517.40	100.81	-236.73
2386	2	18:59:27	2.7830	1517.40	100.81	-236.73
2387	2	18:59:56	2.7910	1517.39	100.82	-236.74
2388	2	19: 0:25	2.7990	1517.38	100.82	-236.75
2389	2	19: 0:53	2.8070	1517.38	100.82	-236.75
2390	2	19: 1:22	2.8150	1517.37	100.82	-236.76
2391	2	19: 1:51	2.8230	1517.36	100.82	-236.77
2392	2	19: 2:20	2.8310	1517.35	100.82	-236.78
2393	2	19: 2:49	2.8390	1517.35	100.83	-236.78
2394	2	19: 3:17	2.8470	1517.34	100.83	-236.79
2395	2	19: 4:29	2.8670	1517.31	100.83	-236.82
2396	2	19: 5:27	2.8830	1517.29	100.84	-236.84
2397	2	19: 6:25	2.8990	1517.28	100.84	-236.85
2398	2	19: 7:22	2.9150	1517.27	100.85	-236.86
2399	2	19: 8:20	2.9310	1517.25	100.86	-236.88
2400	2	19: 9:17	2.9470	1517.24	100.86	-236.89
2401	2	19:10:15	2.9630	1517.23	100.87	-236.90
2402	2	19:11:13	2.9790	1517.21	100.87	-236.92
2403	2	19:12:10	2.9950	1517.20	100.87	-236.93
2404	2	19:13: 8	3.0110	1517.19	100.88	-236.94

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Wednesday: Mar. 23, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2405	2	19:14: 5	3.0270	1517.18	100.88	-236.95
2406	2	19:15: 3	3.0430	1517.16	100.89	-236.97
2407	2	19:16: 1	3.0590	1517.15	100.89	-236.98
2408	2	19:16:58	3.0750	1517.15	100.90	-236.98
2409	2	19:17:56	3.0910	1517.13	100.90	-237.00
2410	2	19:18:53	3.1070	1517.12	100.91	-237.01
2411	2	19:19:51	3.1230	1517.11	100.91	-237.02
2412	2	19:20:49	3.1390	1517.10	100.92	-237.03
2413	2	19:21:46	3.1550	1517.09	100.93	-237.04
2414	2	19:22:44	3.1710	1517.07	100.93	-237.06
2415	2	19:23:41	3.1870	1517.06	100.94	-237.07
2416	2	19:24:39	3.2030	1517.05	100.94	-237.08
2417	2	19:25:37	3.2190	1517.04	100.94	-237.09
2418	2	19:26:34	3.2350	1517.03	100.95	-237.10
2419	2	19:27:32	3.2510	1517.01	100.95	-237.12
2420	2	19:28:29	3.2670	1517.00	100.95	-237.13
2421	2	19:29:27	3.2830	1516.99	100.95	-237.14
2422	2	19:30:25	3.2990	1516.98	100.96	-237.15
2423	2	19:31:22	3.3150	1516.97	100.97	-237.16
2424	2	19:32:20	3.3310	1516.96	100.97	-237.17
2425	2	19:33:17	3.3470	1516.95	100.97	-237.18
2426	2	19:34:15	3.3630	1516.94	100.97	-237.19
2427	2	19:35:13	3.3790	1516.93	100.98	-237.20
2428	2	19:36:10	3.3950	1516.92	100.99	-237.21
2429	2	19:37: 8	3.4110	1516.91	100.99	-237.22
2430	2	19:38: 5	3.4270	1516.89	101.00	-237.24
2431	2	19:39: 3	3.4430	1516.88	101.00	-237.25
2432	2	19:40: 1	3.4590	1516.87	101.00	-237.26
2433	2	19:40:58	3.4750	1516.86	101.01	-237.27
2434	2	19:41:56	3.4910	1516.85	101.01	-237.28
2435	2	19:42:53	3.5070	1516.84	101.02	-237.29
2436	2	19:43:51	3.5230	1516.98	101.02	-237.15
2437	2	19:44:49	3.5390	1516.88	101.03	-237.25
2438	2	19:45:46	3.5550	1516.84	101.03	-237.29
2439	2	19:46:44	3.5710	1516.85	101.03	-237.28
2440	2	19:47:41	3.5870	1516.82	101.04	-237.31
2441	2	19:48:39	3.6030	1516.81	101.04	-237.32
2442	2	19:49:37	3.6190	1516.79	101.05	-237.34
2443	2	19:50:34	3.6350	1516.78	101.05	-237.35
2444	2	19:51:32	3.6510	1516.76	101.06	-237.37
2445	2	19:52:29	3.6670	1516.75	101.06	-237.38
2446	2	19:53:27	3.6830	1516.74	101.06	-237.39
2447	2	19:54:25	3.6990	1516.73	101.07	-237.40
2448	2	19:55:22	3.7150	1516.72	101.07	-237.41
2449	2	19:56:20	3.7310	1516.70	101.08	-237.43
2450	2	19:57:17	3.7470	1516.69	101.08	-237.44
2451	2	19:58:15	3.7630	1516.69	101.08	-237.44
2452	2	19:59:13	3.7790	1516.68	101.09	-237.45
2453	2	20: 0:10	3.7950	1516.67	101.10	-237.46
2454	2	20: 1: 8	3.8110	1516.66	101.10	-237.47

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Wednesday: Mar. 23, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2455	2	20: 2: 5	3.8270	1516.65	101.10	-237.48
2456	2	20: 3: 3	3.8430	1516.64	101.11	-237.49
2457	2	20: 4: 1	3.8590	1516.63	101.11	-237.50
2458	2	20: 4:58	3.8750	1516.63	101.11	-237.50
2459	2	20: 5:56	3.8910	1516.62	101.12	-237.51
2460	2	20: 6:53	3.9070	1516.60	101.13	-237.53
2461	2	20: 7:51	3.9230	1516.59	101.13	-237.54
2462	2	20: 8:49	3.9390	1516.58	101.13	-237.55
2463	2	20: 9:46	3.9550	1516.57	101.14	-237.56
2464	2	20:10:44	3.9710	1516.56	101.14	-237.57
2465	2	20:11:41	3.9870	1516.55	101.14	-237.58
2466	2	20:12:39	4.0030	1516.54	101.15	-237.59
2467	2	20:13:37	4.0190	1516.53	101.15	-237.60
2468	2	20:14:34	4.0350	1516.53	101.16	-237.60
2469	2	20:15:32	4.0510	1516.52	101.16	-237.61
2470	2	20:16:29	4.0670	1516.51	101.16	-237.62
2471	2	20:17:27	4.0830	1516.49	101.16	-237.64
2472	2	20:18:25	4.0990	1516.48	101.17	-237.65
2473	2	20:19:22	4.1150	1516.47	101.17	-237.66
2474	2	20:20:20	4.1310	1516.46	101.17	-237.67
2475	2	20:21:17	4.1470	1516.46	101.18	-237.67
2476	2	20:22:15	4.1630	1516.45	101.18	-237.68
2477	2	20:23:13	4.1790	1516.44	101.19	-237.69
2478	2	20:24:10	4.1950	1516.43	101.19	-237.70
2479	2	20:25: 8	4.2110	1516.42	101.20	-237.71
2480	2	20:26: 5	4.2270	1516.42	101.20	-237.71
2481	2	20:27: 3	4.2430	1516.41	101.21	-237.72
2482	2	20:28: 1	4.2590	1516.40	101.21	-237.73
2483	2	20:28:58	4.2750	1516.39	101.22	-237.74
2484	2	20:29:56	4.2910	1516.38	101.22	-237.75
2485	2	20:30:53	4.3070	1516.37	101.22	-237.76
2486	2	20:31:51	4.3230	1516.36	101.22	-237.77
2487	2	20:32:49	4.3390	1516.35	101.23	-237.78
2488	2	20:33:46	4.3550	1516.34	101.23	-237.79
2489	2	20:34:44	4.3710	1516.34	101.24	-237.79
2490	2	20:35:41	4.3870	1516.33	101.24	-237.80
2491	2	20:36:39	4.4030	1516.32	101.25	-237.81
2492	2	20:37:37	4.4190	1516.31	101.25	-237.82
2493	2	20:38:34	4.4350	1516.30	101.25	-237.83
2494	2	20:39:32	4.4510	1516.30	101.26	-237.83
2495	2	20:40:29	4.4670	1516.29	101.26	-237.84
2496	2	20:41:27	4.4830	1516.28	101.27	-237.85
2497	2	20:42:25	4.4990	1516.27	101.28	-237.86
2498	2	20:43:22	4.5150	1516.26	101.29	-237.87
2499	2	20:44:20	4.5310	1516.25	101.29	-237.88
2500	2	20:45:17	4.5470	1516.25	101.29	-237.88
2501	2	20:46:15	4.5630	1516.23	101.29	-237.90
2502	2	20:47:13	4.5790	1516.22	101.29	-237.91
2503	2	20:48:10	4.5950	1516.21	101.29	-237.92
2504	2	20:49: 8	4.6110	1516.20	101.29	-237.93

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Wednesday: Mar. 23, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2505	2	20:50: 5	4.6270	1516.20	101.30	-237.93
2506	2	20:51: 3	4.6430	1516.19	101.30	-237.94
2507	2	20:52: 1	4.6590	1516.18	101.31	-237.95
2508	2	20:52:58	4.6750	1516.18	101.31	-237.95
2509	2	20:53:56	4.6910	1516.17	101.32	-237.96
2510	2	20:54:53	4.7070	1516.15	101.32	-237.98
2511	2	20:55:51	4.7230	1516.15	101.32	-237.98
2512	2	20:56:49	4.7390	1516.14	101.32	-237.99
2513	2	20:57:46	4.7550	1516.14	101.33	-237.99
2514	2	20:58:44	4.7710	1516.13	101.33	-238.00
2515	2	20:59:41	4.7870	1516.13	101.33	-238.00
2516	2	21: 0:39	4.8030	1516.11	101.34	-238.02
2517	2	21: 1:37	4.8190	1516.10	101.35	-238.03
2518	2	21: 2:34	4.8350	1516.10	101.35	-238.03
2519	2	21: 3:32	4.8510	1516.09	101.35	-238.04
2520	2	21: 4:29	4.8670	1516.08	101.36	-238.05
2521	2	21: 5:27	4.8830	1516.08	101.37	-238.05
2522	2	21: 6:25	4.8990	1516.07	101.37	-238.06
2523	2	21: 7:22	4.9150	1516.06	101.37	-238.07
2524	2	21: 8:20	4.9310	1516.05	101.38	-238.08
2525	2	21: 9:17	4.9470	1516.05	101.38	-238.08
2526	2	21:10:15	4.9630	1516.04	101.39	-238.09
2527	2	21:11:13	4.9790	1516.03	101.39	-238.10
2528	2	21:12:10	4.9950	1516.02	101.39	-238.11
2529	2	21:13: 8	5.0110	1516.01	101.39	-238.12
2530	2	21:14: 5	5.0270	1516.00	101.40	-238.13
2531	2	21:15: 3	5.0430	1516.00	101.40	-238.13
2532	2	21:16: 1	5.0590	1515.99	101.41	-238.14
2533	2	21:16:58	5.0750	1515.98	101.41	-238.15
2534	2	21:17:56	5.0910	1515.98	101.41	-238.15
2535	2	21:18:53	5.1070	1515.97	101.42	-238.16
2536	2	21:19:51	5.1230	1515.96	101.43	-238.17
2537	2	21:20:49	5.1390	1515.95	101.43	-238.18
2538	2	21:21:46	5.1550	1515.95	101.43	-238.18
2539	2	21:22:44	5.1710	1515.94	101.44	-238.19
2540	2	21:23:41	5.1870	1515.93	101.44	-238.20
2541	2	21:24:39	5.2030	1515.92	101.44	-238.21
2542	2	21:25:37	5.2190	1515.91	101.45	-238.22
2543	2	21:26:34	5.2350	1515.91	101.45	-238.22
2544	2	21:27:32	5.2510	1515.90	101.45	-238.23
2545	2	21:28:29	5.2670	1515.89	101.45	-238.24
2546	2	21:29:27	5.2830	1515.89	101.46	-238.24
2547	2	21:30:25	5.2990	1515.88	101.46	-238.25
2548	2	21:31:22	5.3150	1515.88	101.46	-238.25
2549	2	21:32:20	5.3310	1515.87	101.47	-238.26
2550	2	21:33:17	5.3470	1515.86	101.47	-238.27
2551	2	21:34:15	5.3630	1515.85	101.48	-238.28
2552	2	21:35:13	5.3790	1515.85	101.49	-238.28
2553	2	21:36:10	5.3950	1515.84	101.49	-238.29
2554	2	21:37: 8	5.4110	1515.83	101.50	-238.30

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Wednesday: Mar. 23, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2555	2	21:38: 5	5.4270	1515.83	101.50	-238.30
2556	2	21:39: 3	5.4430	1515.82	101.51	-238.31
2557	2	21:40: 1	5.4590	1515.81	101.51	-238.32
2558	2	21:40:58	5.4750	1515.80	101.51	-238.33
2559	2	21:41:56	5.4910	1515.79	101.51	-238.34
2560	2	21:42:53	5.5070	1515.78	101.51	-238.35
2561	2	21:43:51	5.5230	1515.77	101.51	-238.36
2562	2	21:44:49	5.5390	1515.77	101.51	-238.36
2563	2	21:45:46	5.5550	1515.77	101.52	-238.36
2564	2	21:46:44	5.5710	1515.76	101.52	-238.37
2565	2	21:47:41	5.5870	1515.76	101.53	-238.37
2566	2	21:48:39	5.6030	1515.75	101.53	-238.38
2567	2	21:49:37	5.6190	1515.74	101.54	-238.39
2568	2	21:50:34	5.6350	1515.73	101.54	-238.40
2569	2	21:51:32	5.6510	1515.72	101.54	-238.41
2570	2	21:52:29	5.6670	1515.72	101.55	-238.41
2571	2	21:53:27	5.6830	1515.72	101.56	-238.41
2572	2	21:54:25	5.6990	1515.71	101.56	-238.42
2573	2	21:55:22	5.7150	1515.70	101.57	-238.43
2574	2	21:56:20	5.7310	1515.70	101.57	-238.43
2575	2	21:57:17	5.7470	1515.69	101.57	-238.44
2576	2	21:58:15	5.7630	1515.68	101.57	-238.45
2577	2	21:59:13	5.7790	1515.67	101.57	-238.46
2578	2	22: 0:10	5.7950	1515.67	101.58	-238.46
2579	2	22: 1: 8	5.8110	1515.66	101.58	-238.47
2580	2	22: 2: 5	5.8270	1515.65	101.59	-238.48
2581	2	22: 3: 3	5.8430	1515.65	101.59	-238.48
2582	2	22: 4: 1	5.8590	1515.64	101.59	-238.49
2583	2	22: 4:58	5.8750	1515.63	101.59	-238.50
2584	2	22: 5:56	5.8910	1515.62	101.59	-238.51
2585	2	22: 6:53	5.9070	1515.62	101.59	-238.51
2586	2	22: 7:51	5.9230	1515.61	101.60	-238.52
2587	2	22: 8:49	5.9390	1515.61	101.61	-238.52
2588	2	22: 9:46	5.9550	1515.60	101.61	-238.53
2589	2	22:10:44	5.9710	1515.59	101.61	-238.54
2590	2	22:11:41	5.9870	1515.58	101.61	-238.55
2591	2	22:12:39	6.0030	1515.58	101.61	-238.55
2592	2	22:13:37	6.0190	1515.57	101.62	-238.56
2593	2	22:14:34	6.0350	1515.57	101.62	-238.56
2594	2	22:15:32	6.0510	1515.56	101.63	-238.57
2595	2	22:16:29	6.0670	1515.56	101.64	-238.57
2596	2	22:17:27	6.0830	1515.55	101.64	-238.58
2597	2	22:18:25	6.0990	1515.54	101.64	-238.59
2598	2	22:19:22	6.1150	1515.54	101.64	-238.59
2599	2	22:20:20	6.1310	1515.53	101.65	-238.60
2600	2	22:21:17	6.1470	1515.53	101.65	-238.60
2601	2	22:22:15	6.1630	1515.52	101.65	-238.61
2602	2	22:23:13	6.1790	1515.51	101.66	-238.62
2603	2	22:24:10	6.1950	1515.51	101.66	-238.62
2604	2	22:25: 8	6.2110	1515.50	101.67	-238.63

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2605	2	22:26: 5	6.2270	1515.49	101.68	-238.64
2606	2	22:27: 3	6.2430	1515.49	101.68	-238.64
2607	2	22:28: 1	6.2590	1515.48	101.68	-238.65
2608	2	22:28:58	6.2750	1515.48	101.69	-238.65
2609	2	22:29:56	6.2910	1515.47	101.69	-238.66
2610	2	22:30:53	6.3070	1515.46	101.69	-238.67
2611	2	22:31:51	6.3230	1515.45	101.69	-238.68
2612	2	22:32:49	6.3390	1515.45	101.70	-238.68
2613	2	22:33:46	6.3550	1515.44	101.70	-238.69
2614	2	22:34:44	6.3710	1515.43	101.71	-238.70
2615	2	22:35:41	6.3870	1515.42	101.70	-238.71
2616	2	22:36:39	6.4030	1515.42	101.70	-238.71
2617	2	22:37:37	6.4190	1515.41	101.70	-238.72
2618	2	22:38:34	6.4350	1515.41	101.70	-238.72
2619	2	22:39:32	6.4510	1515.41	101.71	-238.72
2620	2	22:40:29	6.4670	1515.41	101.71	-238.72
2621	2	22:41:27	6.4830	1515.40	101.72	-238.73
2622	2	22:42:25	6.4990	1515.39	101.72	-238.74
2623	2	22:43:22	6.5150	1515.38	101.72	-238.75
2624	2	22:44:20	6.5310	1515.38	101.73	-238.75
2625	2	22:45:17	6.5470	1515.37	101.73	-238.76
2626	2	22:46:15	6.5630	1515.36	101.73	-238.77
2627	2	22:47:13	6.5790	1515.36	101.74	-238.77
2628	2	22:48:10	6.5950	1515.36	101.75	-238.77
2629	2	22:49: 8	6.6110	1515.35	101.75	-238.78
2630	2	22:50: 5	6.6270	1515.34	101.75	-238.79
2631	2	22:51: 3	6.6430	1515.34	101.75	-238.79
2632	2	22:52: 1	6.6590	1515.33	101.75	-238.80
2633	2	22:52:58	6.6750	1515.33	101.76	-238.80
2634	2	22:53:56	6.6910	1515.32	101.76	-238.81
2635	2	22:54:53	6.7070	1515.31	101.76	-238.82
2636	2	22:55:51	6.7230	1515.30	101.77	-238.83
2637	2	22:56:49	6.7390	1515.30	101.77	-238.83
2638	2	22:57:46	6.7550	1515.29	101.77	-238.84
2639	2	22:58:44	6.7710	1515.29	101.78	-238.84
2640	2	22:59:41	6.7870	1515.29	101.78	-238.84
2641	2	23: 0:39	6.8030	1515.28	101.79	-238.85
2642	2	23: 1:37	6.8190	1515.27	101.79	-238.86
2643	2	23: 2:34	6.8350	1515.27	101.79	-238.86
2644	2	23: 3:32	6.8510	1515.26	101.79	-238.87
2645	2	23: 4:29	6.8670	1515.25	101.79	-238.88
2646	2	23: 5:27	6.8830	1515.25	101.80	-238.88
2647	2	23: 6:25	6.8990	1515.24	101.80	-238.89
2648	2	23: 7:22	6.9150	1515.24	101.81	-238.89
2649	2	23: 8:20	6.9310	1515.23	101.81	-238.90
2650	2	23: 9:17	6.9470	1515.23	101.81	-238.90
2651	2	23:10:15	6.9630	1515.22	101.82	-238.91
2652	2	23:11:13	6.9790	1515.22	101.82	-238.91
2653	2	23:12:10	6.9950	1515.21	101.83	-238.92
2654	2	23:13: 8	7.0110	1515.21	101.84	-238.92

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Wednesday: Mar. 23, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2655	2	23:14: 5	7.0270	1515.20	101.84	-238.93
2656	2	23:15: 3	7.0430	1515.20	101.85	-238.93
2657	2	23:16: 1	7.0590	1515.19	101.85	-238.94
2658	2	23:16:58	7.0750	1515.18	101.85	-238.95
2659	2	23:17:56	7.0910	1515.18	101.85	-238.95
2660	2	23:18:53	7.1070	1515.17	101.86	-238.96
2661	2	23:19:51	7.1230	1515.17	101.86	-238.96
2662	2	23:20:49	7.1390	1515.16	101.86	-238.97
2663	2	23:21:46	7.1550	1515.16	101.87	-238.97
2664	2	23:22:44	7.1710	1515.15	101.87	-238.98
2665	2	23:23:41	7.1870	1515.15	101.87	-238.98
2666	2	23:24:39	7.2030	1515.14	101.87	-238.99
2667	2	23:25:37	7.2190	1515.14	101.88	-238.99
2668	2	23:26:34	7.2350	1515.13	101.88	-239.00
2669	2	23:27:32	7.2510	1515.13	101.89	-239.00
2670	2	23:28:29	7.2670	1515.12	101.89	-239.01
2671	2	23:29:27	7.2830	1515.12	101.90	-239.01
2672	2	23:30:25	7.2990	1515.11	101.90	-239.02
2673	2	23:31:22	7.3150	1515.10	101.90	-239.03
2674	2	23:32:20	7.3310	1515.09	101.90	-239.04
2675	2	23:33:17	7.3470	1515.09	101.90	-239.04
2676	2	23:34:15	7.3630	1515.09	101.90	-239.04
2677	2	23:35:13	7.3790	1515.09	101.91	-239.04
2678	2	23:36:10	7.3950	1515.07	101.91	-239.06
2679	2	23:37: 8	7.4110	1515.07	101.91	-239.06
2680	2	23:38: 5	7.4270	1515.06	101.91	-239.07
2681	2	23:39: 3	7.4430	1515.06	101.92	-239.07
2682	2	23:40: 1	7.4590	1515.05	101.92	-239.08
2683	2	23:40:58	7.4750	1515.05	101.92	-239.08
2684	2	23:41:56	7.4910	1515.04	101.93	-239.09
2685	2	23:42:53	7.5070	1515.04	101.93	-239.09
2686	2	23:43:51	7.5230	1515.03	101.94	-239.10
2687	2	23:44:49	7.5390	1515.03	101.94	-239.10
2688	2	23:45:46	7.5550	1515.03	101.94	-239.10
2689	2	23:46:44	7.5710	1515.02	101.95	-239.11
2690	2	23:47:41	7.5870	1515.01	101.94	-239.12
2691	2	23:48:39	7.6030	1515.00	101.95	-239.13
2692	2	23:49:37	7.6190	1514.99	101.95	-239.14
2693	2	23:50:34	7.6350	1514.99	101.95	-239.14
2694	2	23:51:32	7.6510	1514.99	101.95	-239.14
2695	2	23:52:29	7.6670	1514.99	101.95	-239.14
2696	2	23:53:27	7.6830	1514.98	101.96	-239.15
2697	2	23:54:25	7.6990	1514.97	101.96	-239.16
2698	2	23:55:22	7.7150	1514.97	101.96	-239.16
2699	2	23:56:20	7.7310	1514.97	101.97	-239.16
2700	2	23:57:17	7.7470	1514.96	101.97	-239.17
2701	2	23:58:15	7.7630	1514.96	101.97	-239.17
2702	2	23:59:13	7.7790	1514.95	101.98	-239.18
[Thursday: Mar. 24, 1994]						
2703	3	0: 0:10	7.7950	1514.94	101.98	-239.19

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2704	3	0: 1: 8	7.8110	1514.94	101.98	-239.19
2705	3	0: 2: 5	7.8270	1514.93	101.98	-239.20
2706	3	0: 3: 3	7.8430	1514.93	101.98	-239.20
2707	3	0: 4: 1	7.8590	1514.93	101.99	-239.20
2708	3	0: 4:58	7.8750	1514.92	101.99	-239.21
2709	3	0: 5:56	7.8910	1514.92	101.99	-239.21
2710	3	0: 6:53	7.9070	1514.91	102.00	-239.22
2711	3	0: 7:51	7.9230	1514.91	102.00	-239.22
2712	3	0: 8:49	7.9390	1514.91	102.01	-239.22
2713	3	0: 9:46	7.9550	1514.90	102.01	-239.23
2714	3	0:10:44	7.9710	1514.89	102.02	-239.24
2715	3	0:11:41	7.9870	1514.89	102.02	-239.24
2716	3	0:12:39	8.0030	1514.88	102.02	-239.25
2717	3	0:13:37	8.0190	1514.87	102.02	-239.26
2718	3	0:14:34	8.0350	1514.87	102.02	-239.26
2719	3	0:15:32	8.0510	1514.87	102.03	-239.26
2720	3	0:16:29	8.0670	1514.86	102.03	-239.27
2721	3	0:17:27	8.0830	1514.85	102.03	-239.28
2722	3	0:18:25	8.0990	1514.85	102.03	-239.28
2723	3	0:19:22	8.1150	1514.84	102.03	-239.29
2724	3	0:20:20	8.1310	1514.84	102.04	-239.29
2725	3	0:21:17	8.1470	1514.84	102.04	-239.29
2726	3	0:22:15	8.1630	1514.83	102.05	-239.30
2727	3	0:23:13	8.1790	1514.83	102.05	-239.30
2728	3	0:24:10	8.1950	1514.82	102.06	-239.31
2729	3	0:25: 8	8.2110	1514.81	102.06	-239.32
2730	3	0:26: 5	8.2270	1514.81	102.06	-239.32
2731	3	0:27: 3	8.2430	1514.81	102.07	-239.32
2732	3	0:28: 1	8.2590	1514.80	102.07	-239.33
2733	3	0:28:58	8.2750	1514.80	102.07	-239.33
2734	3	0:29:56	8.2910	1514.79	102.08	-239.34
2735	3	0:30:53	8.3070	1514.79	102.08	-239.34
2736	3	0:31:51	8.3230	1514.78	102.08	-239.35
2737	3	0:32:49	8.3390	1514.78	102.08	-239.35
2738	3	0:33:46	8.3550	1514.77	102.08	-239.36
2739	3	0:34:44	8.3710	1514.77	102.08	-239.36
2740	3	0:35:41	8.3870	1514.76	102.09	-239.37
2741	3	0:36:39	8.4030	1514.75	102.09	-239.38
2742	3	0:37:37	8.4190	1514.75	102.09	-239.38
2743	3	0:38:34	8.4350	1514.75	102.10	-239.38
2744	3	0:39:32	8.4510	1514.76	102.11	-239.37
2745	3	0:40:29	8.4670	1514.75	102.12	-239.38
2746	3	0:41:27	8.4830	1514.74	102.12	-239.39
2747	3	0:42:25	8.4990	1514.72	102.12	-239.41
2748	3	0:43:22	8.5150	1514.72	102.12	-239.41
2749	3	0:44:20	8.5310	1514.72	102.12	-239.41
2750	3	0:45:17	8.5470	1514.71	102.12	-239.42
2751	3	0:46:15	8.5630	1514.71	102.13	-239.42
2752	3	0:47:13	8.5790	1514.70	102.13	-239.43
2753	3	0:48:10	8.5950	1514.70	102.13	-239.43

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2754	3	0:49: 8	8.6110	1514.70	102.14	-239.43
2755	3	0:50: 5	8.6270	1514.70	102.14	-239.43
2756	3	0:51: 3	8.6430	1514.69	102.15	-239.44
2757	3	0:52: 1	8.6590	1514.68	102.15	-239.45
2758	3	0:52:58	8.6750	1514.68	102.15	-239.45
2759	3	0:53:56	8.6910	1514.68	102.15	-239.45
2760	3	0:54:53	8.7070	1514.67	102.16	-239.46
2761	3	0:55:51	8.7230	1514.66	102.16	-239.47
2762	3	0:56:49	8.7390	1514.66	102.16	-239.47
2763	3	0:57:46	8.7550	1514.66	102.17	-239.47
2764	3	0:58:44	8.7710	1514.66	102.17	-239.47
2765	3	0:59:41	8.7870	1514.65	102.18	-239.48
2766	3	1: 0:39	8.8030	1514.65	102.18	-239.48
2767	3	1: 1:37	8.8190	1514.64	102.19	-239.49
2768	3	1: 2:34	8.8350	1514.63	102.19	-239.50
2769	3	1: 3:32	8.8510	1514.62	102.19	-239.51
2770	3	1: 4:29	8.8670	1514.62	102.19	-239.51
2771	3	1: 5:27	8.8830	1514.61	102.19	-239.52
2772	3	1: 6:25	8.8990	1514.61	102.19	-239.52
2773	3	1: 7:22	8.9150	1514.61	102.20	-239.52
2774	3	1: 8:20	8.9310	1514.61	102.20	-239.52
2775	3	1: 9:17	8.9470	1514.60	102.20	-239.53
2776	3	1:10:15	8.9630	1514.60	102.20	-239.53
2777	3	1:11:13	8.9790	1514.59	102.21	-239.54
2778	3	1:12:10	8.9950	1514.58	102.21	-239.55
2779	3	1:13: 8	9.0110	1514.58	102.21	-239.55
2780	3	1:14: 5	9.0270	1514.58	102.21	-239.55
2781	3	1:15: 3	9.0430	1514.57	102.22	-239.56
2782	3	1:16: 1	9.0590	1514.57	102.22	-239.56
2783	3	1:16:58	9.0750	1514.57	102.23	-239.56
2784	3	1:17:56	9.0910	1514.56	102.23	-239.57
2785	3	1:18:53	9.1070	1514.55	102.23	-239.58
2786	3	1:19:51	9.1230	1514.54	102.23	-239.59
2787	3	1:20:49	9.1390	1514.54	102.22	-239.59
2788	3	1:21:46	9.1550	1514.54	102.23	-239.59
2789	3	1:22:44	9.1710	1514.53	102.23	-239.60
2790	3	1:23:41	9.1870	1514.53	102.23	-239.60
2791	3	1:24:39	9.2030	1514.53	102.23	-239.60
2792	3	1:25:37	9.2190	1514.52	102.24	-239.61
2793	3	1:26:34	9.2350	1514.52	102.24	-239.61
2794	3	1:27:32	9.2510	1514.52	102.25	-239.61
2795	3	1:28:29	9.2670	1514.52	102.25	-239.61
2796	3	1:29:27	9.2830	1514.51	102.25	-239.62
2797	3	1:30:25	9.2990	1514.50	102.26	-239.63
2798	3	1:31:22	9.3150	1514.50	102.26	-239.63
2799	3	1:32:20	9.3310	1514.50	102.26	-239.63
2800	3	1:33:17	9.3470	1514.49	102.27	-239.64
2801	3	1:34:15	9.3630	1514.49	102.27	-239.64
2802	3	1:35:13	9.3790	1514.48	102.27	-239.65
2803	3	1:36:10	9.3950	1514.48	102.28	-239.65

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2804	3	1:37: 8	9.4110	1514.48	102.28	-239.65
2805	3	1:38: 5	9.4270	1514.47	102.29	-239.66
2806	3	1:39: 3	9.4430	1514.47	102.29	-239.66
2807	3	1:40: 1	9.4590	1514.46	102.29	-239.67
2808	3	1:40:58	9.4750	1514.45	102.28	-239.68
2809	3	1:41:56	9.4910	1514.45	102.29	-239.68
2810	3	1:42:53	9.5070	1514.45	102.29	-239.68
2811	3	1:43:51	9.5230	1514.44	102.29	-239.69
2812	3	1:44:49	9.5390	1514.44	102.29	-239.69
2813	3	1:45:46	9.5550	1514.44	102.30	-239.69
2814	3	1:46:44	9.5710	1514.44	102.31	-239.69
2815	3	1:47:41	9.5870	1514.43	102.31	-239.70
2816	3	1:48:39	9.6030	1514.43	102.31	-239.70
2817	3	1:49:37	9.6190	1514.43	102.32	-239.70
2818	3	1:50:34	9.6350	1514.42	102.32	-239.71
2819	3	1:51:32	9.6510	1514.41	102.32	-239.72
2820	3	1:52:29	9.6670	1514.41	102.32	-239.72
2821	3	1:53:27	9.6830	1514.40	102.33	-239.73
2822	3	1:54:25	9.6990	1514.40	102.33	-239.73
2823	3	1:55:22	9.7150	1514.40	102.33	-239.73
2824	3	1:56:20	9.7310	1514.39	102.34	-239.74
2825	3	1:57:17	9.7470	1514.39	102.35	-239.74
2826	3	1:58:15	9.7630	1514.38	102.35	-239.75
2827	3	1:59:13	9.7790	1514.37	102.34	-239.76
2828	3	2: 0:10	9.7950	1514.37	102.35	-239.76
2829	3	2: 1: 8	9.8110	1514.36	102.35	-239.77
2830	3	2: 2: 5	9.8270	1514.36	102.35	-239.77
2831	3	2: 3: 3	9.8430	1514.36	102.36	-239.77
2832	3	2: 4: 1	9.8590	1514.36	102.36	-239.77
2833	3	2: 4:58	9.8750	1514.35	102.36	-239.78
2834	3	2: 5:56	9.8910	1514.35	102.37	-239.78
2835	3	2: 6:53	9.9070	1514.34	102.37	-239.79
2836	3	2: 7:51	9.9230	1514.33	102.37	-239.80
2837	3	2: 8:49	9.9390	1514.32	102.37	-239.81
2838	3	2: 9:46	9.9550	1514.33	102.37	-239.80
2839	3	2:10:44	9.9710	1514.32	102.37	-239.81
2840	3	2:11:41	9.9870	1514.32	102.38	-239.81
2841	3	2:12:39	10.0030	1514.31	102.38	-239.82
2842	3	2:13:37	10.0190	1514.31	102.38	-239.82
2843	3	2:14:34	10.0350	1514.31	102.39	-239.82
2844	3	2:15:32	10.0510	1514.31	102.40	-239.82
2845	3	2:16:29	10.0670	1514.30	102.40	-239.83
2846	3	2:17:27	10.0830	1514.30	102.40	-239.83
2847	3	2:18:25	10.0990	1514.29	102.41	-239.84
2848	3	2:19:22	10.1150	1514.29	102.40	-239.84
2849	3	2:20:20	10.1310	1514.29	102.41	-239.84
2850	3	2:21:17	10.1470	1514.28	102.41	-239.85
2851	3	2:22:15	10.1630	1514.28	102.42	-239.85
2852	3	2:23:13	10.1790	1514.27	102.42	-239.86
2853	3	2:24:10	10.1950	1514.26	102.41	-239.87

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2854	3	2:25: 8	10.2110	1514.26	102.41	-239.87
2855	3	2:26: 5	10.2270	1514.26	102.42	-239.87
2856	3	2:27: 3	10.2430	1514.26	102.42	-239.87
2857	3	2:28: 1	10.2590	1514.25	102.43	-239.88
2858	3	2:28:58	10.2750	1514.25	102.43	-239.88
2859	3	2:29:56	10.2910	1514.24	102.43	-239.89
2860	3	2:30:53	10.3070	1514.24	102.43	-239.89
2861	3	2:31:51	10.3230	1514.24	102.43	-239.89
2862	3	2:32:49	10.3390	1514.24	102.44	-239.89
2863	3	2:33:46	10.3550	1514.23	102.44	-239.90
2864	3	2:34:44	10.3710	1514.23	102.45	-239.90
2865	3	2:35:41	10.3870	1514.22	102.45	-239.91
2866	3	2:36:39	10.4030	1514.21	102.45	-239.92
2867	3	2:37:37	10.4190	1514.21	102.45	-239.92
2868	3	2:38:34	10.4350	1514.21	102.45	-239.92
2869	3	2:39:32	10.4510	1514.21	102.45	-239.92
2870	3	2:40:29	10.4670	1514.20	102.46	-239.93
2871	3	2:41:27	10.4830	1514.20	102.47	-239.93
2872	3	2:42:25	10.4990	1514.20	102.47	-239.93
2873	3	2:43:22	10.5150	1514.19	102.47	-239.94
2874	3	2:44:20	10.5310	1514.19	102.48	-239.94
2875	3	2:45:17	10.5470	1514.19	102.49	-239.94
2876	3	2:46:15	10.5630	1514.19	102.49	-239.94
2877	3	2:47:13	10.5790	1514.18	102.50	-239.95
2878	3	2:48:10	10.5950	1514.17	102.50	-239.96
2879	3	2:49: 8	10.6110	1514.16	102.50	-239.97
2880	3	2:50: 5	10.6270	1514.15	102.49	-239.98
2881	3	2:51: 3	10.6430	1514.15	102.49	-239.98
2882	3	2:52: 1	10.6590	1514.15	102.49	-239.98
2883	3	2:52:58	10.6750	1514.15	102.50	-239.98
2884	3	2:53:56	10.6910	1514.14	102.50	-239.99
2885	3	2:54:53	10.7070	1514.14	102.50	-239.99
2886	3	2:55:51	10.7230	1514.14	102.51	-239.99
2887	3	2:56:49	10.7390	1514.14	102.51	-239.99
2888	3	2:57:46	10.7550	1514.13	102.51	-240.00
2889	3	2:58:44	10.7710	1514.13	102.52	-240.00
2890	3	2:59:41	10.7870	1514.13	102.52	-240.00
2891	3	3: 0:39	10.8030	1514.12	102.52	-240.01
2892	3	3: 1:37	10.8190	1514.11	102.52	-240.02
2893	3	3: 2:34	10.8350	1514.11	102.53	-240.02
2894	3	3: 3:32	10.8510	1514.11	102.53	-240.02
2895	3	3: 4:29	10.8670	1514.10	102.53	-240.03
2896	3	3: 5:27	10.8830	1514.10	102.53	-240.03
2897	3	3: 6:25	10.8990	1514.09	102.53	-240.04
2898	3	3: 7:22	10.9150	1514.09	102.53	-240.04
2899	3	3: 8:20	10.9310	1514.09	102.53	-240.04
2900	3	3: 9:17	10.9470	1514.08	102.53	-240.05
2901	3	3:10:15	10.9630	1514.08	102.54	-240.05
2902	3	3:11:13	10.9790	1514.07	102.54	-240.06
2903	3	3:12:10	10.9950	1514.07	102.54	-240.06

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Thursday: Mar. 24, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2904	3	3:13: 8	11.0110	1514.06	102.54	-240.07
2905	3	3:14: 5	11.0270	1514.06	102.54	-240.07
2906	3	3:15: 3	11.0430	1514.06	102.55	-240.07
2907	3	3:16: 1	11.0590	1514.05	102.55	-240.08
2908	3	3:16:58	11.0750	1514.05	102.55	-240.08
2909	3	3:17:56	11.0910	1514.05	102.55	-240.08
2910	3	3:18:53	11.1070	1514.05	102.56	-240.08
2911	3	3:19:51	11.1230	1514.05	102.56	-240.08
2912	3	3:20:49	11.1390	1514.05	102.57	-240.08
2913	3	3:21:46	11.1550	1514.04	102.57	-240.09
2914	3	3:22:44	11.1710	1514.04	102.57	-240.09
2915	3	3:23:41	11.1870	1514.03	102.58	-240.10
2916	3	3:24:39	11.2030	1514.03	102.58	-240.10
2917	3	3:25:37	11.2190	1514.03	102.59	-240.10
2918	3	3:26:34	11.2350	1514.02	102.59	-240.11
2919	3	3:27:32	11.2510	1514.02	102.58	-240.11
2920	3	3:28:29	11.2670	1514.01	102.59	-240.12
2921	3	3:29:27	11.2830	1514.01	102.59	-240.12
2922	3	3:30:25	11.2990	1514.00	102.59	-240.13
2923	3	3:31:22	11.3150	1514.00	102.60	-240.13
2924	3	3:32:20	11.3310	1513.99	102.59	-240.14
2925	3	3:33:17	11.3470	1513.99	102.59	-240.14
2926	3	3:34:15	11.3630	1513.99	102.59	-240.14
2927	3	3:35:13	11.3790	1513.98	102.59	-240.15
2928	3	3:36:10	11.3950	1513.98	102.60	-240.15
2929	3	3:37: 8	11.4110	1513.97	102.60	-240.16
2930	3	3:38: 5	11.4270	1513.97	102.60	-240.16
2931	3	3:39: 3	11.4430	1513.97	102.60	-240.16
2932	3	3:40: 1	11.4590	1513.97	102.61	-240.16
2933	3	3:40:58	11.4750	1513.97	102.61	-240.16
2934	3	3:41:56	11.4910	1513.97	102.62	-240.16
2935	3	3:42:53	11.5070	1513.96	102.63	-240.17
2936	3	3:43:51	11.5230	1513.95	102.63	-240.18
2937	3	3:44:49	11.5390	1513.95	102.63	-240.18
2938	3	3:45:46	11.5550	1513.95	102.63	-240.18
2939	3	3:46:44	11.5710	1513.95	102.64	-240.18
2940	3	3:47:41	11.5870	1513.95	102.64	-240.18
2941	3	3:48:39	11.6030	1513.94	102.65	-240.19
2942	3	3:49:37	11.6190	1513.94	102.65	-240.19
2943	3	3:50:34	11.6350	1513.94	102.66	-240.19
2944	3	3:51:32	11.6510	1513.93	102.66	-240.20
2945	3	3:52:29	11.6670	1513.92	102.65	-240.21
2946	3	3:53:27	11.6830	1513.92	102.66	-240.21
2947	3	3:54:25	11.6990	1513.92	102.66	-240.21
2948	3	3:55:22	11.7150	1513.91	102.66	-240.22
2949	3	3:56:20	11.7310	1513.91	102.65	-240.22
2950	3	3:57:17	11.7470	1513.91	102.65	-240.22
2951	3	3:58:15	11.7630	1513.90	102.66	-240.23
2952	3	3:59:13	11.7790	1513.90	102.66	-240.23
2953	3	4: 0:10	11.7950	1513.90	102.67	-240.23

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Thursday: Mar. 24, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
2954	3	4: 1: 8	11.8110	1513.90	102.67	-240.23
2955	3	4: 2: 5	11.8270	1513.90	102.68	-240.23
2956	3	4: 3: 3	11.8430	1513.89	102.68	-240.24
2957	3	4: 4: 1	11.8590	1513.88	102.68	-240.25
2958	3	4: 4:58	11.8750	1513.88	102.68	-240.25
2959	3	4: 5:56	11.8910	1513.88	102.69	-240.25
2960	3	4: 6:53	11.9070	1513.87	102.69	-240.26
2961	3	4: 7:51	11.9230	1513.86	102.69	-240.27
2962	3	4: 8:49	11.9390	1513.86	102.69	-240.27
2963	3	4: 9:46	11.9550	1513.86	102.69	-240.27
2964	3	4:10:44	11.9710	1513.85	102.69	-240.28
2965	3	4:11:41	11.9870	1513.86	102.69	-240.27
2966	3	4:12:39	12.0030	1513.86	102.70	-240.27
2967	3	4:13:37	12.0190	1513.85	102.70	-240.28
2968	3	4:14:34	12.0350	1513.84	102.71	-240.29
2969	3	4:15:32	12.0510	1513.84	102.71	-240.29
2970	3	4:16:29	12.0670	1513.83	102.71	-240.30
2971	3	4:17:27	12.0830	1513.83	102.71	-240.30
2972	3	4:18:25	12.0990	1513.83	102.71	-240.30
2973	3	4:19:22	12.1150	1513.82	102.71	-240.31
2974	3	4:20:20	12.1310	1513.81	102.70	-240.32
2975	3	4:21:17	12.1470	1513.82	102.71	-240.31
2976	3	4:22:15	12.1630	1513.82	102.71	-240.31
2977	3	4:23:13	12.1790	1513.82	102.72	-240.31
2978	3	4:24:10	12.1950	1513.82	102.73	-240.31
2979	3	4:25: 8	12.2110	1513.81	102.73	-240.32
2980	3	4:26: 5	12.2270	1513.81	102.74	-240.32
2981	3	4:27: 3	12.2430	1513.81	102.74	-240.32
2982	3	4:28: 1	12.2590	1513.81	102.75	-240.32
2983	3	4:28:58	12.2750	1513.81	102.75	-240.32
2984	3	4:29:56	12.2910	1513.80	102.76	-240.33
2985	3	4:30:53	12.3070	1513.79	102.76	-240.34
2986	3	4:31:51	12.3230	1513.79	102.76	-240.34
2987	3	4:32:49	12.3390	1513.79	102.76	-240.34
2988	3	4:33:46	12.3550	1513.78	102.76	-240.35
2989	3	4:34:44	12.3710	1513.78	102.77	-240.35
2990	3	4:35:41	12.3870	1513.77	102.77	-240.36
2991	3	4:36:39	12.4030	1513.77	102.78	-240.36
2992	3	4:37:37	12.4190	1513.77	102.78	-240.36
2993	3	4:38:34	12.4350	1513.77	102.78	-240.36
2994	3	4:39:32	12.4510	1513.76	102.78	-240.37
2995	3	4:40:29	12.4670	1513.75	102.79	-240.38
2996	3	4:41:27	12.4830	1513.75	102.79	-240.38
2997	3	4:42:25	12.4990	1513.75	102.79	-240.38
2998	3	4:43:22	12.5150	1513.75	102.79	-240.38
2999	3	4:44:20	12.5310	1513.75	102.80	-240.38
3000	3	4:45:17	12.5470	1513.74	102.80	-240.39
3001	3	4:46:15	12.5630	1513.73	102.81	-240.40
3002	3	4:47:13	12.5790	1513.72	102.80	-240.41
3003	3	4:48:10	12.5950	1513.73	102.80	-240.40

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3004	3	4:49: 8	12.6110	1513.73	102.80	-240.40
3005	3	4:50: 5	12.6270	1513.72	102.81	-240.41
3006	3	4:51: 3	12.6430	1513.72	102.81	-240.41
3007	3	4:52: 1	12.6590	1513.71	102.81	-240.42
3008	3	4:52:58	12.6750	1513.70	102.81	-240.43
3009	3	4:53:56	12.6910	1513.70	102.80	-240.43
3010	3	4:54:53	12.7070	1513.69	102.80	-240.44
3011	3	4:55:51	12.7230	1513.70	102.81	-240.43
3012	3	4:56:49	12.7390	1513.70	102.81	-240.43
3013	3	4:57:46	12.7550	1513.70	102.82	-240.43
3014	3	4:58:44	12.7710	1513.69	102.82	-240.44
3015	3	4:59:41	12.7870	1513.68	102.82	-240.45
3016	3	5: 0:39	12.8030	1513.68	102.82	-240.45
3017	3	5: 1:37	12.8190	1513.68	102.82	-240.45
3018	3	5: 2:34	12.8350	1513.69	102.82	-240.44
3019	3	5: 3:32	12.8510	1513.68	102.83	-240.45
3020	3	5: 4:29	12.8670	1513.67	102.83	-240.46
3021	3	5: 5:27	12.8830	1513.67	102.84	-240.46
3022	3	5: 6:25	12.8990	1513.67	102.84	-240.46
3023	3	5: 7:22	12.9150	1513.67	102.85	-240.46
3024	3	5: 8:20	12.9310	1513.66	102.85	-240.47
3025	3	5: 9:17	12.9470	1513.66	102.85	-240.47
3026	3	5:10:15	12.9630	1513.66	102.85	-240.47
3027	3	5:11:13	12.9790	1513.65	102.85	-240.48
3028	3	5:12:10	12.9950	1513.65	102.86	-240.48
3029	3	5:13: 8	13.0110	1513.65	102.86	-240.48
3030	3	5:14: 5	13.0270	1513.65	102.87	-240.48
3031	3	5:15: 3	13.0430	1513.64	102.88	-240.49
3032	3	5:16: 1	13.0590	1513.64	102.88	-240.49
3033	3	5:16:58	13.0750	1513.63	102.88	-240.50
3034	3	5:17:56	13.0910	1513.63	102.88	-240.50
3035	3	5:18:53	13.1070	1513.62	102.88	-240.51
3036	3	5:19:51	13.1230	1513.62	102.88	-240.51
3037	3	5:20:49	13.1390	1513.62	102.89	-240.51
3038	3	5:21:46	13.1550	1513.62	102.89	-240.51
3039	3	5:22:44	13.1710	1513.61	102.89	-240.52
3040	3	5:23:41	13.1870	1513.61	102.89	-240.52
3041	3	5:24:39	13.2030	1513.60	102.89	-240.53
3042	3	5:25:37	13.2190	1513.60	102.89	-240.53
3043	3	5:26:34	13.2350	1513.60	102.89	-240.53
3044	3	5:27:32	13.2510	1513.59	102.89	-240.54
3045	3	5:28:29	13.2670	1513.59	102.90	-240.54
3046	3	5:29:27	13.2830	1513.59	102.90	-240.54
3047	3	5:30:25	13.2990	1513.59	102.90	-240.54
3048	3	5:31:22	13.3150	1513.59	102.91	-240.54
3049	3	5:32:20	13.3310	1513.58	102.91	-240.55
3050	3	5:33:17	13.3470	1513.58	102.91	-240.55
3051	3	5:34:15	13.3630	1513.58	102.91	-240.55
3052	3	5:35:13	13.3790	1513.57	102.91	-240.56
3053	3	5:36:10	13.3950	1513.56	102.91	-240.57

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3054	3	5:37: 8	13.4110	1513.56	102.91	-240.57
3055	3	5:38: 5	13.4270	1513.56	102.91	-240.57
3056	3	5:39: 3	13.4430	1513.56	102.92	-240.57
3057	3	5:40: 1	13.4590	1513.56	102.92	-240.57
3058	3	5:40:58	13.4750	1513.55	102.92	-240.58
3059	3	5:41:56	13.4910	1513.56	102.93	-240.57
3060	3	5:42:53	13.5070	1513.56	102.93	-240.57
3061	3	5:43:51	13.5230	1513.55	102.94	-240.58
3062	3	5:44:49	13.5390	1513.55	102.95	-240.58
3063	3	5:45:46	13.5550	1513.55	102.95	-240.58
3064	3	5:46:44	13.5710	1513.54	102.95	-240.59
3065	3	5:47:41	13.5870	1513.54	102.96	-240.59
3066	3	5:48:39	13.6030	1513.53	102.95	-240.60
3067	3	5:49:37	13.6190	1513.52	102.96	-240.61
3068	3	5:50:34	13.6350	1513.52	102.96	-240.61
3069	3	5:51:32	13.6510	1513.52	102.95	-240.61
3070	3	5:52:29	13.6670	1513.51	102.95	-240.62
3071	3	5:53:27	13.6830	1513.51	102.95	-240.62
3072	3	5:54:25	13.6990	1513.51	102.96	-240.62
3073	3	5:55:22	13.7150	1513.51	102.96	-240.62
3074	3	5:56:20	13.7310	1513.51	102.97	-240.62
3075	3	5:57:17	13.7470	1513.51	102.98	-240.62
3076	3	5:58:15	13.7630	1513.50	102.98	-240.63
3077	3	5:59:13	13.7790	1513.50	102.98	-240.63
3078	3	6: 0:10	13.7950	1513.49	102.99	-240.64
3079	3	6: 1: 8	13.8110	1513.49	102.99	-240.64
3080	3	6: 2: 5	13.8270	1513.49	102.99	-240.64
3081	3	6: 3: 3	13.8430	1513.49	102.99	-240.64
3082	3	6: 4: 1	13.8590	1513.48	102.99	-240.65
3083	3	6: 4:58	13.8750	1513.48	103.00	-240.65
3084	3	6: 5:56	13.8910	1513.48	103.00	-240.65
3085	3	6: 6:53	13.9070	1513.48	103.01	-240.65
3086	3	6: 7:51	13.9230	1513.46	103.01	-240.67
3087	3	6: 8:49	13.9390	1513.46	103.01	-240.67
3088	3	6: 9:46	13.9550	1513.46	103.00	-240.67
3089	3	6:10:44	13.9710	1513.45	103.01	-240.68
3090	3	6:11:41	13.9870	1513.45	103.01	-240.68
3091	3	6:12:39	14.0030	1513.45	103.01	-240.68
3092	3	6:13:37	14.0190	1513.45	103.01	-240.68
3093	3	6:14:34	14.0350	1513.44	103.01	-240.69
3094	3	6:15:32	14.0510	1513.44	103.01	-240.69
3095	3	6:16:29	14.0670	1513.44	103.01	-240.69
3096	3	6:17:27	14.0830	1513.44	103.02	-240.69
3097	3	6:18:25	14.0990	1513.44	103.02	-240.69
3098	3	6:19:22	14.1150	1513.43	103.02	-240.70
3099	3	6:20:20	14.1310	1513.43	103.03	-240.70
3100	3	6:21:17	14.1470	1513.42	103.03	-240.71
3101	3	6:22:15	14.1630	1513.43	103.03	-240.70
3102	3	6:23:13	14.1790	1513.42	103.03	-240.71
3103	3	6:24:10	14.1950	1513.42	103.03	-240.71

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3104	3	6:25: 8	14.2110	1513.42	103.04	-240.71
3105	3	6:26: 5	14.2270	1513.41	103.04	-240.72
3106	3	6:27: 3	14.2430	1513.41	103.04	-240.72
3107	3	6:28: 1	14.2590	1513.40	103.04	-240.73
3108	3	6:28:58	14.2750	1513.40	103.04	-240.73
3109	3	6:29:56	14.2910	1513.39	103.04	-240.74
3110	3	6:30:53	14.3070	1513.39	103.04	-240.74
3111	3	6:31:51	14.3230	1513.39	103.04	-240.74
3112	3	6:32:49	14.3390	1513.39	103.04	-240.74
3113	3	6:33:46	14.3550	1513.39	103.05	-240.74
3114	3	6:34:44	14.3710	1513.39	103.06	-240.74
3115	3	6:35:41	14.3870	1513.38	103.06	-240.75
3116	3	6:36:39	14.4030	1513.38	103.07	-240.75
3117	3	6:37:37	14.4190	1513.37	103.07	-240.76
3118	3	6:38:34	14.4350	1513.37	103.07	-240.76
3119	3	6:39:32	14.4510	1513.37	103.07	-240.76
3120	3	6:40:29	14.4670	1513.36	103.07	-240.77
3121	3	6:41:27	14.4830	1513.36	103.07	-240.77
3122	3	6:42:25	14.4990	1513.36	103.08	-240.77
3123	3	6:43:22	14.5150	1513.36	103.08	-240.77
3124	3	6:44:20	14.5310	1513.36	103.09	-240.77
3125	3	6:45:17	14.5470	1513.35	103.09	-240.78
3126	3	6:46:15	14.5630	1513.35	103.10	-240.78
3127	3	6:47:13	14.5790	1513.34	103.10	-240.79
3128	3	6:48:10	14.5950	1513.34	103.10	-240.79
3129	3	6:49: 8	14.6110	1513.34	103.10	-240.79
3130	3	6:50: 5	14.6270	1513.33	103.10	-240.80
3131	3	6:51: 3	14.6430	1513.33	103.10	-240.80
3132	3	6:52: 1	14.6590	1513.33	103.11	-240.80
3133	3	6:52:58	14.6750	1513.32	103.11	-240.81
3134	3	6:53:56	14.6910	1513.32	103.11	-240.81
3135	3	6:54:53	14.7070	1513.32	103.11	-240.81
3136	3	6:55:51	14.7230	1513.32	103.11	-240.81
3137	3	6:56:49	14.7390	1513.32	103.11	-240.81
3138	3	6:57:46	14.7550	1513.31	103.11	-240.82
3139	3	6:58:44	14.7710	1513.31	103.12	-240.82
3140	3	6:59:41	14.7870	1513.31	103.12	-240.82
3141	3	7: 0:39	14.8030	1513.31	103.13	-240.82
3142	3	7: 1:37	14.8190	1513.31	103.13	-240.82
3143	3	7: 2:34	14.8350	1513.30	103.13	-240.83
3144	3	7: 3:32	14.8510	1513.30	103.14	-240.83
3145	3	7: 4:29	14.8670	1513.29	103.14	-240.84
3146	3	7: 5:27	14.8830	1513.29	103.14	-240.84
3147	3	7: 6:25	14.8990	1513.28	103.14	-240.85
3148	3	7: 7:22	14.9150	1513.28	103.14	-240.85
3149	3	7: 8:20	14.9310	1513.28	103.14	-240.85
3150	3	7: 9:17	14.9470	1513.28	103.14	-240.85
3151	3	7:10:15	14.9630	1513.27	103.14	-240.86
3152	3	7:11:13	14.9790	1513.27	103.15	-240.86
3153	3	7:12:10	14.9950	1513.27	103.15	-240.86

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3154	3	7:13: 8	15.0110	1513.27	103.15	-240.86
3155	3	7:14: 5	15.0270	1513.26	103.15	-240.87
3156	3	7:15: 3	15.0430	1513.26	103.15	-240.87
3157	3	7:16: 1	15.0590	1513.26	103.15	-240.87
3158	3	7:16:58	15.0750	1513.26	103.16	-240.87
3159	3	7:17:56	15.0910	1513.26	103.16	-240.87
3160	3	7:18:53	15.1070	1513.25	103.16	-240.88
3161	3	7:19:51	15.1230	1513.25	103.16	-240.88
3162	3	7:20:49	15.1390	1513.25	103.17	-240.88
3163	3	7:21:46	15.1550	1513.25	103.17	-240.88
3164	3	7:22:44	15.1710	1513.25	103.17	-240.88
3165	3	7:23:41	15.1870	1513.24	103.17	-240.89
3166	3	7:24:39	15.2030	1513.24	103.17	-240.89
3167	3	7:25:37	15.2190	1513.24	103.18	-240.89
3168	3	7:26:34	15.2350	1513.23	103.18	-240.90
3169	3	7:27:32	15.2510	1513.23	103.18	-240.90
3170	3	7:28:29	15.2670	1513.23	103.18	-240.90
3171	3	7:29:27	15.2830	1513.23	103.19	-240.90
3172	3	7:30:25	15.2990	1513.22	103.19	-240.91
3173	3	7:31:22	15.3150	1513.22	103.19	-240.91
3174	3	7:32:20	15.3310	1513.21	103.19	-240.92
3175	3	7:33:17	15.3470	1513.21	103.19	-240.92
3176	3	7:34:15	15.3630	1513.21	103.20	-240.92
3177	3	7:35:13	15.3790	1513.21	103.20	-240.92
3178	3	7:36:10	15.3950	1513.21	103.20	-240.92
3179	3	7:37: 8	15.4110	1513.21	103.21	-240.92
3180	3	7:38: 5	15.4270	1513.21	103.21	-240.92
3181	3	7:39: 3	15.4430	1513.20	103.21	-240.93
3182	3	7:40: 1	15.4590	1513.19	103.21	-240.94
3183	3	7:40:58	15.4750	1513.19	103.21	-240.94
3184	3	7:41:56	15.4910	1513.19	103.21	-240.94
3185	3	7:42:53	15.5070	1513.18	103.21	-240.95
3186	3	7:43:51	15.5230	1513.18	103.22	-240.95
3187	3	7:44:49	15.5390	1513.18	103.22	-240.95
3188	3	7:45:46	15.5550	1513.18	103.22	-240.95
3189	3	7:46:44	15.5710	1513.17	103.23	-240.96
3190	3	7:47:41	15.5870	1513.17	103.22	-240.96
3191	3	7:48:39	15.6030	1513.17	103.22	-240.96
3192	3	7:49:37	15.6190	1513.16	103.22	-240.97
3193	3	7:50:34	15.6350	1513.16	103.22	-240.97
3194	3	7:51:32	15.6510	1513.16	103.22	-240.97
3195	3	7:52:29	15.6670	1513.15	103.22	-240.98
3196	3	7:53:27	15.6830	1513.15	103.22	-240.98
3197	3	7:54:25	15.6990	1513.16	103.23	-240.97
3198	3	7:55:22	15.7150	1513.16	103.24	-240.97
3199	3	7:56:20	15.7310	1513.15	103.24	-240.98
3200	3	7:57:17	15.7470	1513.15	103.24	-240.98
3201	3	7:58:15	15.7630	1513.15	103.24	-240.98
3202	3	7:59:13	15.7790	1513.14	103.24	-240.99
3203	3	8: 0:10	15.7950	1513.14	103.24	-240.99

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3204	3	8: 1: 8	15.8110	1513.14	103.25	-240.99
3205	3	8: 2: 5	15.8270	1513.13	103.25	-241.00
3206	3	8: 3: 3	15.8430	1513.13	103.25	-241.00
3207	3	8: 4: 1	15.8590	1513.13	103.25	-241.00
3208	3	8: 4:58	15.8750	1513.13	103.26	-241.00
3209	3	8: 5:56	15.8910	1513.13	103.26	-241.00
3210	3	8: 6:53	15.9070	1513.13	103.27	-241.00
3211	3	8: 7:51	15.9230	1513.11	103.27	-241.02
3212	3	8: 8:49	15.9390	1513.11	103.27	-241.02
3213	3	8: 9:46	15.9550	1513.11	103.27	-241.02
3214	3	8:10:44	15.9710	1513.11	103.28	-241.02
3215	3	8:11:41	15.9870	1513.11	103.28	-241.02
3216	3	8:12:39	16.0030	1513.11	103.29	-241.02
3217	3	8:13:37	16.0190	1513.10	103.29	-241.03
3218	3	8:14:34	16.0350	1513.10	103.29	-241.03
3219	3	8:15:32	16.0510	1513.10	103.29	-241.03
3220	3	8:16:29	16.0670	1513.10	103.30	-241.03
3221	3	8:17:27	16.0830	1513.10	103.30	-241.03
3222	3	8:18:25	16.0990	1513.09	103.30	-241.04
3223	3	8:19:22	16.1150	1513.09	103.30	-241.04
3224	3	8:20:20	16.1310	1513.09	103.30	-241.04
3225	3	8:21:17	16.1470	1513.08	103.30	-241.05
3226	3	8:22:15	16.1630	1513.08	103.30	-241.05
3227	3	8:23:13	16.1790	1513.07	103.30	-241.06
3228	3	8:24:10	16.1950	1513.07	103.30	-241.06
3229	3	8:25: 8	16.2110	1513.07	103.30	-241.06
3230	3	8:26: 5	16.2270	1513.07	103.31	-241.06
3231	3	8:27: 3	16.2430	1513.07	103.31	-241.06
3232	3	8:28: 1	16.2590	1513.07	103.32	-241.06
3233	3	8:28:58	16.2750	1513.07	103.32	-241.06
3234	3	8:29:56	16.2910	1513.06	103.32	-241.07
3235	3	8:30:53	16.3070	1513.06	103.32	-241.07
3236	3	8:31:51	16.3230	1513.05	103.32	-241.08
3237	3	8:32:49	16.3390	1513.05	103.32	-241.08
3238	3	8:33:46	16.3550	1513.05	103.32	-241.08
3239	3	8:34:44	16.3710	1513.06	103.33	-241.07
3240	3	8:35:41	16.3870	1513.05	103.33	-241.08
3241	3	8:36:39	16.4030	1513.05	103.34	-241.08
3242	3	8:37:37	16.4190	1513.05	103.35	-241.08
3243	3	8:38:34	16.4350	1513.05	103.35	-241.08
3244	3	8:39:32	16.4510	1513.04	103.35	-241.09
3245	3	8:40:29	16.4670	1513.04	103.34	-241.09
3246	3	8:41:27	16.4830	1513.03	103.34	-241.10
3247	3	8:42:25	16.4990	1513.03	103.35	-241.10
3248	3	8:43:22	16.5150	1513.03	103.35	-241.10
3249	3	8:44:20	16.5310	1513.02	103.35	-241.11
3250	3	8:45:17	16.5470	1513.02	103.35	-241.11
3251	3	8:46:15	16.5630	1513.02	103.35	-241.11
3252	3	8:47:13	16.5790	1513.02	103.35	-241.11
3253	3	8:48:10	16.5950	1513.02	103.36	-241.11

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3254	3	8:49: 8	16.6110	1513.02	103.36	-241.11
3255	3	8:50: 5	16.6270	1513.01	103.36	-241.12
3256	3	8:51: 3	16.6430	1513.01	103.36	-241.12
3257	3	8:52: 1	16.6590	1513.01	103.36	-241.12
3258	3	8:52:58	16.6750	1513.01	103.37	-241.12
3259	3	8:53:56	16.6910	1513.01	103.38	-241.12
3260	3	8:54:53	16.7070	1513.01	103.38	-241.12
3261	3	8:55:51	16.7230	1513.00	103.39	-241.13
3262	3	8:56:49	16.7390	1513.00	103.39	-241.13
3263	3	8:57:46	16.7550	1512.99	103.39	-241.14
3264	3	8:58:44	16.7710	1512.99	103.39	-241.14
3265	3	8:59:41	16.7870	1512.98	103.39	-241.15
3266	3	9: 0:39	16.8030	1512.98	103.39	-241.15
3267	3	9: 1:37	16.8190	1512.97	103.39	-241.16
3268	3	9: 2:34	16.8350	1512.97	103.39	-241.16
3269	3	9: 3:32	16.8510	1512.98	103.39	-241.15
3270	3	9: 4:29	16.8670	1512.97	103.39	-241.16
3271	3	9: 5:27	16.8830	1512.97	103.40	-241.16
3272	3	9: 6:25	16.8990	1512.96	103.40	-241.17
3273	3	9: 7:22	16.9150	1512.96	103.40	-241.17
3274	3	9: 8:20	16.9310	1512.95	103.40	-241.18
3275	3	9: 9:17	16.9470	1512.96	103.40	-241.17
3276	3	9:10:15	16.9630	1512.95	103.40	-241.18
3277	3	9:11:13	16.9790	1512.96	103.40	-241.17
3278	3	9:12:10	16.9950	1512.96	103.41	-241.17
3279	3	9:13: 8	17.0110	1512.95	103.41	-241.18
3280	3	9:14: 5	17.0270	1512.95	103.42	-241.18
3281	3	9:15: 3	17.0430	1512.94	103.41	-241.19
3282	3	9:16: 1	17.0590	1512.94	103.41	-241.19
3283	3	9:16:58	17.0750	1512.94	103.42	-241.19
3284	3	9:17:56	17.0910	1512.94	103.42	-241.19
3285	3	9:18:53	17.1070	1512.94	103.42	-241.19
3286	3	9:19:51	17.1230	1512.93	103.43	-241.20
3287	3	9:20:49	17.1390	1512.93	103.43	-241.20
3288	3	9:21:46	17.1550	1512.93	103.43	-241.20
3289	3	9:22:44	17.1710	1512.93	103.44	-241.20
3290	3	9:23:41	17.1870	1512.92	103.44	-241.21
3291	3	9:24:39	17.2030	1512.92	103.44	-241.21
3292	3	9:25:37	17.2190	1512.91	103.44	-241.22
3293	3	9:26:34	17.2350	1512.91	103.43	-241.22
3294	3	9:27:32	17.2510	1512.91	103.44	-241.22
3295	3	9:28:29	17.2670	1512.91	103.44	-241.22
3296	3	9:29:27	17.2830	1512.91	103.45	-241.22
3297	3	9:30:25	17.2990	1512.91	103.46	-241.22
3298	3	9:31:22	17.3150	1512.90	103.46	-241.23
3299	3	9:32:20	17.3310	1512.90	103.46	-241.23
3300	3	9:33:17	17.3470	1512.90	103.46	-241.23
3301	3	9:34:15	17.3630	1512.89	103.46	-241.24
3302	3	9:35:13	17.3790	1512.89	103.46	-241.24
3303	3	9:36:10	17.3950	1512.89	103.46	-241.24

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3304	3	9:37: 8	17.4110	1512.90	103.46	-241.23
3305	3	9:38: 5	17.4270	1512.90	103.47	-241.23
3306	3	9:39: 3	17.4430	1512.90	103.48	-241.23
3307	3	9:40: 1	17.4590	1512.90	103.48	-241.23
3308	3	9:40:58	17.4750	1512.89	103.48	-241.24
3309	3	9:41:56	17.4910	1512.89	103.49	-241.24
3310	3	9:42:53	17.5070	1512.90	103.49	-241.23
3311	3	9:43:51	17.5230	1512.89	103.49	-241.24
3312	3	9:44:49	17.5390	1512.89	103.49	-241.24
3313	3	9:45:46	17.5550	1512.88	103.49	-241.25
3314	3	9:46:44	17.5710	1512.88	103.49	-241.25
3315	3	9:47:41	17.5870	1512.88	103.49	-241.25
3316	3	9:48:39	17.6030	1512.88	103.49	-241.25
3317	3	9:49:37	17.6190	1512.87	103.50	-241.26
3318	3	9:50:34	17.6350	1512.86	103.49	-241.27
3319	3	9:51:32	17.6510	1512.86	103.49	-241.27
3320	3	9:52:29	17.6670	1512.86	103.49	-241.27
3321	3	9:53:27	17.6830	1512.85	103.48	-241.28
3322	3	9:54:25	17.6990	1512.85	103.49	-241.28
3323	3	9:55:22	17.7150	1512.85	103.49	-241.28
3324	3	9:56:20	17.7310	1512.85	103.50	-241.28
3325	3	9:57:17	17.7470	1512.85	103.50	-241.28
3326	3	9:58:15	17.7630	1512.84	103.50	-241.29
3327	3	9:59:13	17.7790	1512.84	103.50	-241.29
3328	3	10: 0:10	17.7950	1512.84	103.50	-241.29
3329	3	10: 1: 8	17.8110	1512.83	103.50	-241.30
3330	3	10: 2: 5	17.8270	1512.83	103.50	-241.30
3331	3	10: 3: 3	17.8430	1512.83	103.51	-241.30
3332	3	10: 4: 1	17.8590	1512.83	103.51	-241.30
3333	3	10: 4:58	17.8750	1512.82	103.52	-241.31
3334	3	10: 5:56	17.8910	1512.81	103.52	-241.32
3335	3	10: 6:53	17.9070	1512.81	103.52	-241.32
3336	3	10: 7:51	17.9230	1512.81	103.52	-241.32
3337	3	10: 8:49	17.9390	1512.81	103.52	-241.32
3338	3	10: 9:46	17.9550	1512.81	103.52	-241.32
3339	3	10:10:44	17.9710	1512.81	103.53	-241.32
3340	3	10:11:41	17.9870	1512.81	103.54	-241.32
3341	3	10:12:39	18.0030	1512.80	103.54	-241.33
3342	3	10:13:37	18.0190	1512.80	103.54	-241.33
3343	3	10:14:34	18.0350	1512.80	103.54	-241.33
3344	3	10:15:32	18.0510	1512.80	103.55	-241.33
3345	3	10:16:29	18.0670	1512.79	103.55	-241.34
3346	3	10:17:27	18.0830	1512.79	103.55	-241.34
3347	3	10:18:25	18.0990	1512.79	103.56	-241.34
3348	3	10:19:22	18.1150	1512.78	103.55	-241.35
3349	3	10:20:20	18.1310	1512.78	103.55	-241.35
3350	3	10:21:17	18.1470	1512.78	103.56	-241.35
3351	3	10:22:15	18.1630	1512.77	103.56	-241.36
3352	3	10:23:13	18.1790	1512.77	103.56	-241.36
3353	3	10:24:10	18.1950	1512.78	103.56	-241.35

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3354	3	10:25: 8	18.2110	1512.76	103.57	-241.37
3355	3	10:26: 5	18.2270	1512.76	103.56	-241.37
3356	3	10:27: 3	18.2430	1512.76	103.56	-241.37
3357	3	10:28: 1	18.2590	1512.76	103.55	-241.37
3358	3	10:28:58	18.2750	1512.76	103.56	-241.37
3359	3	10:29:56	18.2910	1512.76	103.57	-241.37
3360	3	10:30:53	18.3070	1512.75	103.57	-241.38
3361	3	10:31:51	18.3230	1512.74	103.57	-241.39
3362	3	10:32:49	18.3390	1512.74	103.57	-241.39
3363	3	10:33:46	18.3550	1512.74	103.57	-241.39
3364	3	10:34:44	18.3710	1512.74	103.57	-241.39
3365	3	10:35:41	18.3870	1512.74	103.57	-241.39
3366	3	10:36:39	18.4030	1512.74	103.57	-241.39
3367	3	10:37:37	18.4190	1512.74	103.57	-241.39
3368	3	10:38:34	18.4350	1512.73	103.57	-241.40
3369	3	10:39:32	18.4510	1512.73	103.58	-241.40
3370	3	10:40:29	18.4670	1512.72	103.57	-241.41
3371	3	10:41:27	18.4830	1512.73	103.57	-241.40
3372	3	10:42:25	18.4990	1512.73	103.58	-241.40
3373	3	10:43:22	18.5150	1512.73	103.59	-241.40
3374	3	10:44:20	18.5310	1512.72	103.59	-241.41
3375	3	10:45:17	18.5470	1512.72	103.60	-241.41
3376	3	10:46:15	18.5630	1512.72	103.60	-241.41
3377	3	10:47:13	18.5790	1512.72	103.60	-241.41
3378	3	10:48:10	18.5950	1512.71	103.60	-241.42
3379	3	10:49: 8	18.6110	1512.71	103.60	-241.42
3380	3	10:50: 5	18.6270	1512.71	103.60	-241.42
3381	3	10:51: 3	18.6430	1512.70	103.61	-241.43
3382	3	10:52: 1	18.6590	1512.70	103.60	-241.43
3383	3	10:52:58	18.6750	1512.70	103.61	-241.43
3384	3	10:53:56	18.6910	1512.70	103.62	-241.43
3385	3	10:54:53	18.7070	1512.70	103.62	-241.43
3386	3	10:55:51	18.7230	1512.69	103.63	-241.44
3387	3	10:56:49	18.7390	1512.68	103.63	-241.45
3388	3	10:57:46	18.7550	1512.67	103.62	-241.46
3389	3	10:58:44	18.7710	1512.68	103.62	-241.45
3390	3	10:59:41	18.7870	1512.67	103.63	-241.46
3391	3	11: 0:39	18.8030	1512.67	103.63	-241.46
3392	3	11: 1:37	18.8190	1512.67	103.64	-241.46
3393	3	11: 2:34	18.8350	1512.66	103.64	-241.47
3394	3	11: 3:32	18.8510	1512.65	103.64	-241.48
3395	3	11: 4:29	18.8670	1512.66	103.64	-241.47
3396	3	11: 5:27	18.8830	1512.65	103.64	-241.48
3397	3	11: 6:25	18.8990	1512.65	103.65	-241.48
3398	3	11: 7:22	18.9150	1512.65	103.65	-241.48
3399	3	11: 8:20	18.9310	1512.64	103.65	-241.49
3400	3	11: 9:17	18.9470	1512.64	103.65	-241.49
3401	3	11:10:15	18.9630	1512.64	103.65	-241.49
3402	3	11:11:13	18.9790	1512.64	103.65	-241.49
3403	3	11:12:10	18.9950	1512.64	103.66	-241.49

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3404	3	11:13: 8	19.0110	1512.64	103.66	-241.49
3405	3	11:14: 5	19.0270	1512.63	103.67	-241.50
3406	3	11:15: 3	19.0430	1512.64	103.67	-241.49
3407	3	11:16: 1	19.0590	1512.63	103.67	-241.50
3408	3	11:16:58	19.0750	1512.63	103.68	-241.50
3409	3	11:17:56	19.0910	1512.63	103.68	-241.50
3410	3	11:18:53	19.1070	1512.62	103.68	-241.51
3411	3	11:19:51	19.1230	1512.62	103.68	-241.51
3412	3	11:20:49	19.1390	1512.61	103.68	-241.52
3413	3	11:21:46	19.1550	1512.62	103.68	-241.51
3414	3	11:22:44	19.1710	1512.62	103.68	-241.51
3415	3	11:23:41	19.1870	1512.62	103.68	-241.51
3416	3	11:24:39	19.2030	1512.62	103.69	-241.51
3417	3	11:25:37	19.2190	1512.61	103.69	-241.52
3418	3	11:26:34	19.2350	1512.61	103.69	-241.52
3419	3	11:27:32	19.2510	1512.60	103.69	-241.53
3420	3	11:28:29	19.2670	1512.60	103.68	-241.53
3421	3	11:29:27	19.2830	1512.60	103.68	-241.53
3422	3	11:30:25	19.2990	1512.61	103.69	-241.52
3423	3	11:31:22	19.3150	1512.61	103.69	-241.52
3424	3	11:32:20	19.3310	1512.60	103.69	-241.53
3425	3	11:33:17	19.3470	1512.60	103.70	-241.53
3426	3	11:34:15	19.3630	1512.59	103.70	-241.54
3427	3	11:35:13	19.3790	1512.59	103.70	-241.54
3428	3	11:36:10	19.3950	1512.59	103.70	-241.54
3429	3	11:37: 8	19.4110	1512.60	103.71	-241.53
3430	3	11:38: 5	19.4270	1512.60	103.71	-241.53
3431	3	11:39: 3	19.4430	1512.59	103.72	-241.54
3432	3	11:40: 1	19.4590	1512.59	103.72	-241.54
3433	3	11:40:58	19.4750	1512.58	103.71	-241.55
3434	3	11:41:56	19.4910	1512.58	103.71	-241.55
3435	3	11:42:53	19.5070	1512.58	103.71	-241.55
3436	3	11:43:51	19.5230	1512.58	103.72	-241.55
3437	3	11:44:49	19.5390	1512.58	103.72	-241.55
3438	3	11:45:46	19.5550	1512.58	103.73	-241.55
3439	3	11:46:44	19.5710	1512.58	103.73	-241.55
3440	3	11:47:41	19.5870	1512.58	103.74	-241.55
3441	3	11:48:39	19.6030	1512.57	103.74	-241.56
3442	3	11:49:37	19.6190	1512.57	103.74	-241.56
3443	3	11:50:34	19.6350	1512.56	103.75	-241.57
3444	3	11:51:32	19.6510	1512.56	103.74	-241.57
3445	3	11:52:29	19.6670	1512.55	103.74	-241.58
3446	3	11:53:27	19.6830	1512.55	103.74	-241.58
3447	3	11:54:25	19.6990	1512.54	103.73	-241.59
3448	3	11:55:22	19.7150	1512.54	103.73	-241.59
3449	3	11:56:20	19.7310	1512.54	103.74	-241.59
3450	3	11:57:17	19.7470	1512.54	103.73	-241.59
3451	3	11:58:15	19.7630	1512.54	103.73	-241.59
3452	3	11:59:13	19.7790	1512.54	103.74	-241.59
3453	3	12: 0:10	19.7950	1512.54	103.73	-241.59

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Thursday: Mar. 24, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3454	3	12: 1: 8	19.8110	1512.54	103.74	-241.59
3455	3	12: 2: 5	19.8270	1512.55	103.74	-241.58
3456	3	12: 3: 3	19.8430	1512.54	103.75	-241.59
3457	3	12: 4: 1	19.8590	1512.54	103.75	-241.59
3458	3	12: 4:58	19.8750	1512.53	103.75	-241.60
3459	3	12: 5:56	19.8910	1512.53	103.75	-241.60
3460	3	12: 6:53	19.9070	1512.53	103.75	-241.60
3461	3	12: 7:51	19.9230	1512.53	103.76	-241.60
3462	3	12: 8:49	19.9390	1512.53	103.77	-241.60
3463	3	12: 9:46	19.9550	1512.53	103.77	-241.60
3464	3	12:10:44	19.9710	1512.53	103.77	-241.60
3465	3	12:11:41	19.9870	1512.53	103.78	-241.60
3466	3	12:12:39	20.0030	1512.53	103.78	-241.60
3467	3	12:13:37	20.0190	1512.52	103.79	-241.61
3468	3	12:14:34	20.0350	1512.52	103.79	-241.61
3469	3	12:15:32	20.0510	1512.51	103.79	-241.62
3470	3	12:16:29	20.0670	1512.51	103.79	-241.62
3471	3	12:17:27	20.0830	1512.51	103.80	-241.62
3472	3	12:18:25	20.0990	1512.50	103.80	-241.63
3473	3	12:19:22	20.1150	1512.50	103.80	-241.63
3474	3	12:20:20	20.1310	1512.50	103.80	-241.63
3475	3	12:21:17	20.1470	1512.50	103.81	-241.63
3476	3	12:22:15	20.1630	1512.50	103.81	-241.63
3477	3	12:23:13	20.1790	1512.50	103.81	-241.63
3478	3	12:24:10	20.1950	1512.49	103.81	-241.64
3479	3	12:25: 8	20.2110	1512.49	103.81	-241.64
3480	3	12:26: 5	20.2270	1512.48	103.80	-241.65
3481	3	12:27: 3	20.2430	1512.48	103.79	-241.65
3482	3	12:28: 1	20.2590	1512.48	103.79	-241.65
3483	3	12:28:58	20.2750	1512.48	103.79	-241.65
3484	3	12:29:56	20.2910	1512.48	103.80	-241.65
3485	3	12:30:53	20.3070	1512.48	103.80	-241.65
3486	3	12:31:51	20.3230	1512.47	103.80	-241.66
3487	3	12:32:49	20.3390	1512.48	103.80	-241.65
3488	3	12:33:46	20.3550	1512.48	103.81	-241.65
3489	3	12:34:44	20.3710	1512.48	103.81	-241.65
3490	3	12:35:41	20.3870	1512.48	103.82	-241.65
3491	3	12:36:39	20.4030	1512.42	103.82	-241.71
3492	3	12:37:37	20.4190	1512.45	103.81	-241.68
3493	3	12:38:34	20.4350	1512.46	103.80	-241.67
3494	3	12:39:32	20.4510	1512.46	103.81	-241.67
3495	3	12:40:29	20.4670	1512.46	103.82	-241.67
3496	3	12:41:27	20.4830	1512.46	103.83	-241.67
3497	3	12:42:25	20.4990	1512.46	103.83	-241.67
3498	3	12:43:22	20.5150	1512.46	103.84	-241.67
3499	3	12:44:20	20.5310	1512.46	103.85	-241.67
3500	3	12:45:17	20.5470	1512.45	103.85	-241.68
3501	3	12:46:15	20.5630	1512.45	103.85	-241.68
3502	3	12:47:13	20.5790	1512.44	103.85	-241.69
3503	3	12:48:10	20.5950	1512.44	103.85	-241.69

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3504	3	12:49: 8	20.6110	1512.44	103.85	-241.69
3505	3	12:50: 5	20.6270	1512.44	103.86	-241.69
3506	3	12:51: 3	20.6430	1512.43	103.86	-241.70
3507	3	12:52: 1	20.6590	1512.43	103.86	-241.70
3508	3	12:52:58	20.6750	1512.43	103.86	-241.70
3509	3	12:53:56	20.6910	1512.43	103.86	-241.70
3510	3	12:54:53	20.7070	1512.43	103.87	-241.70
3511	3	12:55:51	20.7230	1512.43	103.87	-241.70
3512	3	12:56:49	20.7390	1512.43	103.87	-241.70
3513	3	12:57:46	20.7550	1512.43	103.87	-241.70
3514	3	12:58:44	20.7710	1512.42	103.87	-241.71
3515	3	12:59:41	20.7870	1512.42	103.88	-241.71
3516	3	13: 0:39	20.8030	1512.42	103.88	-241.71
3517	3	13: 1:37	20.8190	1512.42	103.88	-241.71
3518	3	13: 2:34	20.8350	1512.41	103.88	-241.72
3519	3	13: 3:32	20.8510	1512.41	103.88	-241.72
3520	3	13: 4:29	20.8670	1512.41	103.89	-241.72
3521	3	13: 5:27	20.8830	1512.41	103.89	-241.72
3522	3	13: 6:25	20.8990	1512.41	103.89	-241.72
3523	3	13: 7:22	20.9150	1512.40	103.89	-241.73
3524	3	13: 8:20	20.9310	1512.40	103.89	-241.73
3525	3	13: 9:17	20.9470	1512.40	103.90	-241.73
3526	3	13:10:15	20.9630	1512.40	103.90	-241.73
		Drop downhole 10 feet, then pull out of hole making static gradient stops.				
3527	3	13:11:13	20.9790	1512.40	103.90	-241.73
3528	3	13:12:10	20.9950	1513.12	103.90	-241.01
3529	3	13:13: 8	21.0110	1502.55	103.87	-251.58
3530	3	13:14: 5	21.0270	1483.56	103.42	-270.57
3531	3	13:15: 3	21.0430	1461.28	102.95	-292.85
3532	3	13:16: 1	21.0590	1435.38	102.46	-318.75
3533	3	13:16:58	21.0750	1410.18	102.05	-343.95
3534	3	13:17:56	21.0910	1384.31	101.89	-369.82
3535	3	13:18:53	21.1070	1381.54	101.63	-372.59
3536	3	13:19:51	21.1230	1381.76	101.56	-372.37
3537	3	13:20:49	21.1390	1381.86	101.54	-372.27
3538	3	13:21:46	21.1550	1381.92	101.53	-372.21
3539	3	13:22:44	21.1710	1381.95	101.52	-372.18
3540	3	13:23:41	21.1870	1381.97	101.51	-372.16
3541	3	13:24:39	21.2030	1381.98	101.51	-372.15
3542	3	13:25:37	21.2190	1381.99	101.50	-372.14
		Leaving 3,000 feet.				
3543	3	13:26:34	21.2350	1381.99	101.50	-372.14
3544	3	13:27:32	21.2510	1381.53	101.50	-372.60
3545	3	13:28:29	21.2670	1336.31	101.43	-417.82
3546	3	13:29:27	21.2830	1272.21	101.14	-481.92
3547	3	13:30:25	21.2990	1204.75	100.25	-549.38
3548	3	13:31:22	21.3150	1138.23	99.72	-615.90
3549	3	13:32:20	21.3310	1069.91	99.05	-684.22
3550	3	13:33:17	21.3470	1001.30	98.46	-752.93

APPENDIX E

CALCULATION FLOW CHART

CALCULATION FLOW CHART

1. Calculate slope value from Semi-Log Plot.

2 a. Utilize reservoir viscosity for *Initial Calculations*.

b. If required, redo calculations with waste viscosity.

3. Calculate Permeability.

4. Calculate Time to exit waste front.

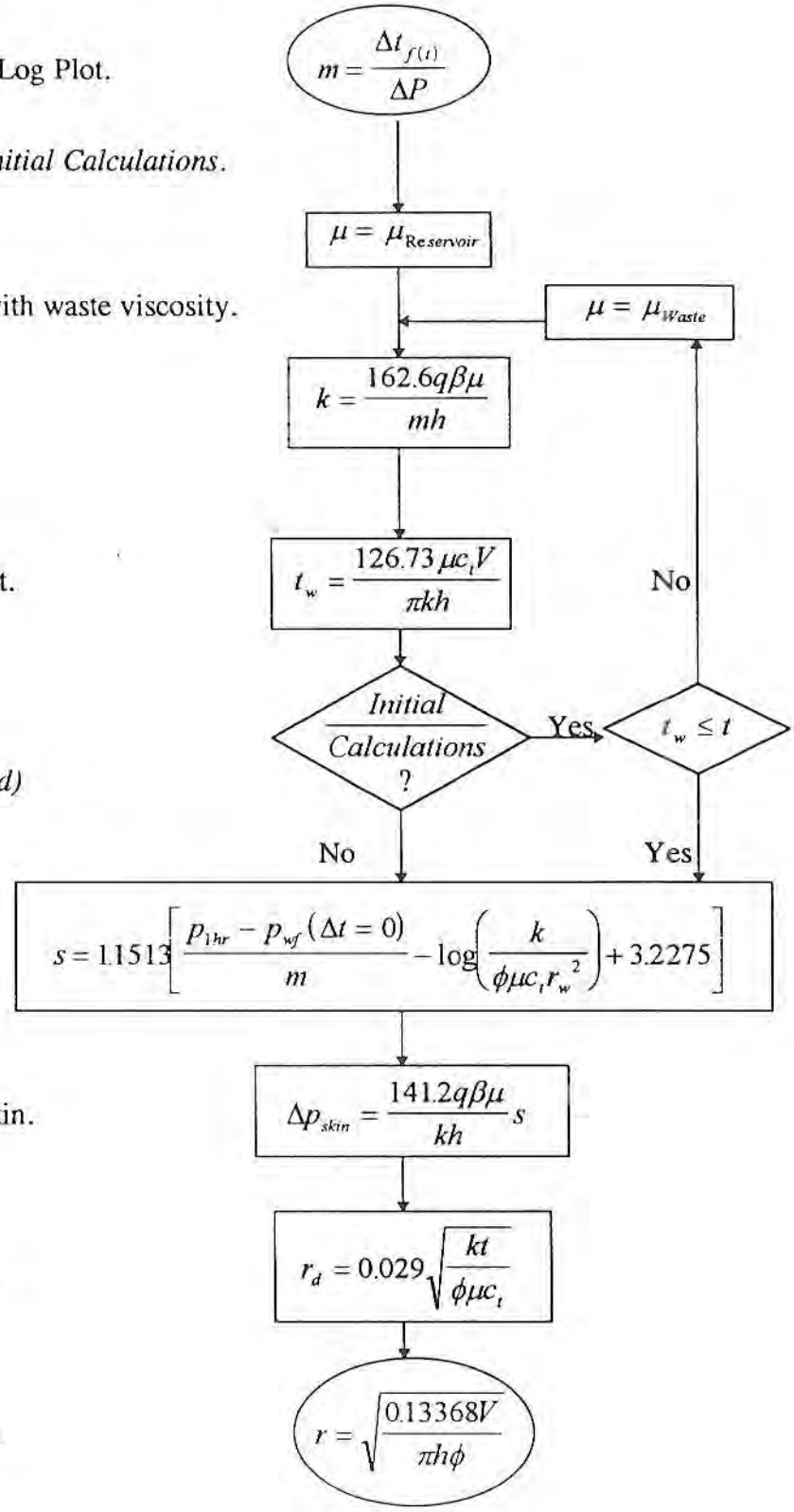
5. Conditional statements.
   (t, beginning of radial flow period)

6. Calculate skin factor.

7. Calculate Pressure drop due to skin.

8. Calculate radius of investigation.

9. Calculate distance to waste front.



ECO Solutions, Inc.
Hoechst Celanese Chemical Group, Inc.
Pressure Falloff/MIT Testing

APPENDIX F

STATIC GRADIENT SURVEY

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A
Field: BAY CITY, TEXAS PLANT
County: MATAGORDA
State: TEXAS

Engineer: DOUG BEALL
Date: 03/24/1994
Gauge Type: GRC EPG-520
Serial No.: 69491
Gauge Range: 5,000 PSI
Gauge Depth: 3300 ft
Well Type: INJECTION
Test Type: GRADIENT SURVEY
Well Status: SHUT-IN

Tubing: 5 1/2" TO 3380'
Tubing: TO
Casing: 9 5/8" TO 4616'
Perfs.: 3376' - 3471'
Perfs.: 3494' - 3572'
Elevation: 17'

Packer Depth 3330 ft
PBTD 3800 ft
Oil Level None
H2O Level 4 ft

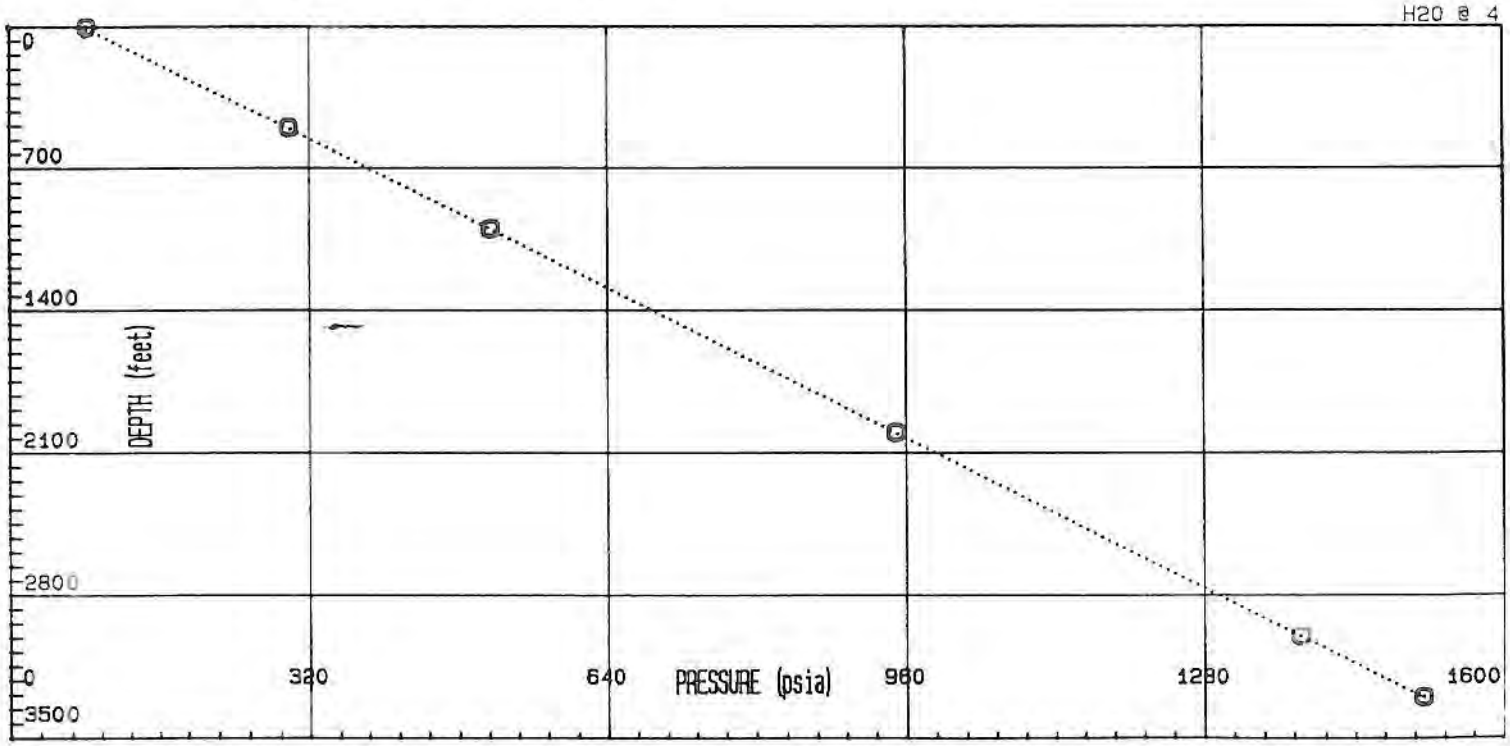
Zero: KB

Shut-in BHP	1512	@	3300 ft	Shut-in BHT	104 F	@	3300 ft
Flowing BHP	1754	@	3300 ft	Flowing BHT	100 F	@	3300 ft
Shut-in WHP	81			Shut-in WHT	76 F		
Flowing WHP	328			Flowing WHT	83 F		

[GRADIENT DATA]

#	MD	TVD	PRESSURE	PSI/ft
1	0	0	80.60	
2	500	500	296.59	0.432
3	1000	1000	513.93	0.435
4	2000	2000	948.17	0.434
5	3000	3000	1381.99	0.434
6	3300	3300	1512.40	0.435

Remarks: STATIC GRADIENT SURVEY, PULLING OUT OF HOLE.
Tagged fill @ 3558.5 feet.



REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3504	3	12:49: 8	20.6110	1512.44	103.85	-241.69
3505	3	12:50: 5	20.6270	1512.44	103.86	-241.69
3506	3	12:51: 3	20.6430	1512.43	103.86	-241.70
3507	3	12:52: 1	20.6590	1512.43	103.86	-241.70
3508	3	12:52:58	20.6750	1512.43	103.86	-241.70
3509	3	12:53:56	20.6910	1512.43	103.86	-241.70
3510	3	12:54:53	20.7070	1512.43	103.87	-241.70
3511	3	12:55:51	20.7230	1512.43	103.87	-241.70
3512	3	12:56:49	20.7390	1512.43	103.87	-241.70
3513	3	12:57:46	20.7550	1512.43	103.87	-241.70
3514	3	12:58:44	20.7710	1512.42	103.87	-241.71
3515	3	12:59:41	20.7870	1512.42	103.88	-241.71
3516	3	13: 0:39	20.8030	1512.42	103.88	-241.71
3517	3	13: 1:37	20.8190	1512.42	103.88	-241.71
3518	3	13: 2:34	20.8350	1512.41	103.88	-241.72
3519	3	13: 3:32	20.8510	1512.41	103.88	-241.72
3520	3	13: 4:29	20.8670	1512.41	103.89	-241.72
3521	3	13: 5:27	20.8830	1512.41	103.89	-241.72
3522	3	13: 6:25	20.8990	1512.41	103.89	-241.72
3523	3	13: 7:22	20.9150	1512.40	103.89	-241.73
3524	3	13: 8:20	20.9310	1512.40	103.89	-241.73
3525	3	13: 9:17	20.9470	1512.40	103.90	-241.73
3526	3	13:10:15	20.9630	1512.40	103.90	-241.73
		Drop downhole 10 feet, then pull out of hole making static gradient stops.				
3527	3	13:11:13	20.9790	1512.40	103.90	-241.73
3528	3	13:12:10	20.9950	1513.12	103.90	-241.01
3529	3	13:13: 8	21.0110	1502.55	103.87	-251.58
3530	3	13:14: 5	21.0270	1483.56	103.42	-270.57
3531	3	13:15: 3	21.0430	1461.28	102.95	-292.85
3532	3	13:16: 1	21.0590	1435.38	102.46	-318.75
3533	3	13:16:58	21.0750	1410.18	102.05	-343.95
3534	3	13:17:56	21.0910	1384.31	101.89	-369.82
3535	3	13:18:53	21.1070	1381.54	101.63	-372.59
3536	3	13:19:51	21.1230	1381.76	101.56	-372.37
3537	3	13:20:49	21.1390	1381.86	101.54	-372.27
3538	3	13:21:46	21.1550	1381.92	101.53	-372.21
3539	3	13:22:44	21.1710	1381.95	101.52	-372.18
3540	3	13:23:41	21.1870	1381.97	101.51	-372.16
3541	3	13:24:39	21.2030	1381.98	101.51	-372.15
3542	3	13:25:37	21.2190	1381.99	101.50	-372.14
		Leaving 3,000 feet.				
3543	3	13:26:34	21.2350	1381.99	101.50	-372.14
3544	3	13:27:32	21.2510	1381.53	101.50	-372.60
3545	3	13:28:29	21.2670	1336.31	101.43	-417.82
3546	3	13:29:27	21.2830	1272.21	101.14	-481.92
3547	3	13:30:25	21.2990	1204.75	100.25	-549.38
3548	3	13:31:22	21.3150	1138.23	99.72	-615.90
3549	3	13:32:20	21.3310	1069.91	99.05	-684.22
3550	3	13:33:17	21.3470	1001.20	98.46	-752.93

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3551	3	13:34:15	21.3630	947.67	97.78	-806.46
3552	3	13:35:13	21.3790	947.60	97.29	-806.53
3553	3	13:36:10	21.3950	947.90	97.20	-806.23
3554	3	13:37: 8	21.4110	948.04	97.16	-806.09
3555	3	13:38: 5	21.4270	948.11	97.14	-806.02
3556	3	13:39: 3	21.4430	948.14	97.13	-805.99
3557	3	13:40: 1	21.4590	948.16	97.11	-805.97
3558	3	13:40:58	21.4750	948.17	97.10	-805.96
		Leaving 2,000 feet.				
3559	3	13:41:56	21.4910	948.17	97.10	-805.96
3560	3	13:42:53	21.5070	923.72	97.09	-830.41
3561	3	13:43:51	21.5230	861.39	96.85	-892.74
3562	3	13:44:49	21.5390	805.27	96.39	-948.86
3563	3	13:45:46	21.5550	744.70	95.95	-1009.43
3564	3	13:46:44	21.5710	682.01	95.39	-1072.12
3565	3	13:47:41	21.5870	619.76	94.98	-1134.37
3566	3	13:48:39	21.6030	557.24	94.43	-1196.89
3567	3	13:49:37	21.6190	512.90	93.92	-1241.23
3568	3	13:50:34	21.6350	513.42	93.49	-1240.71
3569	3	13:51:32	21.6510	513.68	93.40	-1240.45
3570	3	13:52:29	21.6670	513.81	93.37	-1240.32
3571	3	13:53:27	21.6830	513.87	93.35	-1240.26
3572	3	13:54:25	21.6990	513.90	93.33	-1240.23
3573	3	13:55:22	21.7150	513.92	93.32	-1240.21
3574	3	13:56:20	21.7310	513.93	93.31	-1240.20
3575	3	13:57:17	21.7470	513.93	93.30	-1240.20
		Leaving 1,000 feet.				
3576	3	13:58:15	21.7630	513.93	93.29	-1240.20
3577	3	13:59:13	21.7790	477.66	93.28	-1276.47
3578	3	14: 0:10	21.7950	410.32	93.09	-1343.81
3579	3	14: 1: 8	21.8110	340.38	92.59	-1413.75
3580	3	14: 2: 5	21.8270	296.06	92.17	-1458.07
3581	3	14: 3: 3	21.8430	296.30	91.98	-1457.83
3582	3	14: 4: 1	21.8590	296.44	91.90	-1457.69
3583	3	14: 4:58	21.8750	296.51	91.86	-1457.62
3584	3	14: 5:56	21.8910	296.55	91.85	-1457.58
3585	3	14: 6:53	21.9070	296.57	91.84	-1457.56
3586	3	14: 7:51	21.9230	296.58	91.83	-1457.55
3587	3	14: 8:49	21.9390	296.58	91.82	-1457.55
3588	3	14: 9:46	21.9550	296.59	91.81	-1457.54
		Leaving 500 feet.				
3589	3	14:10:44	21.9710	296.59	91.81	-1457.54
3590	3	14:11:41	21.9870	296.60	91.80	-1457.53
3591	3	14:12:39	22.0030	254.57	91.78	-1499.56
3592	3	14:13:37	22.0190	188.81	91.59	-1565.32
3593	3	14:14:34	22.0350	131.86	91.18	-1622.27
3594	3	14:15:32	22.0510	111.25	90.65	-1642.88
3595	3	14:16:29	22.0670	95.64	90.63	-1658.49
3596	3	14:17:27	22.0830	86.81	87.98	-1667.32
3597	3	14:18:25	22.0990	78.08	84.08	-1676.05

Company: HOECHST CELANESE CHEMICAL GROUP, INC.
Well: WDW-110 WELL #1A [Thursday: Mar. 24, 1994]
Field: BAY CITY, TEXAS PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	Delta-P (psi)
3598	3	14:19:22	22.1150	74.76	80.50	-1679.37
3599	3	14:20:20	22.1310	76.77	78.83	-1677.36
3600	3	14:21:17	22.1470	78.21	78.20	-1675.92
3601	3	14:22:15	22.1630	79.06	77.78	-1675.07
3602	3	14:23:13	22.1790	79.48	77.44	-1674.65
3603	3	14:24:10	22.1950	79.72	77.16	-1674.41
3604	3	14:25: 8	22.2110	79.92	76.87	-1674.21
3605	3	14:26: 5	22.2270	80.05	76.66	-1674.08
3606	3	14:27: 3	22.2430	80.13	76.47	-1674.00
3607	3	14:28: 1	22.2590	80.19	76.28	-1673.94
3608	3	14:28:58	22.2750	80.25	76.11	-1673.88
3609	3	14:29:56	22.2910	80.31	75.96	-1673.82
3610	3	14:30:53	22.3070	80.38	75.83	-1673.75
3611	3	14:31:51	22.3230	80.45	75.73	-1673.68
3612	3	14:32:49	22.3390	80.50	75.66	-1673.63
3613	3	14:33:46	22.3550	80.54	75.60	-1673.59
3614	3	14:34:44	22.3710	80.58	75.55	-1673.55
		Bleed off lubricator.				
3615	3	14:35:41	22.3870	80.60	75.51	-1673.53
3616	3	14:36:39	22.4030	43.21	75.48	-1710.92
3617	3	14:37:37	22.4190	3.30	75.43	-1750.83
3618	3	14:38:34	22.4350	13.26	75.37	-1740.87
3619	3	14:39:32	22.4510	13.32	75.37	-1740.81
3620	3	14:40:29	22.4670	13.32	75.37	-1740.81
3621	3	14:41:27	22.4830	13.35	75.36	-1740.78
3622	3	14:42:25	22.4990	13.35	75.35	-1740.78
3623	3	14:43:22	22.5150	13.45	75.33	-1740.68
		Shut down Data Acquisition System and rig down.				
3624	3	14:44:20	22.5310	13.31	75.32	-1740.82

ECO Solutions, Inc.
Hoechst Celanese Chemical Group, Inc.
Pressure Falloff/MIT Testing

APPENDIX G

GAUGE CALIBRATION CERTIFICATE

MILTON M. COOKE COMPANY

WELL TESTING SPECIALISTS

2310 McALLISTER • HOUSTON, TEXAS 77092

713/683-0333 TX. WATS: 1-800-392-3861

FAX: 683-0128

FIELD CALIBRATION CHECK: [PRE-TEST]

(GRC EPG-520 - SURFACE READOUT GAUGE)

DATE: 03/21/1994

D.W.T. S/N: 13469

GRC GAUGE S/N: 69491

D.W.P. (PSIG)	GAUGE PRESSURE (PSIA)	DIFFERENCE (+/-PSI)
0.0	10.90	+10.90
550.0	564.48	+14.48
1050.0	1062.32	+12.32
2050.0	2060.34	+10.34

MILTON M. COOKE COMPANY

WELL TESTING SPECIALISTS

2310 McALLISTER • HOUSTON, TEXAS 77092

713/683-0333 TX. WATS: 1-800-392-3861

FAX: 683-0128

FIELD CALIBRATION CHECK: [POST-TEST]

(GRC EPG-520 - SURFACE READOUT GAUGE)

DATE: 03/24/1994

D.W.T. S/N: 13469

GRC GAUGE S/N: 69491

D.W.P. (PSIG)	GAUGE PRESSURE (PSIA)	DIFFERENCE (+/-PSI)
0.0	15.37	+15.37
550.0	561.17	+11.17
1050.0	1055.85	+ 5.85
2050.0	2053.94	+ 3.94

***** [illegible] ******

GAUGE S/N: 63491
RANGE: 5,000
DATE CALIBRATED: 1-19-94

*** TEMPERATURE SUMMARY ***

MAXIMUM POSITIVE ERROR:	1.366 Deg F
MAXIMUM NEGATIVE ERROR:	-0.811 Deg F
MAXIMUM ERROR SPECIFICATION:	3.000 Deg F
NUMBER OF POINTS EXCEEDING ERROR SPEC.:	0
SENSITIVITY:	0.078 Deg F/Hz
SENSITIVITY:	12.804 Hz/Deg F

*** PRESSURE SUMMARY ***

MAXIMUM POSITIVE ERROR:	1.300 PSIA
OCCURS AT:	251.366 Deg F
AND AT:	4016.000 PSIA
MAXIMUM NEGATIVE ERROR:	-1.670 PSIA
OCCURS AT:	149.809 Deg F
AND AT:	3013.030 PSIA
MAXIMUM ERROR SPECIFICATION:	20.000 PSIA
NUMBER OF POINTS EXCEEDING SPEC:	0
PERCENTAGE OF POINTS EXCEEDING SPECS:	0.000 %
SENSITIVITY:	2.772 PSIA/Hz
SENSITIVITY:	0.361 Hz/PSIA

Interoffice Memo

Hoechst Celanese

Date: October 13, 1992

GMQ-621-92

To: H. R. Horton

From: G. M. Quinney

Dept/Location: Maintenance Engineering

Dept/Location: Maintenance

Subject: Well Instrumentation

The well instrumentation for #2, #3 and #4 wells at the Bay City Plant is the Honeywell ST 3000. Its accuracy is ± .1% of full span in the analog mode. The ST 3000 transmitter is calibrated via the Smart Field Communication Model STS 102.

G. M. Quinney

G. M. Quinney

Condensed Specifications

Output

Linear or square root
- Analog Mode: 4-20 mA dc
- Digital Mode: DE protocol
  - Analog or digital mode selectable by SFC

Accuracy (Reference)

Analog Mode: ±0.1% span
Digital Mode: ±0.075% span or ±0.15% reading, whichever is smaller

Combined zero and span temperature effect per 28°C (50°F)

Analog Mode: ±0.175% span
Digital Mode: ±0.125% reading

Combined zero and span static pressure effect per 70 bar (1000 psi)–DP models only

Analog Mode: ±0.2% span
Digital Mode: ±0.2% reading

Ambient temperature limits

–40° to +93°C (–40° to +200°F)

Meter body temperature limits

–40° to +125°C (–40° to +257°F)

Damping

Adjustable from 0–32 seconds

Overpressure

210 bar (3000 psi) for DP models;
1.5 X upper range limit for GP models

Supply voltage

11 to 45 Vdc

ST 3000 Transmitter Ranges

Measurement	Model	Min-Max Span
Differential Pressure	STD 120	1–400 in H_2O
	STD 125*	25–600 in H_2O
	STD 130	5–100 psi
	STD 170	100–3000 psi
	STD 624	25–400 in H_2O
Flange Mount	STF 128	10–400 in H_2O
	STF 132	5–100 psi
	STF 12F	1–400 in H_2O
	STF 13F	5–100 psi
	STD 14F*	25–600 in H_2O
	STF 62F	25–400 in H_2O
Remote Seal	STR 126	10–400 in H_2O
	STR 130	5–100 psi
Gage Pressure	STG 140	5–500 psi
	STG 170	100–3000 psi
	STG 180	100–6000 psi
	STG 644	5–500 psi
	STG 674	100–3000 psi
Absolute Pressure	STA 122	10–780 mmHg
	STA 140	5–500 psi

*HTG

Honeywell

Helping You Control Your World

Industrial Automation and Control
Honeywell Inc.
1100 Virginia Drive
Fort Washington, PA 19034

34-01-58-16 B (100) 7/91 ©Honeywell Inc. Printed in U.S.A.

Honeywell

SFC Smart Field Communicator
Model STS102

Specification

Function

The hand-held SFC Smart Field Communicator is a battery-powered device which establishes two-way communication between Honeywell Smart Transmitters and an operator over the existing transmitter signal lines, thereby simplifying maintenance and providing operator access to transmitters without a trip to the field. The operator can send data to and receive data from the transmitter's microprocessor, through the SFC, when connected to the transmitter signal lines at any accessible location from the control room to the transmitter. The SFC is in an impact resistant housing and comes with a weather-proof carrying case, a NiCad rechargeable battery pack, and a dc recharger.

Description

Model STS102 is capable of communicating with ST 3000 differential pressure, gauge pressure and absolute pressure transmitters, with the STT 3000 Smart Temperature Transmitter, with the Smart MagneW 3000 Magnetic Flowmeter and with future additions to the Honeywell Smart Field Architecture.

You can use the SFC to:

Select the Communication Mode: Command the transmitter to transmit its output signal in either an analog (4-20 mA) mode or in the Digital Communications (DE) Mode.

Configure: Enter the desired operating parameters (LRV, URV, damping, fail-safe mode, input actuation type for STT, etc) into the transmitter.

Diagnose: Access the Smart Transmitter self-diagnostic capabilities to troubleshoot suspected operation or communication problems.

Calibrate: The SFC provides a simplified procedure for calibrating Smart Transmitters, thus maintaining excellent transmitter accuracy with significantly reduced maintenance requirements. Note that Honeywell Smart Transmitters can be re-ranged from a remote location without the need to apply input signals from calibration standards.

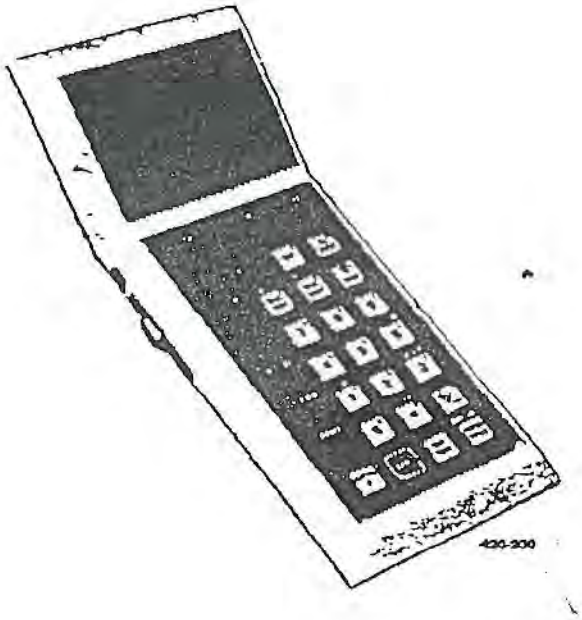


Figure 1—SFC Smart Field Communicator

Display: Readout all configured operating parameters from the transmitter as well as other data such as PROM/Serial No., tag no. sensor temperature (ST), h/lo PV (STT), scratch pad memory (ST), etc. Also displays measured input values (pressure, differential pressure, temperature, flow velocity) in selected engineering units for readout by the operator. All readouts can be displayed in English, German, French or Spanish.

Checkout: Put the transmitter in the Output Mode and you can command the Smart Transmitter to transmit a precise signal, selectable from 0% to 100% full scale, to assist in verifying loop operation, loop calibration or troubleshooting.

Industrial Controls Division, 1100 Virginia Drive, Fort Washington, PA 19034

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ECO Solutions, Inc.
Hoechst Celanese Chemical Group, Inc.
Pressure Falloff/MIT Testing

APPENDIX H

CORRESPONDENCE

94-004

Hoechst Celanese

Chemical Group
Hoechst Celanese Corporation
Bay City Plant
PO Box 509
Highway 3057
Bay City, TX 77404-0509

January 7, 1994
IOC-002-94

CERTIFIED MAIL

Mr. Mike Mishra
Underground Injection Control Unit
Texas Natural Resource Conservation Commission
P. O. Box 13087
1700 North Congress Avenue
Austin, TX 78711-3087

Subject: Revised (January 7, 1994) Proposed Mechanical Integrity Testing Procedures and Additional Information
WDW-14 and WDW-110
Hoechst Celanese Chemical Group, Inc.
Bay City Plant, Bay City, Texas
(Reference Letter, IOC-097-93, (dated December 7, 1993)

Dear Mr. Mishra:

Pursuant to your telephone request on Wednesday, January 5, 1994, please find included with this transmittal the following:

Addendum I - Detailed mechanical integrity test procedures and well schematic for WDW-14,

Addendum II - Detailed mechanical integrity test procedures and well schematic for WDW-110,

Addendum III - Bottom hole pressure falloff procedure for both WDW-14 and WDW-110, and

Addendum IV - Revised bottom hole pressure falloff schedule for both WDW-14 and WDW-110.

If you have any questions, contact me at (409) 241-4197.

Respectfully,

I. O. Coleman, Jr.
Environmental Section Leader

IOC/cjs
attachments

Hoechst

cc:

Mr. Larry Walker, Geologist
UIC Team
UIC, Uranium and Radioactive Waste Section
Industrial and Hazardous Waste Division
Texas Natural Resource Conservation Commission
P. O. Box 13087
1700 North Congress Avenue
Austin, TX 78711-3087

Mr. Chuck Green
Texas Natural Resource Conservation Commission
P. O. Box 13087
Austin, TX 78711-3087

Mr. Phil Dellinger, USEPA Region VI
Environmental Protection Agency, Region VI
Emergency Response Branch (6E-E)
1445 Ross Ave.
Dallas, Tx 75202-2733

Mr. Tom Jones, ECO
ECO Solutions
10333 Richmond Avenue
Suite 250
Houston, TX 77042

Mr. Bob Hall, ECO
ECO Solutions
10333 Richmond Avenue
Suite 250
Houston, TX 77042

PROPOSED PROCEDURES TO DEMONSTRATE
MECHANICAL INTEGRITY TESTING
HOECHST CELANESE - CHEMICAL GROUP
WDW-14
BAY CITY FACILITY

The following step-by-step proposed mechanical integrity testing (MIT) procedures were developed in accordance with the Underground Injection Control (UIC) and the Hazardous Waste Disposal Injection Restrictions (HWDIR) Programs issued by the United States Environmental Protection Agency (US EPA) and promulgated by the Texas Natural Resources Conservation Commission (TNRCC). Except where noted, all steps of this procedure will be performed by ECO Solutions Inc. (ECO) personnel.

1) **Request and secure approval from the TNRCC to demonstrate MIT (HCCG & ECO).**

* Define annulus pressure test, type logging tools and downhole logging procedures and submit to HCCG .

* HCCG will draft a letter which will provide formal notification to the TNRCC of the intent to demonstrate MIT.

* HCCG will issue the letter to the TNRCC for review and acceptance.

* Receive approval letter from TNRCC on proposed MIT.

2) **Notify the TNRCC field inspector of the scheduled MIT (HCCG).**

* Verbally notify the field inspector of the date field work is scheduled and the estimated starting time for the first test to be witnessed by the TNRCC.

* Determine the intent of TNRCC to field witness MIT.

* Determine desire of TNRCC for any special documentation of test results.

3) **Prepare well for MIT (HCCG).**

* Test master valve to make sure that it will open, close and seal off properly.

* Check wellhead valves to insure that standard fittings can be installed during the MIT. ECO requests that a 2" NPT connection, or standard oil field size adapter, be available on the tubing and casing outlets.

* HCCG's personnel will be set-up to maintain proper annulus pressure while conducting the radioactive tracer (RAT) survey.

* Close well in 48 hours prior to performing annulus pressure test/temperature survey.

4) **Perform annulus pressure test.**

* Install calibrated pressure gauge onto the annulus. Also, HCCG will furnish and install a pressure recorder.

* HCCG's personnel will slowly pressurize the annulus using nitrogen gas to +/- 800 psig. The annulus is reportedly filled with inhibited brine.

* Monitor casing pressure for a minimum period of 60 minutes. Maximum allowable pressure leak-off rate during test is 5% of maximum test pressure.

* Gradually bleed off annulus pressure to normal operating level.

5) **Run temperature survey and radioactive tracer (RAT) survey.**

* Rig up electrical wireline service unit including two gamma ray (G/R) detectors, casing collar locator (CCL) and radioactive tracer (RAT) ejector tool and temperature tools.. Ejector containes +/-5 millicuries of Iodine 131 radioactive (R/A) solution.

* Run temperature survey from surface to either the top of fill or plug back total depth.

* Run initial base G/R log from just below perforated section up to +/-300' above the packer (@3162'), or up to +/-2800. Make repeat G/R run in cased section to prove G/R tool repeatability.

* Run one (1) five-minute statistical log at a depth of 3340'.

* Commence pumping non hazardous effluent fluid down tubing using HCCG's injection pumps at a steady rate.

* Release first R/A slug inside tubing at +/-2800' while pumping fluid down the tubing at the rate of +/-40 gpm. Make multiple recorded passes following the R/A slug (1) down the tubing, (2) into the borehole and (3) into the disposal zone until the R/A slug virtually disappears and cannot be distinguished from the normal background G/R radioactivity.

* Release second R/A slug. Repeat multiple pass survey above.

* Release third R/A slug from tool at +/-3340'. Hold tool stationary with a pump rate of approximately 100 gpm. Place recorder on time-drive sequence. Logging time will be predetermined based on actual injection rate and as agreed upon with the TNRCC inspector.

* Release fourth R/A slug from tool at +/-3340. Repeat stationary survey above.

* Run final base G/R from just below base of perforated section up to +/-2800' (same interval as original base G/R log) to verify that all R/A materials have been flushed into the disposal zone and that no fluid is migrating up behind the casing strings. Pull tool out of the hole.

6) **MIT field work is completed.**

* Rig down all rental equipment and either move to the next injection well or off the location.

7) **Submit MIT report (HCCG & ECO).**

* Prepare a draft MIT report detailing the demonstration of MIT on WDW No. 14.

* Submit draft report to HCCG for comments and approval (ECO).

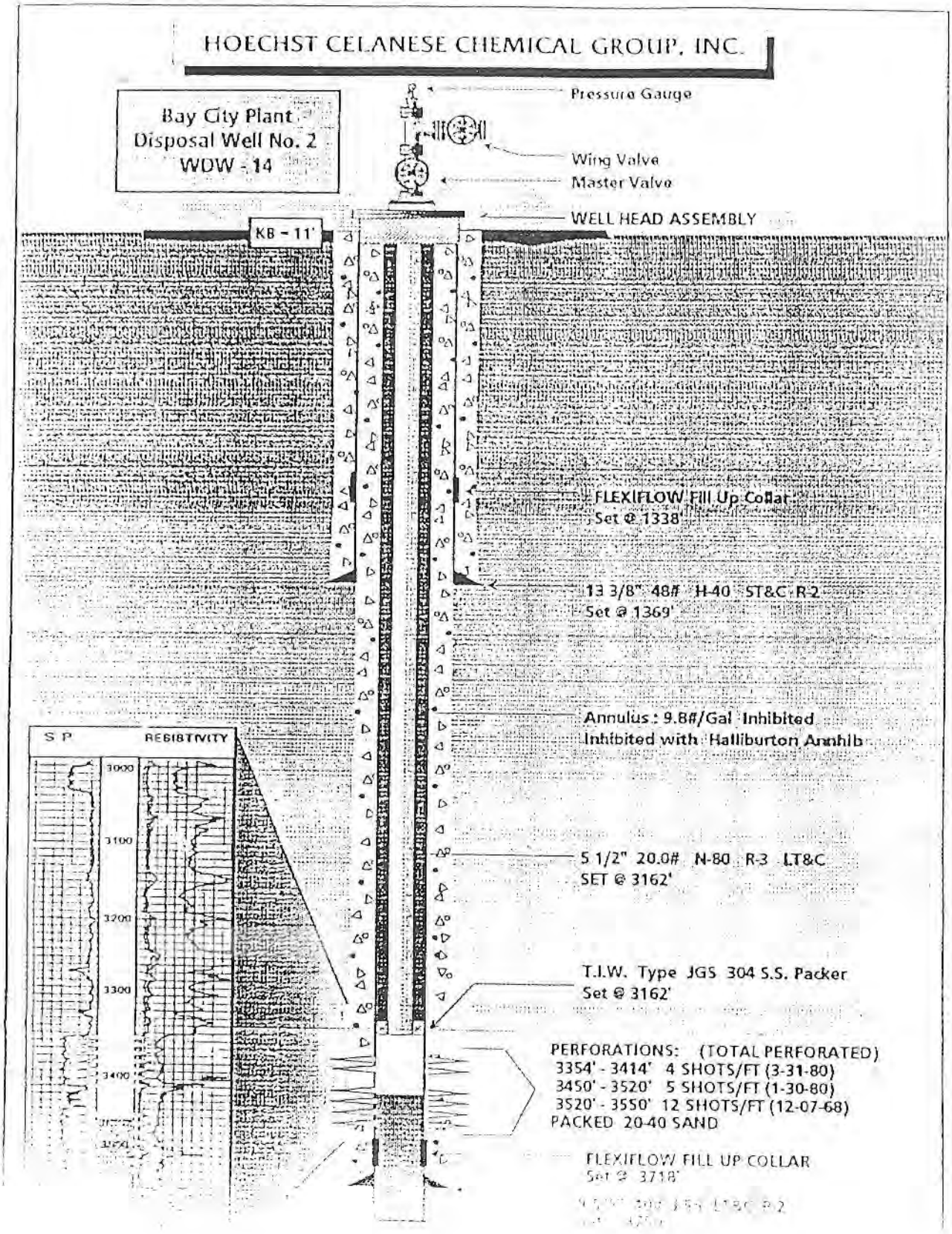
* ECO will correct the MIT report as required and issue 5 copies of the final report to HCCG.

* HCCG will submit report to the TNRCC for review and approval.

* HCCG will receive TNRCC's acceptance of the MIT report.

8) **Mechanical Integrity Testing Complete.**

FIGURE 7.1


HOECHST CELANESE CHEMICAL GROUP, INC.
Bay City Plant
Disposal Well No. 2
WDW - 14
Pressure Gauge
Wing Valve
Master Valve
WELL HEAD ASSEMBLY
KB - 11'
FLEXIFLOW Fill Up Collar
Set @ 1338'
13 3/8" 48# H-40 ST&C R-2
Set @ 1369'
Annulus : 9.8#/Gal Inhibited
Inhibited with Halliburton Annhib
S P
RESISTIVITY
3000
3100
3200
3300
3400
5 1/2" 20.0# N-80 R-3 LT&C
SET @ 3162'
T.I.W. Type JGS 304 S.S. Packer
Set @ 3162'
PERFORATIONS: (TOTAL PERFORATED)
3354' - 3414' 4 SHOTS/FT (3-31-80)
3450' - 3520' 5 SHOTS/FT (1-30-80)
3520' - 3550' 12 SHOTS/FT (12-07-68)
PACKED 20-40 SAND
FLEXIFLOW FILL UP COLLAR
Set @ 3718'

BOTTOM HOLE PRESSURE FALLOFF TESTING
WDW NOS. 14 & 110

HOECHST CELANESE - CHEMICAL GROUP
BAY CITY, TEXAS

Prepared by ECO Solutions

The following is an overview of the proposed bottom hole pressure falloff test procedures for WDW-14 and WDW-110. The falloff test procedures feature the shutting-in of adjacent, onsite, injection wells prior to conducting each falloff test.

Effluent samples will be taken prior to and during each falloff test. Specific gravity and viscosity measurements will be taken on each sample at simulated bottom hole temperature.

ECO Solutions will provide an engineer on-site with the appropriate computer software for analysis of each falloff test.

1) WDW-49 will remain brined in while conducting bottom hole pressure falloff testing on WDW-14 and WDW-110.

2) Maintain high constant injection rates on WDW-14 for approximately four (4) days prior to conducting falloff test on same.

3) Approximately 48 hours prior to conducting bottom hole pressure testing on WDW-14, shut-in WDW-110 and WDW-32.

4) Install surface readout bottom hole pressure gauges in WDW-14 and monitor/record flowing bottom hole pressure for approximately 24 hours.

5) Conduct bottom hole pressure falloff test on WDW-14.

6) Place WDW-14, WDW-32 and WDW-49 back in service for approximately one week prior to conducting falloff testing on WDW-110.

7) Maintain high constant injection rates on WDW-110 for approximately four (4) days prior to conducting falloff test on same.

8) Approximately 48 hours prior to conducting bottom hole pressure testing on WDW-110, shut-in WDW-14 and WDW-32.

9) Install surface readout bottom hole pressure gauges in WDW-110 and monitor/record flowing bottom hole pressure for approximately 24 hours.

10) Conduct bottom hole pressure falloff test on WDW-110.

11) Place all wells back in service.

12) Prepare and submit report detailing field activities to Texas Natural Resources Conservation Commission

ECO Solutions, Inc.

HOECHST CELANESE CHEMICAL GROUP, INC.
Bay City Plant

Response to EPA NODs

Dated 1/12/94

Prepared by:

ECO Solutions, Inc.
10333 Richmond, Suite 250
Houston, Texas 77042

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6 W-SU

January 1994

Job No. 93-007

ECO Solutions, Inc.

HOECHST CELANESE CHEMICAL GROUP, INC.
Bay City Plant

Response to EPA NODs

Dated 1/12/94

Prepared by:

ECO Solutions, Inc.
10333 Richmond, Suite 250
Houston, Texas 77042

RECEIVED
FEB - 8 1994
6 W-SU

January 1994

Job No. 93-007

HOECHST CELANESE CHEMICAL GROUP, INC.
1/12/94 EPA Notice of Deficiencies
Mechanical Integrity Test Report
For WDW-32

1. *A detailed summary of events in real time. This should include information on the following: the length of the injection period prior to falloff, rate changes including any that occurred during running of the gauges, problems encountered, etc.*

RESPONSE

The following is a summary of the events in real time.

October 23, 1994

Began stabilizing flow to WDW-32 (Well No. 3). Although some variations in flow occurred, it was quickly stabilized between 133 and 134 gallons per minute ("gpm"). The variations occurred within the first 6 hours of 10/23/93 where the rate fluctuated between 129 and 136 gpm. This flow rate information was provided in the November 1993 report as Figure 11.

October 24, 1994

Continued stabilizing flow to WDW-32 (Well No. 3). The flow rate was stabilized between 134 and 135 gpm. (See Figure 11 of the November 1993 report)

October 25, 1994

Continued stabilizing flow to WDW-32 (Well No. 3). The flow rate was stabilized between 134 and 135 gpm. Three hours prior to the falloff test the rate fell from 134 gpm to 133 gpm. (See Figure 11 of the November 1993 report). At 12:50 hours, a surface read out and memory pressure gauge was lowered into the well. At 13:16 hours, the gauge was down to 3200' and the packer tagged. The depth was then corrected to 3192'. The flowing bottom hole pressure was then monitored from 13:38 hours until the well was shut in at 16:05 hours. (See pages 1 and 2 of the pressure data table provided in the 11/93 Report). No problems were encountered.

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NOTE: The length of the injection period prior to the falloff was calculated to be 9672 hours. This is the length of time since the well was last stabilized on 9/16/92. The cumulative injection was 1846 x 10^6 gallons. The rate history from 9/16/92 until 10/25/93 was provided as Figure 12 of the November 1993 report.

October 26, 1994

The bottom hole pressure falloff was monitored all day. No problems encountered.

October 27, 1994

The falloff test was completed at 08:39 hours. The depth of fill was tagged at 3,353' and the pressure equipment was pulled from the well making gradient stops every 500'. No problems were encountered.

October 28, 1994

Moved in and rigged up Western Atlas. Ran in hole with Radioactive Tracer (RAT)/Temperature tools in tandem. Ran differential/absolute log from surface to 3,248'. Ran API Gamma Ray (GR) from 3,248' to 2,865'. Pressurized annulus to 993 psig at 13:00 hours with nitrogen bottle. Pressured up to 1099 psig at 13:27 hours. Began annulus pressure test at 14:00 hours with pressure at 1095.4 psig, pressure decreased to 1092.2 psig over a 30 minute period. Ran two Gamma Ray base logs from 3,248' to 2,850', ran RAT survey, and ran final base log. Rigged down Western Atlas. No problems encountered.

2. *A discussion of how the falloff testing was analyzed, including what software was employed, the type of simulation that was performed, assumptions, etc.*

RESPONSE

The falloff testing was analyzed using both *Semi-Log* and *Log-Log* analysis. The Semi-Log curve was generated by plotting pressure vs the horner time function, $[(t_p+d_t)/d_t]$, using an injection time, t_p of 9672 hours. The semi-log straight line was calculated by liner regression through the infinite acting flow period of the fall-off curve. The slope, P_{1hr}, and P* values were obtained from the semi-log straight line and utilized for the final permeability and skin calculation. The Log-Log curves were generated by plotting delta-P and pressure derivative vs the Agarwal time function, $\{(t_p*d_t)/(t_p+d_t)]$. The delta-P and pressure derivative curves were simultaneously positioned over Gringarten type curves until a solution match was obtained. Permeability and skin values were calculated from

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6 W-SU

this match and then compared with those obtained from the Semi-Log analysis.

Semi-Log (Horner)

The straight line area of the Semi-Log curve was identified by first using the 1-1/2 log cycle rule to estimate the end of wellbore storage effects. Secondly, the time of the flat portion from the pressure derivative curve was used in determining the area of the Semi-Log curve in which the straight line was drawn. The Semi-Log straight line yielded a slope value of 4.558 psi/cycle and a P_{1hr} of 1484 psi. The pressure difference between P_{1hr} and the injection pressure followed with the calculated slope, *m* would give indications of positive skin damage and high permeability. This particular test showed some slight deviation from the semi-log straight line in the late time region of the curve.

Log-Log (Gringarten Type Curves)

The high maximum of the derivative curve illustrates wellbore storage with positive skin effects. The flatting portion of the derivative curve at 0.5 pd/pd' was observed approximately four hours following the shut-in. A slight upward trend of the derivative curve was observed in the late time region of the fall-off test. This anomaly was also seen in the semi-log curve as a slight slope change.

Conclusions

Because the semi-log slope variation was minimal the system was diagnosed as a homogenous reservoir with a calculated permeability of 695.7 (md) and skin damage of 82.6 utilizing an h_{net} value of 165 feet. The flow efficiency of 0% suggests that the near wellbore conditions has large affects on the injection volume limitations and that the total pressure drip is primarily due to conditions within a small radius from the well.

Type of Simulator and Assumptions

A homogeneous simulator was utilized to confirm the calculated results mentioned above. The main assumption is that a single well with infinite acting and radial flow conditions is being injected at a constant rate with constant reservoir conditions such as porosity, permeability, and compressibility.

Based on this particular reservoir the simulated data matched the actual data with a reasonable degree of accuracy.

The program used "KHS", marketed by Computer Aided Technical Services.

3. *Worked through calculations, with appropriate explanative text for t_p, the injection period; the time to exit the waste front; the flowing bottom hole pressure; and radius of investigation.*

RESPONSE

See the Calculation Flow Chart included as Attachment 1 for the equations used to calculate the following data that was provided in the November 1993 report.

- Slope value from semi-log plot
- Reservoir permeability
- Time to exit waste front
- Skin factor
- Pressure drop due to skin
- Radius of investigation
- Distance to waste front

t_p - injection period

The length of the injection period prior to the falloff was calculated to be 9672 hours. This is the length of time since the well was last stabilized on 9/16/92. The cumulative injection was 1846 x 10^6 gallons. The rate history and cumulative volumes graph from 9/16/92 until 10/25/93 were provided as Figure 12 of the November 1993 report.

Time to exit waste front

$t_w = 126.73\mu c_1 V/kh\pi$

Where: V = cumulative injection into completed injection interval only, gal. = 1,846,000,000 gal.
h = interval thickness, ft = 165'
π = approximately 3.14
μ = viscosity of historic waste plume = 0.60
c_t = total compressibility, psi $^{-1}$, = .0000059994

t_w =2.33 hours

well conditions. The measured flowing pressures corrected for skin effects and maximum predicted operational pressures are presented in the Table below:

Formation Pressures WDW-32

Well Name	Flowing Formation Pressures	Skin Pressure Loss, psi	Revised Formation Pressure, psi	Maximum Modeled Pressure, psi
WDW-32 (Well No. 3)	1945 psi @ 3440'	326 psi	1619 psi	1640 psi

The measured flowing pressure is below the maximum modeled operational pressure by more than 21 psi for WDW-32. A graph of the modeled pressures for WDW-32 is included as Attachment 2. The graph shows the yearly predicted operations formation pressure (1991 through the end of 2000) using maximum modeled injection rates (250 gpm in each well). All predicted operational pressures correspond to a depth of 3440 feet below ground level and an original estimated formation pressure for the upper Miocene injection interval of 1555 psi.

The measured static formation pressures from the well tests, corrected to a depth of 3440 feet below ground level, show a formation pressure increase of 29 psi. This illustrates that injection operations at the plant have had limited impact on formation pressures and should continue to have limited impact on formation pressures in the future.

Static Formation Pressures From WDW-32 Well Test

Well	Static Formation Pressure@ 3440'	Fm. Pressure Increase
WDW-32 (Well No. 3)	1584 psi	+29 psi

The fall-off tests in each of the wells were analyzed to derive a transmissivity and permeability values for the upper Miocene injection interval. A comparison of the test permeability and transmissivity values with the modeled values of permeability and transmissivity is presented below. The test permeability for WDW-32 is 696 md. The test transmissivity for WDW-32 is 166,989 md-ft/cp. This compares to the petition transmissivity of 313,700 md-ft/cp.

ECO Solutions, Inc.
Hoechst Celanese Chemical Group, Inc.
Response to NODs

ATTACHMENT 1

CALCULATION FLOW CHART

CALCULATION FLOW CHART

1. Calculate slope value from Semi-Log Plot.

2 a. Utilize reservoir viscosity for *Initial Calculations*.

b. If required, redo calculations with waste viscosity.

3. Calculate Permeability.

4. Calculate Time to exit waste front.

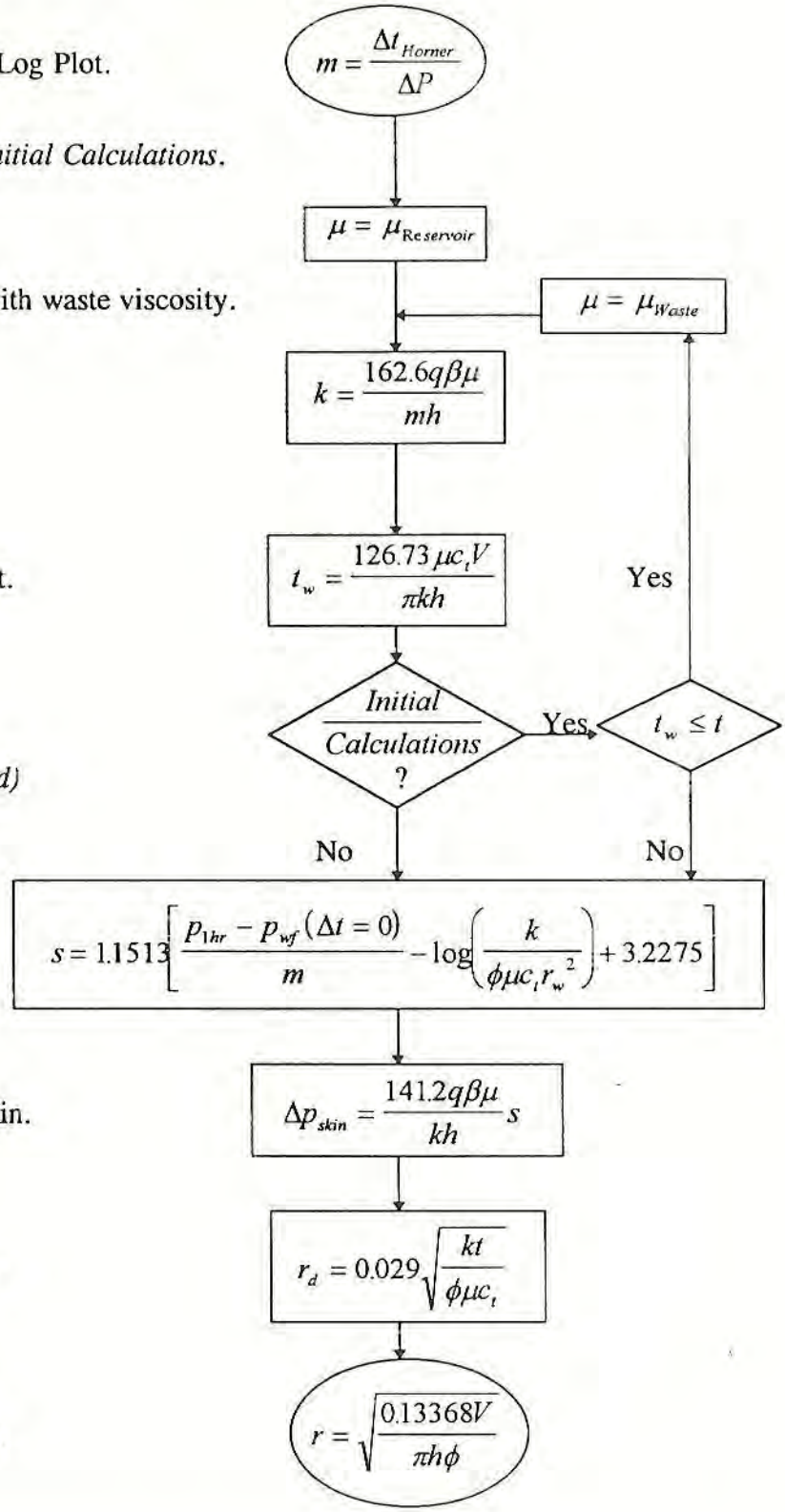
5. Conditional statements.
(t, beginning of radial flow period)

6. Calculate skin factor.

7. Calculate Pressure drop due to skin.

8. Calculate radius of investigation.

9. Calculate distance to waste front.



NOTE: The 2.76 hours listed for the time to exit waste front in the *Analysis of Test Results* section of the 11/93 report used a formation viscosity of 0.70 cp which was conservative.

Radius Of Investigation

$r_i = 0.029\ (kt/\phi\mu c_t)^{1/2}$

Where:
k = injection interval permeability = 696 md
t = shut-in time = 40 hrs
ϕ = porosity, fraction = 0.33
h = interval thickness, ft = 165'
c_t = total compressibility, psi^{-1}, = .0000059994
μ = formation fluid viscosity = 0.70166

r_i = 4105'

NOTE: A drainage radius of 4105' was listed in the *Calculated Results and the Analysis of Test Results* section of the 11/93 report. However, the radius of investigation referenced in the Analysis of Test Results section should be 4105' rather than then 3179' value provided. The radius of investigation value is significantly greater than the calculated waste front radius of 1201' and as such the formation viscosity of 0.7016 cp was used in the falloff analysis.

Flowing bottom hole pressure

Calculated in response to NOD 4 below.

4. *A comparison of the static and flowing bottom hole pressures with those predicted by the petition.*

RESPONSE

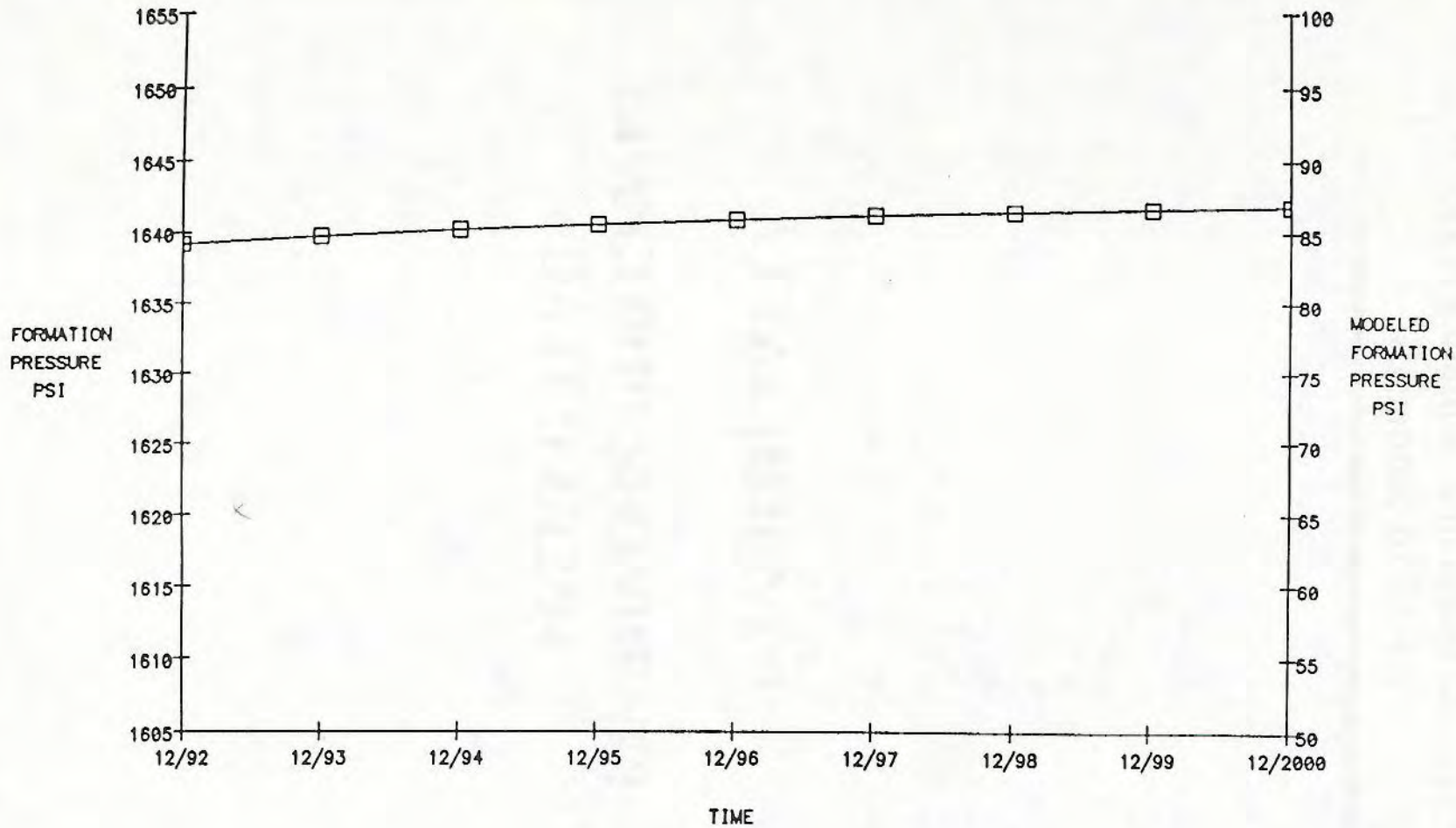
The reservoir properties (pressure, permeability, etc.) of the upper miocene injection interval were determined through fall-off testing in WDW-32 in 1993. The flowing or operational formation pressures from the tests can be compared with the modeled operational pressures by converting the measured pressures to a depth of 3440' below ground level and removing the pressure increase due to skin effects. The formation pressures predicted by the model assume no formation damage effects or other near-bore

ECO Solutions, Inc.
Hoechst Celanese Chemical Group, Inc.
Response to NODs

ATTACHMENT 2

WDW-32 GRAPH OF MODELED PRESSURES

UPPER MIOCENE INJECTION SAND - WDW-32



—□— MODELED FORMATION PRESSURES

MODELED OPERATIONAL FORMATION PRESSURES IN WDW-32 (1992 - 2000)

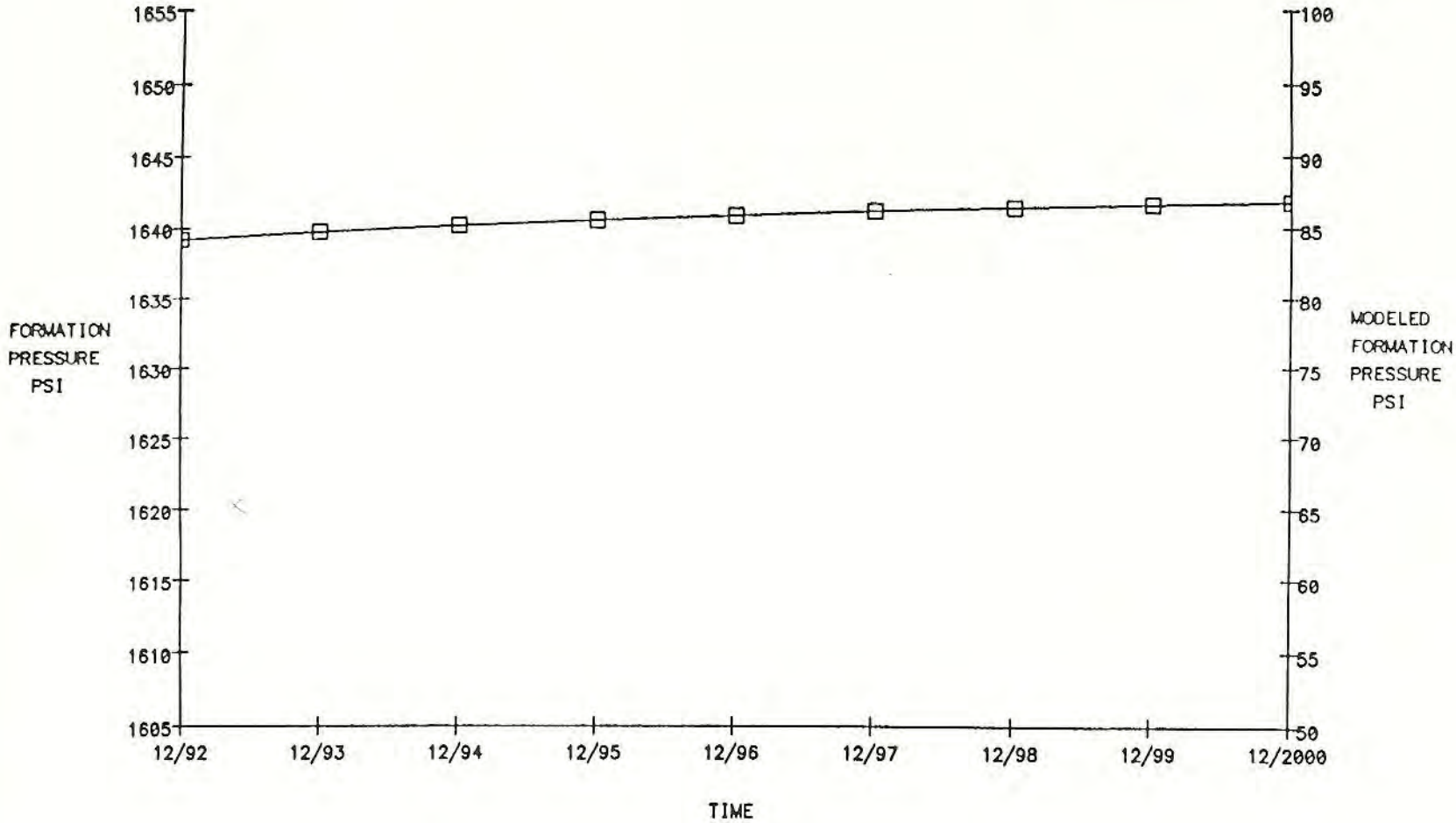
ECO Solutions, Inc.

ECO Solutions, Inc.
Hoechst Celanese Chemical Group, Inc.
Response to NODs

ATTACHMENT 2

WDW-32 GRAPH OF MODELED PRESSURES

UPPER MIOCENE INJECTION SAND - WDW-32



—□— MODELED FORMATION PRESSURES

MODELED OPERATIONAL FORMATION PRESSURES IN WDW-32 (1992 - 2000)

ECO Solutions, Inc.

ECO Solutions, Inc.
Hoechst Celanese Chemical Group, Inc.
Response to NODs

ATTACHMENT 3

EPA CORRESPONDENCE DATED 1/12/94

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

January 12, 1994

CERTIFIED MAIL P 873 011 248 RETURN RECEIPT REQUESTED

Mr. I. O. Coleman, Jr.
Hoechst Celanese Corporation
Bay City Plant
P. O. Box 509
Highway 3057
Bay City, Texas 77404-0509

Dear Mr. Coleman:

Your 1993 annual report for WDW-32 has been reviewed. Please provide the following by February 10, 1994:

1. A detailed summary of events in real time. This should include information on the following: the length of the injection period prior to falloff, rate changes including any that occurred during running of the gauges, problems encountered, etc.

2. A discussion of how the falloff testing was analyzed, including what software was employed, the type of simulation that was performed, assumptions, etc.

3. Worked through calculations, with appropriate explanative text for t_p, the injection period; the time to exit the waste front; the flowing bottomhole pressure; and radius of investigation.

4. A comparison of the static and flowing bottomhole pressures with those predicted by the petition.

In general your report lacks any explanative text and is merely a summary of the data and well analysis. This type of presentation makes it extremely difficult to review your well test. In addition, many of the above comments are covered in the "Pressure Falloff Testing Guideline, First Revision", which was sent to you several months ago. Please ensure that your contractor follows this document in conducting future tests.

If you have any questions, please contact Joe Kordzi at (214) 655-7186 or Phil Dellinger at (214) 655-7142.

Sincerely yours,

Mac A. Weaver

Mac A. Weaver, P.E.
Chief
UIC State Programs

NOTE: The 2.76 hours listed for the time to exit waste front in the *Analysis of Test Results* section of the 11/93 report used a formation viscosity of 0.70 cp which was conservative.

Radius Of Investigation

$r_i = 0.029\ (kt/\phi\mu c_t)^{1/2}$

Where:
k = injection interval permeability = 696 md
t = shut-in time = 40 hrs
ϕ = porosity, fraction = 0.33
h = interval thickness, ft = 165'
c_t = total compressibility, psi^{-1}, = .0000059994
μ = formation fluid viscosity = 0.70166

r_i = 4105'

NOTE: A drainage radius of 4105' was listed in the *Calculated Results and the Analysis of Test Results* section of the 11/93 report. However, the radius of investigation referenced in the Analysis of Test Results section should be 4105' rather than then 3179' value provided. The radius of investigation value is significantly greater than the calculated waste front radius of 1201' and as such the formation viscosity of 0.7016 cp was used in the falloff analysis.

Flowing bottom hole pressure

Calculated in response to NOD 4 below.

4. *A comparison of the static and flowing bottom hole pressures with those predicted by the petition.*

RESPONSE

The reservoir properties (pressure, permeability, etc.) of the upper miocene injection interval were determined through fall-off testing in WDW-32 in 1993. The flowing or operational formation pressures from the tests can be compared with the modeled operational pressures by converting the measured pressures to a depth of 3440' below ground level and removing the pressure increase due to skin effects. The formation pressures predicted by the model assume no formation damage effects or other near-bore

If you have any questions, please contact Joe Kordzi at (214) 655-7186 or Phil Dellinger at (214) 655-7142.

Sincerely yours,

Mac A Weaver

Mac A. Weaver, P.E.
Chief
UIC State Programs

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c_t = total compressibility, psi^{-1}, = .0000059994
μ = formation fluid viscosity = 0.70166

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Chemicals Division
Bay City Plant

Celanese Ltd.
Highway 3057
PO Box 509
Bay City, TX 77404-0509

Celanese

(2)

December 19, 1997
IOC-032-97

CERTIFIED MAIL

Mr. Philip Dellinger, Chief
Ground Water/UIC Section
United States Environmental Protection Agency
Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Subject: Land Disposal Restrictions ("No - Migration" Petition)
For Injection Well Facility
Celanese Ltd.
Bay City Site, Bay City, Texas

Dear Mr. Dellinger:

In response to your letter dated November 26, 1997, Celanese Ltd., Bay City Site, Bay City, Texas will not be pursuing reissuance of the exemption to the land disposal restrictions ("No - Migration" petition) for its injection well facility.

Per the enclosed Attachment I (Record of Contact, dated December 10 and 11, 1997), the Bay City Site closed three (WDWs: 14, 32 and 49) of its four injection wells during 1996. Pending the Texas Natural Resource Conservation Commission approval of proposed closure procedures submitted December 3, 1997 (reference letter, IOC-030-97, dated December 3, 1997 enclosed as Attachment II), we plan to close the fourth well (WDW-110) during the first quarter 1998.

Please don't hesitate to contact me at 409/241-4197 if you have questions.

I. O. Coleman, Jr./gjo

I. O. Coleman, Jr.
Staff Environmental Chemist

6WQ-SG
DEC 24 1997

Hoechst

Celanese
A member of the Hoechst Group

cc: Mr. Brian Graves
Ground Water/ UIC Section
United States Environmental Protection Agency
Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Mr. Ben Knape
Chief
Underground Injection Control (UIC) Team
UIC, Uranium, & Radioactive Waste Section
Industrial & Hazardous Waste Division
Texas Natural Resource Conservation Commission
P. O. Box 13087
Austin, TX 78711-3087

6WQ-SG
DEC 24 1997

ATTACHMENT I

RECORD OF CONTACT
Celanese Ltd.,
Bay City Site, Bay City, Texas

DATE: **December 10, 1997/December 11, 1997**

TIME: **9:30 AM/11:55 AM**

AGENCY: **Environmental Protection Agency (EPA), Dallas, TX (Telephone No. 214/665-7165)**

PERSON/TITLE/SECTION: **Philip Dellinger, Chief, Ground Water/UIC Section and Brian Graves, Staff Person, Ground Water/UIC Section**

CONTACT INITIATED BY: **Celanese**

COMPANY PERSONNEL INVOLVED: **I. O. Coleman, Jr.**

CONTACT BY: **I. O. Coleman, Jr.**

PURPOSE OF CONTACT: **To respond to Phil's letter, dated 11/20/97, in which we are in receipt of as of 12/1/97. EPA is contacting facilities that own and/or operate injection wells that have land disposal restriction exemptions ("No - Migration" petitions) that expire at the end of 2000. (Our petition expires December 31, 2000.) Since the "crunch time" of the original ban dates, EPA's Land Ban staffing levels have decreased. Because of the decrease in staffing levels and the anticipated workload associated with processing time for petition reissuance, EPA requested that we provide them with our plans for the injection wells here at the Bay City Site.**

COMMENTS: **I informed Phil and Brian that we had closed three of our wells (WDWs: 14, 32, and 49, Nos. 2, 3 and 4 Wells respectively) during 1996. Our plan is to close the fourth well (WDW-110, No. 1A Well) during the first quarter 1998. Brian asked if I would document this information in a letter to EPA and stating that the Bay City Site will not be seeking reissuance of its "No - Migration" petition.**

I told Brian that I would. I also reminded him that EPA Region 6 had been copied on all correspondences associated with closures of the wells. Brian replied that he had seen some of the correspondences and that the same should be some where in their files. He did indicate that he had seen a copy of our request, dated 12/03/97, to the TNRCC for review and approval of proposed closure procedures for 1A Well.

SIGNED BY: **I. O. Coleman, Jr.**

6WQ-SG
DEC 2 4 1997

ATTACHMENT II

Chemicals Division
Bay City Plant

Celanese Ltd.
Highway 3057
PO Box 509
Bay City, TX 77404-0509

Celanese

December 3, 1997
IOC-030-97

FEDERAL EXPRESS MAIL

Mr. Ben Knape - Head
Underground Injection Control (UIC) Team
UIC, Uranium, & Radioactive Waste Section
Industrial & Hazardous Waste Division
Texas Natural Resource Conservation Commission
12100 Park 35 Circle
Austin, Texas 78753

Subject: WDW - 110
Permit Modification
Proposed Permanent Closure Procedures/
Request For Extension Of Annual Mechanical Integrity Testing (MIT)
Hoechst Celanese Chemical Group, Ltd.
Bay City Site, Bay City, Texas

Dear Mr. Knape:

Enclosed are the proposed procedures for the permanent closure by plug and abandonment of WDW-110 for your review and approval. We also propose that the January 1997 MIT and ambient pressure measurement serve as the pre - closure testing. The well has not been in service during 1997 other than when the annual MIT (1/97) was performed.

Additionally, we request a 90 - day extension for performing the annual MIT which is scheduled for January 1998 and that the above proposed closure procedures be performed in lieu of the annual testing. Field operation for closure are scheduled to begin on January 12, 1998.

A check in the amount of $100.00 is enclosed for the permit modification fee.

Your consideration to expedite review and approval of the above requests is very much appreciated.

6WQ-SG
Hoechst
DEC 2 1997
Celanese
A member of the Hoechst Group

IOC-030-97
December 3, 1997
Page 2

Please contact me at 409/241-4197 or Mr. Mike Johnson, Terra Dynamics, Inc., Environmental Services at 512/795-8183 if you have questions.

Very truly yours,

I. O. Coleman, Jr. /cjs

I. O. Coleman, Jr.
Staff Environmental Chemist

6WQ-SG
DEC 24 1997

cc:

Mr. Charles J. Green, Geologist
UIC Team Section
UIC, Uranium, & Radioactive Waste Section
Industrial & Hazardous Waste Division
Texas Natural Resource Conservation Commission
12100 Park Circle
P. O. Box 13087
Austin, Texas 78711-3087

Mr. Brian Graves
UIC Programs Section
Environmental Protection Agency
1445 Ross Avenue
Dallas, TX 75202-2733

6WQ-SG
DEC 24 1997

bcc: Via Email (Without Enclosures)

C. R. Pennington
M. L. Wyatt
D. Peters
W. G. Cornman
K. A. Laird
B. L. Fritz
G. W. Phillips
R. S. O'Neal
B. R. Hightower
R. E. VanWie
P. H. Richardson
B. S. Barrington
M. D. Garcia
L. J. Wenk
G. J. McCarthy
R. J. Johnston
C. M. Morales
A. Conley-Pitchell - Warren, NJ

bcc: Hard Copy (Without Enclosures)

Mr. Mike Johnson, Senior Engineer
Terra Dynamics, Inc.
Environmental Services
9011 Mountain Ridge Drive, Suite 100
Austin, Texas 78759-7252

bcc: Hard Copy (With Enclosures)

Environmental File No. 203.20

6WQ-SG
DEC 24 1997

ATTACHMENT II (CONT'D)

CHECK IS VOID IF COLORED BACKGROUND IS ABSENT

HOECHST CELANESE CHEMICAL GROUP
P.O. BOX 509
BAY CITY, TX 77404

Hoechst Celanese

Hoechst

62-20
311

CITIBANK Delaware
A SUBSIDIARY OF CITICORP
ONE PENN'S WAY
NEW CASTLE, DE 19720

CHECK NUMBER 43006955

DATE 12/02/97

One-Hundred 00/100 dollars **********

AMOUNT $100.00

PAY TO THE ORDER OF

TEXAS NATURAL RESOURCE
CONSERVATION COMMISSION
P. O. BOX 13087
AUSTIN, TX 787113087 787113087

HOECHST CELANESE CORPORATION

AUDITED

⑈43006955⑈ ⑆031100209⑆ 38727758⑈

VENDOR # 10014644 TEXAS NATURAL RESOURCE

CHECK # 43006955

INVOICE NUMBER	INVOICE DATE	NET AMOUNT		INVOICE NUMBER	INVOICE DATE	NET AMOUNT
CK REQ 11/28/97	12/02/97	100.00				

6WQ-SG
DEC 24 1997

THIS CHECK IS IMPRINTED WITH THE HOECHST CELANESE OFFICIAL CHECK SIGNATURE

PERMANENT CLOSURE BY PLUG AND ABANDONMENT OF WDW-110

Prepared for

Hoechst Celanese Chemical Group, Ltd.
Bay City Plant
Bay City, Texas

November 26, 1997
TDI PROJECT NO. 97-165

(Revision 1)

Task 1 Procedures for Mobilization and Equipment Rig Up

1. Travel to Celanese facility from Austin. Meet with facility and rig personnel to discuss project objectives and to determine workover equipment layout and space requirements. Notify TNRCC of upcoming operations and scheduling. Assure that a fresh water line has been run to well location.

2. Move in and rig up workover unit and support equipment. Install guy wires to rig anchors per pulling unit specifications (or rig up on base beam if rig anchors are not available). Set catwalk, one sets of pipe racks, rig pump and tank. Move in and fill 500 bbl mobile frac tank with fresh water.

3. Flush well with 350 barrels of fresh water (buffer fluid). Assure that well is dead. Nipple down injection tree and wellhead.

4. Nipple up 11-inch, 3,000 psi x 11-inch, 5,000 psi adapter spool, and nipple up 11-inch, 5,000 psi double blowout preventer (BOPs) with 2 7/8-inch rams to wellhead.

Task 2 Procedures for Removing Existing 5 1/2-inch Injection Tubing and 9 5/8-Inch Casing/Cement Inspection Logging

1. Rig up casing power tongs and lay down machine to pull 5 ½-inch injection tubing. Release existing 5 ½-inch tubing from packer and trip out of hole while laying down 5 ½-inch injection tubing.

2. Rig up loggers and run casing inspection logging suite consisting of multifinger caliper from top of packer to surface. Run cement bond log from TIW model "LH" packer at 3,175 feet to 1,000 feet (or to base of surface casing). Rig down and release loggers.

GWQ-SG
DEC 2 4 1997
TERRA DYNAMICS INC

Task 3 Well Plugging Procedures

1. Mobilize and unload 3,200 feet of 2 7/8-inch 6.5 lb/ft workstring tubing to well site.

2. Pick up cement retainer and cementing stinger and run in hole on 2 7/8-inch workstring. Set retainer at approximately 3,160 feet (just above TIW model "LH" packer). Load 2 7/8-inch x 9 5/8-inch annulus with fresh water and pressure test to 500 psi.

3. Mix and pump 275 sacks of premium plugging cement to plug perforated interval and lower wellbore (beneath TIW model "LH" packer) from 3,800 feet to cement retainer at 3,160 feet. Unsting from retainer and allow final 10-20 sacks to circulate on top of retainer.

4. Pull up hole to 2,000 feet and shut down overnight to allow cement plug (Plug No. 1) to set.

5. Run in hole with workstring and tag top of Plug No. 1. Record depth to top and pressure test plug to 1,000 psi.

6. Mix and pump 650 sacks of premium cement in 216 sack increments from top of plug no. 1 to 1,500 feet while standing back tubing from top of Plug No. 1 to 1,500 feet. Pull out of hole while laying down remaining tubing from 1,500 feet. Shut down overnight and allow cement plug (Plug No. 2) to set.

7. Run in hole with workstring and tag top of Plug No. 2. Record depth to top and pressure test plug to 1,000 psi.

8. Mix and pump 602 sacks of premium cement in 200 sack increments from top of Plug No. 2 to surface while laying down. Clear cement from BOP and top five feet of casing. Shut down overnight to allow cement plug (Plug No. 3) to set.

9. Excavate around casing. Cut off wellhead and weld plate on top of casing. Weld monument to plate. Rig down and release workover rig and all support equipment. Dispose of waste materials in appropriate manner.

10. Make color photograph of well monument for closure report.

6WQ-SG
DEC 24 1997

ATTACHMENT II (CONT'D)

PERMANENT CLOSURE BY PLUG AND ABANDONMENT OF WDW-110

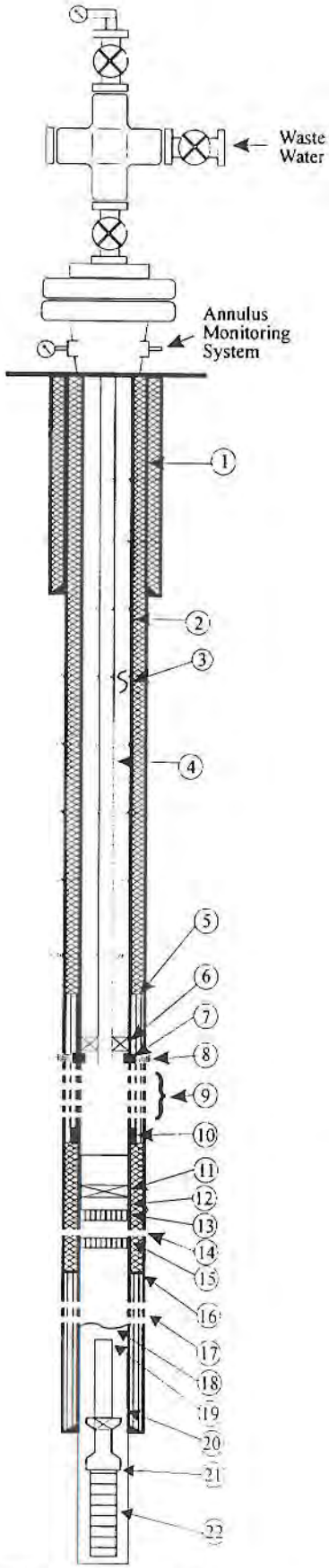
PROPOSED SCHEDULE

Prepared for
Hoechst Celanese Chemical Group, Ltd.
Bay City Plant
Bay City, Texas

November 26, 1997
TDI PROJECT NO. 97-165

Activity	Days to Complete Activity	Date
Finish Mobilization and Rig up Equipment	1/2	1/12/98
Flush Well, remove Injection Tree, Nipple up BOP	1/2	1/12/98
Pull 5 ½-Inch Injection Tubing,	1	1/13/98
Conduct Casing and Cement Inspection Logs	1	1/14/98
Run, Set and Test Cement Retainer	1	1/15/98
Cement Lower Wellbore through Retainer (Plug No. 1)	1	1/16/98
Tag and Test Plug No. 1, Pump and Set Plug No. 2	1	1/17/98
Tag and Test Plug No. 2; Pump and Set Plug No. 3	1	1/18/98
Cut off Wellhead, Erect Monument, Rig Down and Release Equipment	1	1/19/98

6WQ-SG
TERRA DYNAMICS INC
TOTAL P.02



TOTAL DEPTH = (?)

ALL DEPTHS RELATIVE TO KELLY BUSHING ELEVATION WHICH IS 17 FEET ABOVE GROUND LEVEL.

BELOW GROUND DETAIL

1. **SURFACE CASING** :
   13 3/8", 54.5 lb/ft, K-55, set to 1,396'.
2. **LONGSTRING CASING** :
   9 5/8", 40 lb/ft, K-55, and 9 5/8", 43 lb/ft, N-80, set to 5,656'.
3. **ANNULUS FLUID** : Inhibited Brine.
4. **INJECTION TUBING** : 5 1/2" carbon steel set into packer at approximately 3,330'.
5. **PLASTIC RESIN CEMENT** : From DV Tool (3,694') to 3,050.
6. **PACKER** : 5 1/2" x 9 5/8" , 316 SS TIW, Set at 3,330'.
7. **CASING PATCH** : HOMCO 0.15" wall carbon steel, from 3,350'-3,370'.
8. **CEMENT SQUEEZE** : Perforated at 4 SPF from 3,358'-3,360'. Two squeezes using Premium Cement and Halliburton "Micromix".
9. **PERFORATIONS** : (5 shots/ft, 0.42" hole) as follows:
   3,376' to 3,426' 3,460' to 3,471'
   3,494' to 3,524' 3,543' to 3,572'
10. **DV TOOL** : Set at 3,694'.
11. **BRIDGE PLUG** : Cast iron, set at 4,616'.
12. **CEMENT PLUG** : Common cement, from 3,800' to 4,718'.
13. **EPOXY SQUEEZE** : Top of Epoxy at 4,718'.
14. **PERFORATIONS** : 4 shots/ft. from 5,196' to 5,206'.
15. **EPOXY SQUEEZE** : Top of Epoxy at 5,224'.
16. **EPOXY CEMENT** : Top of original Epoxy cement at 5,255'.
17. **PERFORATIONS** : 4 shots/ft. from 5,480' to 5,500' and 5,538' to 5,548'.
18. **TOP OF FILL** : Top of sand fill at 5,548'.
19. **TOP OF FIBERGLASS** : Top of original fiberglass tubing at 5,597'.
20. **BLANKING PLUG** : Stainless AVA Blanking Plug.
21. **OVERSHOT ASSEMBLY** : Overshot on top of Abandoned Screen at approximately 5,656'.
22. **ABANDONED SCREEN**

Figure 1

TERRA DYNAMICS INC.

CURRENT CONSTRUCTION SCHEMATIC FOR WDW-110

PREPARED FOR:

HOECHST CELANESE CHEMICAL GROUP, INC.
BAY CITY PLANT, TEXAS

GWQ-SG
DEC 24 1997

DRAWN BY: Mike Eide		SCALE: Not to Scale	DATE: 11/26/97
DESIGNED BY: Mike Johnson			JOB NO: 97-165
CHECKED BY: B. Bizzoni			

(2)

NOV 26 1997

Mr. I. O. Coleman
Environmental Affairs
Hoechst Celanese Chemical
Group, Incorporated
P.O. Box 509
Bay City, TX 77414

Dear Mr. Coleman:

As you are aware the exemption to the land disposal restrictions for the Celanese Bay City injection well facility expires on December 31, 2000. This letter is an inquiry as to your plans for managing your waste after this expiration date.

Numerous injection well facilities have land disposal restriction exemptions that expire at the end of 2000. Region 6 Land Ban staffing levels have decreased since the "crunch time" of the original ban dates. For these reasons, our workload will be heavy between now and the year 2000 and processing time for petition reissuances could be considerable.

I am requesting that you inform us of your plans for the injection wells at your Bay City facility. If you do plan to extend your petition please let me know when you plan to submit your reissuance request. This information will help Region 6 plan resource needs and workload. To assure that petition reissuance requests are processed prior to petition expiration dates, reissuance requests should be submitted as soon as possible.

I thank you in advance for your response. If you have any questions please feel free to call me at (214) 665-7165 or Brian Graves of my staff at (214) 665-7193.

Sincerely yours,

Philip Dellinger
Chief
Ground Water/UIC Section

cc: Ben Knape, TNRCC

6WQ-SG:11/21/97:GRAVES:F:\SHARE2\LBAN\WP50\CELANESE\CELANESE.BA 2000.LTR BNG 11/24/97

(2)

Hoechst Celanese

Chemical Group
Hoechst Celanese Corporation
Bay City Plant
PO Box 509
Highway 3057
Bay City, TX 77404-0509

February 13, 1997
LJW-010-97

Certified Mail

Mr. Jim L. Boswell, Permits Coordinator
Underground Injection Control Team
UIC, Uranium and Radioactive Waste Section, MC131
Industrial & Hazardous Waste Division
Texas Natural Resource Conservation Commission
P.O. Box 13087
Austin, TX 78711-3087

RECEIVED
97 FEB 21 PM 12: 34
AR/OK/TX BRANCH

SUBJECT: WDW-277 (#5 Well)
Consent of Revocation of Permit
TNRCC Industrial Solid Waste Registration No. 30134
EPA ID No. TXD026040709
Hoechst Celanese Chemical Group, Ltd.
Bay City Plant, Bay City, TX

Dear Mr. Boswell:

We request a voluntary revocation of our permit, No. WDW-277, for injection well No. 5 per 30 TAC §305.67(b). Our consent form is attached. This particular well was never constructed and subject permit expired July 30, 1996.

With this revocation we would like to discontinue our financial assurance for this permitted injection well.

Please contact me at (409) 241-4187 if you have any questions or require additional information.

Sincerely,

Lester J. Wenk / cp

Lester J. Wenk
Sr. Environmental Engineer

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FEB 26 1997
6 W-SU

Enclosure

Hoechst

CONSENT TO REVOCATION OF

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION PERMIT

I, C. R. Pennington, Facility Manager, acting on behalf of
(Name & Title)

Hoechst Celanese Chemical Group, Ltd., do hereby consent to the
(Name of Permittee)

the revocation of Texas Natural Resource Conservation Commission Permit No. WDW-277, pursuant to the provisions of 30 TAC Section 305.67(b).

The activities regulated by the permit were:

(X) Never begun (Wastewater treatment facility was not constructed)

( ) Terminated on or about (Date) _____ (Waste Disposal Well plugged and abandoned)

Facility dismantled ( ); Facility will be dismantled ( ); Facility will be sold and relocated ( ).

( ) Diverted to another permitted wastewater treatment system Please identify the facility to which flow has been diverted _____ and the approximate date the diversion occurred _____.

I also certify that there are no materials remaining at the permitted site which endanger ground or surface water quality.

C. R. Pennington / WLC
(Signature)

(409) 241-4000
(Telephone No.)

February 19, 1997
(Date)

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6 W-SU

Hoechst Celanese

Chemical Group
Hoechst Celanese Corporation
Bay City Plant
PO Box 509
Highway 3057
Bay City, TX 77404-0509

November 18, 1996
IOC-052-96

FEDERAL EXPRESS MAIL

Mr. Ben Knape, Chief
Underground Injection Control Unit
UIC, Uranium & Radioactive Waste Section
Industrial and Hazardous Waste Division
TX Natl Resource Conservation Commission
12100 Park 35 Circle
Austin, TX 78753

Subject: Final Closure Report
Injection Well, WDW-32
(Plant Well No. 3)
Hoechst Celanese Chemical Group, Ltd.
Bay City Plant, Bay City, TX

Dear Mr. Knape:

Enclosed herewith are two copies of the "Final Closure Report" for the subject Injection Well, WDW-32, for your review and approval. Submittal of the completed report fulfills the requirements associated with the closure plan previously approved by the TNRCC, January 8, 1996.

Please do not hesitate to contact Mr. B. S. Barrington at 409-241-4413 or me at 409-241-4197 if you have questions concerning the report.

Very truly yours,

I. O. Coleman, Jr.
Staff Environmental Chemist

IOC/cjs
attachments

Hoechst

cc:
Mr. Charles J. Green, Geologist - w/o attachment
TX Natl Resource Conservation Comm.
Underground Injection Control Team
UIC, Uranium & Radioactive Waste Section
Industrial and Hazardous Waste Division
P. O. Box 13087
Austin, TX 78711-3087

Mr. Jim L. Boswell, Permit Coordinator - w/o attachment
Underground Injection Control Team
UIC, Uranium & Radioactive Waste Section
TX Natl Resource Conservation Commission
P.O. Box 13087
Austin, TX 78711-3087

Mr. Phil Dellinger
Environmental Protection Agency
Underground Injection Control Program
1445 Ross Avenue
Dallas, TX 75202-2733

Mr. Guy Grossman
District Director
Texas Railroad Commission
13201 Northwest Freeway
Houston, TX 77040

Hoechst Celanese

Chemical Group
Hoechst Celanese Corporation
Bay City Plant
PO Box 509
Highway 3057
Bay City, TX 77404-0509

November 18, 1996
IOC-053-96

FEDERAL EXPRESS MAIL

Mr. Ben Knape, Chief
Underground Injection Control Unit
UIC, Uranium & Radioactive Waste Section
Industrial and Hazardous Waste Division
TX Natl Resource Conservation Commission
12100 Park 35 Circle
Austin, TX 78753

Subject: Final Closure Report
Injection Well, WDW-49
(Plant Well No. 4)
Hoechst Celanese Chemical Group, Ltd.
Bay City Plant, Bay City, TX

Dear Mr. Knape:

Enclosed herewith are two copies of the "Final Closure Report" for the subject Injection Well, WDW-49, for your review and approval. Submittal of the completed report fulfills the requirements associated with the closure plan previously approved by the TNRCC, January 8, 1996.

Please do not hesitate to contact Mr. B. S. Barrington at 409-241-4413 or me at 409-241-4197 if you have questions concerning the report.

Very truly yours,

I. O. Coleman, Jr.
Staff Environmental Chemist

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NOV 22

IOC/cjs
attachments

cc:
Mr. Charles J. Green, Geologist - w/o attachment
TX Natl Resource Conservation Comm.
Underground Injection Control Team
UIC, Uranium & Radioactive Waste Section
Industrial and Hazardous Waste Division
P. O. Box 13087
Austin, TX 78711-3087

Mr. Jim L. Boswell, Permit Coordinator - w/o attachment
Underground Injection Control Team
UIC, Uranium & Radioactive Waste Section
TX Natl Resource Conservation Commission
P.O. Box 13087
Austin, TX 78711-3087

Mr. Phil Dellinger
Environmental Protection Agency
Underground Injection Control Program
1445 Ross Avenue
Dallas, TX 75202-2733

Mr. Guy Grossman
District Director
Texas Railroad Commission
13201 Northwest Freeway
Houston, TX 77040

NOV 2 2
6 W-SU

Hoechst Celanese

Chemical Group
Hoechst Celanese Corporation
Bay City Plant
PO Box 509
Highway 3057
Bay City, TX 77404-0509

November 14, 1996
IOC-050-96

FEDERAL EXPRESS

Mr. Jim L. Boswell, Permits Coordinator
Underground Injection Control Team
UIC, Uranium & Radioactive Waste Section
Industrial and Hazardous Waste Section
Texas Natural Resource Conservation Commission.
P. O. Box 13087
Austin, TX 78711-3087

NOV 18 1996
6VI-SU

SUBJECT: CONSENT OF REVOCATION OF TEXAS NATURAL RESOURCE CONSERVATION COMMISSION (TNRCC)PERMIT FORM TNRCC INJECTION WELL PERMIT NUMBER, WDW-32 HOECHST CELANESE CHEMICAL GROUP, LTD. BAY CITY PLANT, BAY CITY, TEXAS

Dear Mr. Boswell:

Enclosed herewith is the completed subject form for our Injection Well Permit, WDW-32. This form is provided pursuant to the provisions of 30 TAC Section 305.67 (b).

Please contact me at 409/241-4197 if you have questions.

Very truly yours,

I. O. Coleman, Jr.

I. O. Coleman, Jr.

IOC/las
attachment

CONSENT TO REVOCATION OF

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION PERMIT

I, C.R. Pennington, Facility Manager, acting on behalf of
(Name & Title)
Hoechst Celanese Chemical Group, Ltd., do hereby consent to
(Name of Permittee)

the revocation of Texas Natural Resource Conservation Commission Permit No. WDW-32, pursuant to the provisions of 30 TAC Section 305.67 (b).

The activities regulated by the permit were:

( ) Never begun (Wastewater treatment facility was not constructed)

(X) Terminated on or about (Date) October 2, 1996 (Waste Disposal Well plugged and abandoned)

Facility dismantled ( ); Facility will be dismantled ( ); Facility will be sold and relocated ( ).

( ) Diverted to another permitted wastewater treatment system Please identify the facility to which flow has been diverted _____ and the approximate date the diversion occurred _____.

I also certify that there are no materials remaining at the permitted site which endanger ground or surface water quality.

C.R. P

(Signature)

(409) 241-4000
(Telephone No.)

November 13, 1996
(Date)

NOV 18

cc: Mr. Ben Knape, Chief
Underground Injection Control Unit
UIC, Uranium & Radioactive Waste Section
Industrial and Hazardous Waste Division
Texas Natural Resource Conservation Commission
P. O. Box 13087
Austin, Texas 78711-3087

Mr. Charles J. Green, Geologist
Underground Injection Control Team
UIC, Uranium & Radioactive Waste Section
Industrial And Hazardous Waste Section
Texas Natural Resource Conservation Commission
P. O. Box 13087
Austin, Texas 78711-3087

Mr. Phil Dellinger
Underground Injection Control Program
U. S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733

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Hoechst Celanese

Chemical Group
Hoechst Celanese Corporation
Bay City Plant
PO Box 509
Highway 3057
Bay City, TX 77404-0509

November 14, 1996
IOC-051-96

FEDERAL EXPRESS

Mr. Jim L. Boswell, Permits Coordinator
Underground Injection Control Team
UIC, Uranium & Radioactive Waste Section
Industrial and Hazardous Waste Section
Texas Natural Resource Conservation Commission.
P. O. Box 13087
Austin, TX 78711-3087

SUBJECT: CONSENT OF REVOCATION OF TEXAS NATURAL RESOURCE CONSERVATION COMMISSION (TNRCC)PERMIT FORM TNRCC INJECTION WELL PERMIT NUMBER, WDW-49 HOECHST CELANESE CHEMICAL GROUP, LTD. BAY CITY PLANT, BAY CITY, TEXAS

Dear Mr. Boswell:

Enclosed herewith is the completed subject form for our Injection Well Permit, WDW-49. This form is provided pursuant to the provisions of 30 TAC Section 305.67 (b).

Please contact me at 409/241-4197 if you have questions.

Very truly yours,

I. O. Coleman, Jr.

I. O. Coleman, Jr.

RECEIVED
NOV 18
6 WQ-SU

IOC/las
attachment

cc: Mr. Ben Knape, Chief
Underground Injection Control Unit
UIC, Uranium & Radioactive Waste Section
Industrial and Hazardous Waste Division
Texas Natural Resource Conservation Commission
P. O. Box 13087
Austin, Texas 78711-3087

Mr. Charles J. Green, Geologist
Underground Injection Control Team
UIC, Uranium & Radioactive Waste Section
Industrial And Hazardous Waste Section
Texas Natural Resource Conservation Commission
P. O. Box 13087
Austin, Texas 78711-3087

Mr. Phil Dellinger
Underground Injection Control Program
U. S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733

NOV 18 96

Hoechst Celanese

Chemical Group
Hoechst Celanese Corporation
Bay City Plant
PO Box 509
Highway 3057
Bay City, TX 77404-0509

April 25, 1996
IOC-027-96

FEDERAL EXPRESS

Mr. John Patterson,
Permits Applications Team
Permits Section (MC 130)
Industrial and Hazardous Waste Division
Texas Natural Resource Conservation Commission
P. O. Box 13087
Austin, Texas 78711-3087

RECEIVED
MAY - 1 1996
6 W-SU

RE: Response To Administrative Notice Of Deficiency
Permit Renewal Application
Underground Injection Well No. WDW-110
Industrial Solid Waste Registration No. 30134
EPA ID No. TXD026040709
Hoechst Celanese Chemical Group, Ltd.
Bay City Plant, Bay City, Texas
(Reference Letter, Attached As Addendum I, Dated March 28, 1996)

Dear Mr. Patterson:

To facilitate administrative completeness of our February , 1996 submittal of the renewal application for Injection Well, WDW-110, listed below are the items outlined in your letter (referenced above) followed by our response to same (and enclosed as Attachments I-IV). This information is provided for your review and approval.

Item I - Please provided a signed and notarized signature page (page 7 of the application) as required by 30 TAC 305.44.

Response - Attachment I is the signed and notarized signature page and Attachment I (A) is the Hoechst Celanese Texas Holdings, Inc., Hoechst Celanese Chemical Group, Ltd. documented signature authorization delegation to Mr. C. R. Pennington, Facility Manager, Bay City Plant, Bay City, Texas

Also, Attachment I(B), page 1 of the Technical Report is resubmitted.

Item II - Please submit a copy of the letter from the Railroad Commission stating that the injection well will not endanger or injure any oil or gas formation.

Response - Attachment II is a copy of the letter, dated April 24, 1996 from Mr. Richard P. Ginn, Deputy Assistant Director, Underground Injection Control, Texas Railroad Commission concluding that the operation of WDW-110 for disposal of industrial waste into the Miocene Sands in the subsurface perforated interval from 3376 feet to 3572 feet will not injure or endanger any known oil or gas reservoir.

Item III - Please update, if necessary, and submit revised financial assurance information.

Response - Attachment III which includes a set of the relevant financial assurance documents which were submitted to Mr. Robert Norris, Executive Director, TNRCC by Ms. Tema S. Maccaro, Legal Assistant, Hoechst Celanese Corporation, (reference letter, TSM-159-95), dated December 27, 1995.

Item IV - Please provide proof of liability insurance. This proof should contain a direct reference to waste disposal activities at this site.

Response - Attachment IV which includes a set of the relevant financial responsibility for liability coverage and assurance documents which were previously submitted to Mr. Robert Norris, Executive Director, TNRCC by Ms. Tema S. Maccaro, Legal Assistant, Hoechst Celanese Corporation (reference letter, TSM-158-95), dated December 27, 1995.

Please don't hesitate to contact me at 409/241-4197 if you have questions.

Very truly yours,

I. O. Coleman, Jr.

I. O. Coleman, Jr.
Staff Environmental Chemist

RECEIVED
MAY - 1 1996
6 W-SE

IOC/cjs
attachments

cc: Mr. Ben Knape, Chief
Underground Injection Control
Industrial and Hazardous Waste Division
Texas Natural Resource Conservation Commission
P. O. Box 13087
Austin, Texas

Mr. Phil Dellinger
Underground Injection Control Program
United States Environmental Protection Agency
Region 6
Dallas, Texas 75202-2733

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MAY - 1 1996
6 W-SU

Barry R. McBee, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*
Dan Pearson, *Executive Director*

ADDENDUM I

4/3/96
Env. File #202.SA
CC: IOC

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

March 28, 1996

Mr. I.O. Coleman
Environmental, Health and Safety Affairs Dept.
Hoechst Celanese Chemical Group, LTD.
Bay City Plant
P.O. Box 509
Bay City, TX 77414

RE: Administrative Notice of Deficiency
Underground Injection Well No. WDW-110
Industrial Solid Waste Registration No. 30134
EPA ID No. TXD026040709

Dear Mr. Coleman:

We have completed an administrative review of your permit renewal application dated November 3, 1995 and received by this office on February 12, 1996. Our review indicates that additional information must be presented to demonstrate compliance with Title 30 Texas Administrative Code (TAC) Sections 331.121, 305.45, 305.49, and 305.50.

Please note that this letter does not represent a detailed technical review of the application, but rather identifies certain portions of the application which have been omitted or are clearly deficient. A detailed technical review will be conducted after submittal of your response to the deficiencies noted below which follow the format of the Texas Natural Resource Conservation Commission (TNRCC) Underground Injection Control (UIC) permit application forms.

Section I.

Please provide a signed and notarized signature page (page 7 of the application) as required by 30 TAC 305.44.

Section V., Attachment G.

Please submit a copy of the letter from the Railroad Commission stating that this injection well will not endanger or injure any oil or gas formation. This letter is required by 30 TAC 305.49(a)(7).

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MAY - 1 1996
G.W.

Section VI., Attachment I.

Please update, if necessary, and submit revised financial assurance information as required by 30 TAC 305.49(a)(3) and 30 TAC 305.153.

Section VI.B.

Please provide proof of liability insurance as required by 30 TAC 331.121(b)(3). This proof should contain a direct reference to waste disposal well activities at this site.

The information requested above is necessary for an administratively complete permit application. Please submit an original response and two (2) copies of your application revisions, including signature pages (page 8 of the TNRCC - UIC Class I Injection Well Application and page 1 of the TNRCC - UIC Technical Report Application). Your response should be in a form that allows for the replacement of application pages with the revised pages. Each page should contain a revision date and revision number as well.

Failure to submit the requested information within thirty (30) days of the date of this letter may result in the application being returned.

If you have any questions regarding this matter, please contact me at 512/239-6618. When responding by letter, please be sure to use Mail Code MC130.

Sincerely,

John Patterson
Permits Applications Team
Permits Section
Industrial and Hazardous Waste Division

JP/jp

RECEIVED
MAY - 1 1996
6 W-SU

ATTACHMENT I
SIGNATURE PAGE

I, C. R. PENNINGTON, FACILITY MANAGER
(applicant) (Title)

I, HOECHST CELANESE CHEMICAL GROUP, LTD., _____
(owner) (Title)

Certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____, Date: APRIL 25, 1996
(applicant)

Signature: _____, Date: _____
(owner)

(1) SEE ATTACHMENT I(A) FOR SIGNATURE AUTHORIZATION, DATED DECEMBER 5, 1995 ---

TO BE COMPLETED BY THE APPLICANT IF THE APPLICATION IS SIGNED BY AN AGENT FOR THE APPLICANT

I, _____ hereby designate _____
(applicant) (agent)

as my agent and hereby authorize said agent to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Natural Resource Conservation Commission in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my agent in support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.

_____
Printed or Typed Name of Applicant or Principal Executive Officer

_____
Signature

(Note: Application Must Bear Signature & Seal of Notary Public)

- -

SUBSCRIBED AND SWORN to before me by the said C.R. Pennington on this 25th day of April, 19 96.

My commission expires of the 9th day of January 2000 ~~19~~.

BETTY M. GALLEY
MY COMMISSION EXPIRES
January 9, 2000

Betty M. Galley
Notary Public in and for
Matagorda County, Texas

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ATTACHMENT I(A)

Hoechst Celanese Texas Holdings, Inc.
1601 West LBJ Freeway
Dallas, Texas 78234

December 5, 1995

Mr. C. R. Pennington
Hoechst Celanese Chemical Group, Ltd.
Bay City Plant
Highway 3057
Bay City, TX 77404-0509

Dear Mr. Pennington:

By this letter I hereby authorize you to sign all reports and other information relating to Hoechst Celanese Chemical Group, Ltd.'s Bay City Plant required by applicable Federal, State and local environmental regulatory agencies.

Signed: _____

Name: Michael E. Grom

Title: Vice President, HOECHST CELANESE TEXAS HOLDINGS, INC.
General Partner of HOECHST CELANESE CHEMICAL GROUP, LTD.

RECEIVED
MAY - 1 1996
6 W-SU

Submitted April 25, 1996
Hoechst Celanese Chemical Group, Ltd.
Bay City Plant, Bay City, TX

ATTACHMENT II

DAVID J. KELTON RYLANDER, CHAIRMAN
BARRY WILLIAMSON, COMMISSIONER
CHARLES R. MATTHEWS, COMMISSIONER

DAVID E. SCHECK
DIRECTOR, OIL AND GAS DIVISION
LORI WROTENBERY
DEPUTY DIRECTOR, OIL AND GAS DIVISION
ASSISTANT DIRECTOR—ENVIRONMENTAL SERVICES

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

April 24, 1996

Mr. I.O. Coleman Jr.
Chemical Group
Hoechst Celanese Corporation
P.O. Box 509
Bay City, TX 77404-0509

Re: Application for Industrial Waste Disposal Permit
James Moore Survey
Abstract A-62
WDW No. 110
Matagorda County, Texas

Dear Mr. Coleman:

The Railroad Commission staff has completed a technical review of the referenced permit application, dated February 8, 1996, for an industrial waste disposal well in Matagorda County. We reviewed the portion of the application relating to possible injury or endangerment of any known oil or gas reservoir.

Specifically, our review entailed a study of the aspects of the application relating to the injection operation, geology of the area, and location and well records of the artificial penetrations within the area of review (2.5 miles). We also used the Railroad Commission's computerized mapping system to verify that all artificial penetrations within the area of review have been identified in the application.

Based upon our review, we have concluded that the operation of WDW - 110 for disposal of industrial waste into the Miocene Sands, in the subsurface perforated interval from 3376 feet to 3572 feet, will not injure or endanger any known oil or gas reservoir. There is no hydrocarbon production within a two and one-half mile radius from the disposal well.

Sincerely yours,

Richard F. Cinn,
Deputy Assistant Director
Underground Injection Control

cc: Ben Knape, UIC Unit Head
Hazardous and Solid Waste Enforcement Section
Texas Natural Resource Conservation Commission

1701 NORTH CONGRESS AVENUE ★ POST OFFICE BOX 12967 ★ AUSTIN, TEXAS 78711-2967 ★ PHONE:512/463-6792 FAX:512/463-6780
TDD 800/735-2989 or TDY 512/463-7284 AN EQUAL OPPORTUNITY EMPLOYER

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MAY - 1 1996
6 W-SU

Submitted April 25, 1996
Hoechst Celanese Chemical Group, Ltd.
Bay City Plant, Bay City, TX

ATTACHMENT I(B)

TECHNICAL REPORT - ENGINEERING AND GEOLOGY

SIGNATURE PAGE

I. Signature of the Technical Report Supervisor

The technical report of the application must be signed by the technical report supervisor. The supervisor must be a professional engineer, registered in the State of Texas, or a geologist. The technical report supervisor must be competent and experienced in the Class I Underground Injection Control program and be thoroughly familiar with the operation or project for which the application is made. Attach a copy of the supervisor's resume.

I, DANIEL J. COLLINS, PRINCIPAL GEOLOGIST
(technical report supervisor) (Title)

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: [signature] Date: 1/31/96

(Note: Application Must Bear Signature & Seal of Notary Public)

SUBSCRIBED AND SWORN to before me by the said Party

on this 1st day of February, 1996

My commission expires on the 5-~~16-99~~ 16th day of May, 1999

A. VIKTORIA CADDICK
MY COMMISSION EXPIRES
May 16, 1999

A. Viktoria Caddick
Notary Public in and for

HARRIS County, Texas

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MAY - 1 1996
B.W.-SEC

ATTACHMENT III
FINANCIAL ASSURANCE

RECEIVED
MAY - 1 1996
6 W-SU

ATTACHMENT III

Hoechst Celanese

Hoechst Celanese Corporation
Route 202-206
PO Box 2500
Somerville, NJ 08876-1258
908 231 2000
Telex 833 449
Fax 908 231 3225

VIA FEDERAL EXPRESS

TSM/159/95

December 27, 1995

Executive Director
Texas Natural Resource Conservation Commission
12100 Park 35 Circle, Building A
Austin, TX 78753

Attn: Mr. Robert Norris

Re: Financial Assurance of Injection Well Closure and Post-Closure Cost for Hoechst Celanese Chemical Group, Ltd.

Dear Mr. Norris:

Hoechst Celanese Chemical Group, Ltd. has obtained a letter of Credit No. 190347 issued by the Norddeutsche Landesbank effective as of December 22, 1995 in the amount of $1,609,292 to cover closure and post-closure care of its injection wells located at the facilities listed on Attachment A.

Should you have any questions concerning this matter, please call me at (908) 231-4673.

Tema Maccaro

Tema S. Maccaro
Legal Assistant

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MAY - 1 1996
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Hoechst

Attachment A

Hoechst Celanese Chemical Group, Ltd.

EPA ID #	Plant	Permit Number	Closure Costs Estimates ($)	Post Closure Costs
TXD026040709	*Bay City* Box 59 FM Road 3057 Bay City TX 77404-0509	WDW-14	$128,301	- 0 -
		WDW-32	$126,070	- 0 -
		WDW-49	$124,954	- 0 -
		WDW-110	$136,111	- 0 -
		WDW-277	$137,226	- 0 -
TXD073432457	*Clear Lake* 9502 Bayport Road Pasadena TX 77507-1498	WDW-33	$143,413	$58,014 for WDW-33 & 45
		WDW-45	$148,151	
		WDW-283	$148,517	- 0 -
TXD007376700	*Pampa* Box 937 Highway 60 Pampa TX 79065	WDW-244	$152,845	-0-
		WDW-245	$152,845	-0-
		WDW-246	$152,845	-0-

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U C

TRUST AGREEMENT

Trust agreement, the "Agreement," entered into as of January 23, 1996 by and between Hoechst Celanese Chemical Group, Ltd., a Texas partnership, the "Grantor," and The Chase Manhattan Bank, N.A., a national banking association, the "Trustee."

Whereas, the Texas Natural Resource Conservation Commission, "TNRCC", an agency of the State of Texas, has established certain regulations applicable to the Grantor, requiring that an owner or operator of an injection well shall provide assurance that funds will be available when needed for plugging and abandonment of the injection well of the facility;

Whereas, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the facilities identified herein;

Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee.

Now, Therefore, the Grantor and the Trustee agree as follows:

Section 1. Definitions

As used in this Agreement:

(a) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.

(b) The term "Trustee" means the Trustee who enters into this Agreement and any successor Trustee.

(c) "Facility" or "activity" means any "underground injection well" or any other facility or activity that is subject to regulation under the Underground Injection Control Program.

Section 2. Identification of the Facilities and Cost Estimates

This Agreement pertains to the facilities and cost estimates identified on attached Schedule A.

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Section 3. Establishment of Fund

The Grantor and the Trustee hereby establish a trust fund, the "Fund," for the benefit of TNRCC. The Grantor and the Trustee intend that no third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by TNRCC.

Section 4. Payment for Plugging and Abandonment

The Trustee shall make payments from the Fund as the Executive Director shall direct, in writing, to provide for the payment of the costs of plugging and abandonment of the injection wells covered by this Agreement. The Trustee shall reimburse the Grantor or other persons as specified by the Executive Director from the Fund for plugging and abandonment expenditures in such amounts as the Executive Director shall direct in writing. In addition, the Trustee shall refund to the Grantor such amounts as the Executive Director specifies in writing. Upon refund, such funds shall no longer constitute part of the Fund as defined herein.

Section 5. Payments Comprising the Fund.

Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

Section 6. Trustee Management

The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this section. In investing, reinvesting, exchanging, selling, and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an

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enterprise of a like character and with like aims; *except that*:

(i) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2(a), shall not be acquired or held, unless they are securities or other obligations of the Federal or a State government;

(ii) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(iii) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and Investment

The Trustee is expressly authorized in its discretion:

(a) To transfer from time to time any or all of the assets of the Fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. 80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

Section 8. Express Powers of Trustee

Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(a) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or

expediency of any such sale or other disposition;

(b) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentally thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund;

(d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the federal or state government; and

(e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses

All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

Section 10. Annual Valuation

The Trustee shall annually, at least 30 days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the appropriate Executive Director a statement confirming the value of the Trust. Any securities in the Fund shall

be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the Executive Director shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

Section 11. Advice of Counsel

The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any questions arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

Section 12. Trustee Compensation

The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

Section 13. Successor Trustee

The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor Trustee or for instructions. The successor Trustee shall specify the date on which it assumes administration of the trust in writing sent to the Grantor, the Executive Director, and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

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Section 14. Instructions to the Trustee

All orders, requests, and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in the attached Exhibit A or such other

designees as the Grantor may designate by amendment to Exhibit A. The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests, and instructions. All orders, requests, and instructions by the Executive Director to the Trustee shall be in writing signed by the Executive Director or his designee, and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests, and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or TNRCC hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instructions from the Grantor and/or TNRCC, except as provided for herein.

Section 15. Notice of Nonpayment

The Trustee shall notify the Grantor and the Executive Director, by certified mail within 10 days following the expiration of the 30-day period after the anniversary of the establishment of the Trust, if no payment is received from the Grantor during that period. After the pay-in period is completed, the Trustee shall not be required to send a notice of nonpayment.

Section 16. Amendment of Agreement

This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, and the Executive Director, or by the Trustee and the Executive Director if the Grantor ceases to exist.

Section 17. Irrevocability and Termination

Subject to the right of the parties to amend this Agreement as provided in Section 16, this Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee, and the Executive Director, or by the Trustee and the Executive Director, if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

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Section 18. Immunity and Indemnification

The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor or the Executive Director issued in accordance with this

Schedule A

Hoechst Celanese Chemical Group, Ltd.

Bay City, Texas
Box 509
FM Road 3057
Bay City, TX 77404-0509
EPA I.D. No. TXD 026040709
$7,644,446 closure
$1,799,861 post-Closure

Bayport, Texas
Terminal
11807 Port Road
Seabrook TX 77586
EPA I.D. No. TXD 000719286
$ 297,837 closure

Clear Lake, Texas
9502 Bayport Road
Pasadena TX 77507-1498
EPA I.D. No. TXD 073432457
$14,521,566 closure
$ 2,649,631 post-closure
$ 863,000 corrective action

Pampa, Texas
Box 937
Highway 60
Pampa TX 79065
EPA I.D. No. TXD 007376700
$8,165,688 closure
$ 1,296,024 post-closure
$26,703,493 corrective action

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State of New Jersey

County of Somerset

On this 23rd day of January, 1996, before me personally came John M. Kacani to me known, who, being by me duly sworn, did depose and say that he resides at 15 Graham Avenue, Metuchen, New Jersey 08840, that he is Vice President of Hoechst Celanese Texas Holdings, Inc., the general partner of Hoechst Celanese Chemical Group, Ltd., the corporation described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

Judith S. Kurzeja

[Signature of Notary Public]

JUDITH S. KURZEJA
Notary Public of New Jersey
My Commission Expires Nov. 12, 1997

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NORDDEUTSCHE LANDESBANK
GIROZENTRALE
NEW YORK

Executive Director
Texas Natural Resource
Conservation Commission

December 22, 1995

IRREVOCABLE STANDBY LETTER OF CREDIT NO.: 190347

Dear Sir or Madam:

We hereby establish our Irrevocable Standby Letter of Credit No.: 190347 in your favor, at the request and for the account of Hoechst Celanese Chemical Group, Ltd. 1601 West LBJ Freeway, Dallas, Texas 75381-9005 up to the aggregate amount of US$ 1,609,292.00 (U.S. DOLLARS ONE MILLION SIX HUNDRED NINE THOUSAND TWO HUNDRED NINETY TWO AND 00/100) available upon presentation of

(1) Your sight draft, bearing reference to this letter of credit No.190347, and
(2) Your signed statement reading as follows: "I certify that the amount of the draft is payable pursuant to regulations issued under authority of the Safe Drinking Water Act".

This letter of credit is effective as of December 22, 1995 and shall expire on December 23, 1996, but such expiration date shall be automatically extended for a period of 1 year on December 23, 1996 and each successive expiration date, unless, at least 120 days before the current expiration date, we notify both you and Hoechst Celanese Chemical Group Ltd. by certified mail that we have decided not to extend this letter of credit beyond the current expiration date. In the event you are so notified, any unused portion of the credit shall be available upon presentation of your sight draft for 120 days after the date of receipt by both you and Hoechst Celanese Chemical Group Ltd., as shown on the signed return receipts.

Whenever this letter of credit is drawn on under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us, and we shall deposit the amount of the draft directly into the standby trust fund of Hoechst Celanese Chemical Group Ltd. in accordance with your instructions.

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1270 Avenue of the Americas
New York, N.Y. 10020

Telephone (212) 332 8600
Telex MCI 62345
Telex MCI 666750

Telefax (212) 332-8660
(212) 332 8670

NORD/LB

We certify that the wording of this letter of credit is identical to the wording specified in 31 Texas Administrative Code §331.147 (e) as such regulations were constituted on the date shown immediately below.

Stephen K. Hunter
Senior Vice President and
Deputy General Manager

Wolfgang P. Sander
Vice President

This credit is subject to the Uniform Customs and Practice for Documentary Credits (1993 Revision) Publication No. 500 of the International Chamber of Commerce, Paris.

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ATTACHMENT IV
FINANCIAL RESPONSIBILITY FOR LIABILITY COVERAGE
AND ASSURANCE

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Hoechst Celanese

Hoechst Celanese Corporation
Route 202-206
PO Box 2500
Somerville, NJ 08876-1258
908 231 2000
Telex 833 449
Fax 908 231 3225

VIA FEDERAL EXPRESS

TSM/158/95

December 27, 1995

Executive Director
Texas Natural Resource Conservation Commission
12100 Park 35 Circle, Building A
Austin, TX 78753

Attn: Mr. Robert Norris

Re: Financial Responsibility for Liability Coverage and Assurance of Closure and Post-Closure Care and Corrective Action Costs of Hoechst Celanese Chemical Group, Ltd. Facilities - Solid Waste Registration Numbers 30134, 30022 and 30072

Dear Mr. Norris:

Hoechst Celanese Chemical Group, Ltd. ("HCCG, Ltd.") has obtained a letter of Credit No. 190345 issued by the Norddeutsche Landesbank effective as of December 22, 1995 in the amount of $63,941,546 to cover closure, post-closure care and corrective action costs for its facilities listed on Attachment A. HCCG, Ltd. has also obtained a letter of Credit No. 190346 issued by the Norddeutsche Landesbank effective as of December 22, 1995 in the amount of $8,000,000 to cover bodily injury and property damage to third parties covered by sudden and non-sudden accidental occurrences arising from operations of the facilities listed on Attachment A.

Should you have any questions concerning this matter, please call me at (908) 231-4673.

Tema S. Maccaro
Legal Assistant

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Hoechst

Attachment A

Hoechst Celanese Chemical Group, Ltd.

Bay City, Texas
Box 509
FM Road 3057
Bay City, TX 77404-0509
EPA I.D. No. TXD 026040709
$7,644,446 closure
$1,799,861 post-Closure

Bayport, Texas
Terminal
11807 Port Road
Seabrook TX 77586
EPA I.D. No. TXD 000719286
$ 297,837 closure

Clear Lake, Texas
9502 Bayport Road
Pasadena TX 77507-1498
EPA I.D. No. TXD 073432457
$14,521,566 closure
$ 2,649,631 post-closure
$ 863,000 corrective action

Pampa, Texas
Box 937
Highway 60
Pampa TX 79065
EPA I.D. No. TXD 007376700
$8,165,688 closure
$ 1,296,024 post-closure
$26,703,493 corrective action

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NORDDEUTSCHE LANDESBANK
GIROZENTRALE
NEW YORK

Executive Director
Texas Natural Resource Conservation Commission

December 22, 1995

Irrevocable Standby Letter of Credit No.: 190346

Dear Sir or Madam:

We hereby establish our irrevocable Standby Letter of Credit No.: 190346 in the favor of any and all third-party liability claimants, at the request and for the account of Hoechst Celanese Chemical Group Ltd., 1601 West LBJ Freeway, Dallas, Texas 75381-9005 for third-party liability awards or settlements up to US$ 1,000,000.00 (U.S. DOLLARS ONE MILLION) per occurrence and the annual aggregate amount of US$ 2,000,000.00 (U.S. DOLLARS TWO MILLION) , for sudden accidental occurrences and/or for third party liability awards or settlements up to the amount of US$ 3,000,000.00 (U.S. DOLLARS THREE MILLION) per occurrence, and the annual aggregate amount of US$ 6,000,000.00 (U.S. DOLLARS SIX MILLION), for nonsudden accidental occurences available upon presentation of a sight draft bearing reference to this letter of credit No.: 190346 and "(1) a signed certificate reading as follows:

Certificate of Valid Claim

The undersigned, as parties (insert principal) and (insert name and address of third party claimant(s)), hereby certify that the claim of bodily injury and/or property damage caused by a (sudden or nonsudden) accidental occurrence arising from operations of (principal's) hazardous waste treatment, storage, or disposal facility should be paid in the amount of U.S.$ ( ). We hereby certify that the claim does not apply to any of the following:

a) Bodily injury or property damage for which (insert principal) is obligated to pay damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for damages that (insert principal) would be obligated to pay in the absence of the contract or agreement.

b) Any obligation of (insert principal) under a worker's compensation, disability benefits, or unemployment compensation law or any similar law.

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1270 Avenue of the Americas
New York, N.Y. 10020

Telephone (212) 332 8600
Telex MCI 62345
Telex MCI 666730

Telefax (212) 332 8600
(212) 332 8670

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c) Bodily injury to:

(1) An employee of (insert principal) arising from, and in the course of, employment by (insert principal), or

2) The spouse, child, parent, brother or sister of that employee as a consequence of, or arising from, and in the course of employment (insert principal) This exclusion applies:

(A) Whether (insert principal) may be liable as an employer or in any other capacity; and

(B) To any obligation to share damages with or repay another person who must pay damages because of the injury in persons identified in paragraphs (1) and (2).

d) Bodily injury or property damage arising out of the ownership, maintenance, use, or entrustment to others of any aircraft, motor vehicle or watercraft.

e) Property damage to:

(1) Any property owned, rented, or occupied by (insert principal);

(2) Premises that are sold, given away or abandoned by (insert principal) if the property damage arises out of any part of those premises;

(3) Property loaned to (insert principal);

(4) Personal property in the care, custody or control of (insert principal);

(5) That particular part of real property on which (insert principal) or any contractors or subcontractors working directly or indirectly on behalf of (insert principal) are performing operations, if the property damage arises out of these operations.

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(Signatures)_____

Grantor_____

(Signatures)_____

Claimant (s)_____

or (2) a valid final court order establishing a judgment against the Grantor for bodily injury or property damage caused by sudden or nonsudden accidental occurrences arising from the operation of the Grantor's facility or group of facilities.

This letter of credit is effective as of December 22, 1995 and shall expire on December 23, 1996, but such expiration date shall be automatically extended for a period of 1 year on December 23, 1996 and on each successive expiration date, unless, at least 120 days before the current expiration date, we notify you, the Executive Director of the Texas Natural Resource Conservation Commission, and Hoechst Celanese Chemical Group, Ltd. by certified mail that we have decided not to extend this letter of credit beyond the current expiration date.

Whenever this letter of credit is drawn on under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us.

We certify that the wording of this letter of credit is identical to the wording specified in 40 CFR 264.151 (k) as such regulations were constituted on the date shown immediately below.

Stephen K. Hunter
Senior Vice President and
Deputy General Manager

Wolfgang P. Sander
Vice President

This credit is subject to the Uniform Customs and Practice for Documentary Credits (1993 Revision) Publication No. 500 of the International Chamber of Commerce" or "the Uniform Commercial Code").

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NORDDEUTSCHE LANDESBANK
GIROZENTRALE
NEW YORK

Executive Director

Texas Natural Resource Conservation Commission

December 22, 1995

Dear Sir or Madam:

We hereby establish our irrevocable Standby Letter of Credit NO.190 345 in your favor, at the request and for the account of Hoechst Celanese Chemical Group, Ltd., 1601 West LBJ Freeway, Dallas, TX 75381-9005, up to the aggregate amount of sixtythree million ninehundredfortyone thousand fivehundredfortysix U.S. dollars $63,941,546.00 available upon presentation of

(1) your sight draft, bearing reference to this letter of credit No. 190 345 and

(2) your signed statement reading as follows: "I certify that the amount of the draft is payable pursuant to regulations issued under authority of the Resource Conservation and Recovery Act of 1976 as amended".

This letter of credit is effective as of December 22, 1995 and shall expire on December 23, 1996, but such expiration date shall be automatically extended for a period of at least 1 year on December 23, 1996 and on each successive expiration date, unless, at least 120 days before the current expiration date, we notify both you and Hoechst Celanese Chemical Group, Ltd. by certified mail that we have decided not to extend this letter of credit beyond the current expiration date. In the event you are so notified, any unused portion of the credit shall be available upon presentation of your sight draft for 120 days after the date of receipt by both you and Hoechst Celanese Chemical Group, Ltd., as shown on the signed return receipts.

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1270 Avenue of the Americas
New York, N.Y. 10020

Telephone (212) 512 8600
Telex MCI 62545
Telex MCI 666750

Telefax (212) 512 8600
(212) 512 8670

Whenever this letter of credit is drawn on under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us, and we shall deposit the amount of the draft directly into the standby trust fund of Hoechst Celanese Chemical Group, Ltd. in accordance with your instructions.

We certify that the wording of this letter of credit is identical to the wording specified in 40 CFR 264.151(d) as such regulations were constituted on the date shown immediately below.

Stephen K. Hunter
Senior Vice President
Deputy General Manager

Wolfgang P. Sander
Vice President

This credit is subject to Uniform Customs and Practice for Documentary Credits (1993 Revision) Publication No. 500 of the International Chamber of Commerce, Paris.

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TRUST AGREEMENT

Trust agreement, the "Agreement," entered into as of January 23, 1996 by and between Hoechst Celanese Chemical Group, Ltd., a Texas partnership, the "Grantor," and The Chase Manhattan Bank, N.A., a national banking association, the "Trustee."

Whereas, the Texas Natural Resource Conservation Commission, "TNRCC", an agency of the State of Texas, has established certain regulations applicable to the Grantor, requiring that an owner or operator of a hazardous waste management facility shall provide assurance that funds will be available when needed for closure and/or postclosure and/or corrective action care of the facility;

Whereas, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the facilities identified herein;

Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee.

Now, Therefore, the Grantor and the Trustee agree as follows:

Section 1. Definitions

As used in this Agreement:

(a) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.

(b) The term "Trustee" means the Trustee who enters into this Agreement and any successor Trustee.

Section 2. Identification of the Facilities and Cost Estimates

This Agreement pertains to the facilities and cost estimates identified on attached Schedule A.

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Section 3. Establishment of Fund

The Grantor and the Trustee hereby establish a trust fund, the "Fund," for the benefit of TNRCC. The Grantor and the Trustee intend that no third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by TNRCC.

Section 4. Payment for Closure and Post-Closure Care.

The Trustee shall make payments from the Fund as the Executive Director shall direct, in writing, to provide for the payment of the costs of closure and/or post-closure care and/or corrective action care of the facilities covered by this Agreement. The Trustee shall reimburse the Grantor or other persons as specified by the Executive Director from the Fund for closure, post-closure and corrective action expenditures in such amounts as the Executive Director shall direct in writing. In addition, the Trustee shall refund to the Grantor such amounts as the Executive Director specifies in writing. Upon refund, such funds shall no longer constitute part of the Fund as defined herein.

Section 5. Payments Comprising the Fund.

Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

Section 6. Trustee Management

The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this section. In investing, reinvesting, exchanging, selling, and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an

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enterprise of a like character and with like aims; *except that*:

(i) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2(a), shall not be acquired or held, unless they are securities or other obligations of the Federal or a State government;

(ii) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(iii) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and Investment

The Trustee is expressly authorized in its discretion:

(a) To transfer from time to time any or all of the assets of the Fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. 80a-a1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

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Section 8. Express Powers of Trustee

Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(a) To sell, exche

expediency of any such sale or other disposition;

(b) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentally thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund;

(d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the federal or state government; and

(e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses

All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

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Section 10. Annual Valuation

The Trustee shall annually, at least 30 days [illegible]

be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the Executive Director shall constitute a conclusively binding asset by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

Section 11. Advice of Counsel

The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any questions arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

Section 12. Trustee Compensation

The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

Section 13. Successor Trustee

The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor Trustee or for instructions. The successor Trustee shall specify the date on which it assumes administration of the trust in writing sent to the Grantor and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

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Section 14. Instructions to the Trustee

All orders, requests, and instructions by the Grantor to the T

be fully protected in acting without inquiry in accordance with the Grantor's orders, requests, and instructions. All orders, requests, and instructions by the Executive Director to the Trustee shall be in writing signed by the Executive Director of the Regions in which the facilities are located, or their designees, and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests, and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or TNRCC hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instructions from the Grantor and/or TNRCC, except as provided for herein.

Section 15. Notice of Nonpayment

The Trustee shall notify the Grantor and the Executive Director, by certified mail within 10 days following the expiration of the 30-day period after the anniversary of the establishment of the Trust, if no payment is received from the Grantor during that period. After the pay-in period is completed, the Trustee shall not be required to send a notice of nonpayment.

Section 16. Amendment of Agreement

This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, and the Executive Director, or by the Trustee and the Executive Director if the Grantor ceases to exist.

Section 17. Irrevocability and Termination

Subject to the right of the parties to amend this Agreement as provided in Section 16, this Trust shall be irrevocable and shall continue until terminated at the written direction of the Grantor, the Trustee, and the Executive Director, or by the Trustee and the Executive Director, if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

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Section 18. Immunity and Indemnification

The Trustee shall not incur personal liability of

from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

Section 19. Choice of Law

This Agreement shall be administered, construed, and enforced according to the laws of the State of Texas.

Section 20. Interpretation

As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each Section of this Agreement shall not affect the interpretation of the legal efficacy of this Agreement.

In Witness Whereof the parties have caused this Agreement to be executed by their respective officers duly authorized and their corporate seals to be hereunto affixed and attested as of the date first above written. The parties below certify that the wording of this Agreement is identical to the wording specified in 40 CFR 264.151(a)(1) as such regulations were constituted on the date first above written.

Attest: Hoechst Celanese Chemical Group, Ltd.

Name: John M. Kacani
Title: Vice President, Hoechst Celanese Texas Holdings, Inc., General Partner

Seal

Attest: The Chase Manhattan Bank, N.A.

Name: Rosanna Fucci
Title: Second Vice President

RECEIVED
MAY - 1 1998

Schedule A

Hoechst Celanese Chemical Group, Ltd.

EPA ID #	Plant	Permit Number	Closure Costs Estimates ($)	Post Closure Costs
TXD026040709	*Bay City*	WDW-14	$128,301	- 0 -
	Box 59 FM Road 3057 Bay City TX 77404-0509	WDW-32	$126,070	- 0 -
		WDW-49	$124,954	- 0 -
		WDW-110	$136,111	- 0 -
		WDW-277	$137,226	- 0 -
TXD073432457	*Clear Lake*	WDW-33	$143,413	$58,014 for WDW-33 & 45
	9502 Bayport Road Pasadena TX 77507-1498	WDW-45	$148,151	
		WDW-283	$148,517	- 0 -
TXD007376700	*Pampa*	WDW-244	$152,845	-0-
	Box 937 Highway 60 Pampa TX 79065	WDW-245	$152,845	-0-
		WDW-246	$152,845	-0-

Chemical Group
Hoechst Celanese Corporation
Bay City Plant
PO Box 509
Highway 3057
Bay City, TX 77404-0509

April 26, 1996
IOC-024-96

FEDERAL EXPRESS

Mr. Jim L. Boswell, Permits Coordinator
Underground Injection Control Team
UIC, Uranium & Radioactive Waste Section
Industrial and Hazardous Waste Section
Texas Natural Resource Conservation Commission.
P. O. Box 13087
Austin, TX 78711-3087

SUBJECT: CONSENT OF REVOCATION OF TEXAS NATURAL RESOURCE CONSERVATION COMMISSION (TNRCC)PERMIT FORM TNRCC INJECTION WELL PERMIT NUMBER, WDW-14 HOECHST CELANESE CHEMICAL GROUP, LTD. BAY CILTY PLANT, BAY CITY, TEXAS

Dear Mr. Boswell:

Enclosed herewith is the completed subject form for our Injection Well Permit, WDW-14. This form is provided pursuant to the provisions of 30 TAC Section 305.67 (b).

Please contact me at 409/241-4197 if you have questions.

Very truly yours,

I. O. Coleman, Jr.

RECEIVED
SOURCE WATER
PROTECTION BRANCH
96 APR 29 PM 12:10
GWQ-S

IOC/cjs
attachment

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION PERMIT

I, C.R. Pennington, Facility Manager, acting on behalf of
(Name & Title)

Hoechst Celanese Chemical Group, Ltd., do hereby consent to the
(Name of Permittee)

the revocation of Texas Natural Resource Conservation Commission Permit No. WDW-14, pursuant to the provisions of 30 TAC Section 305.67(b).

The activities regulated by the permit were:

( ) Never begun (Wastewater treatment facility was not constructed)

(X) Terminated on or about (Date) MARCH 13, 1996 (Waste Disposal Well plugged and abandoned)

Facility dismantled ( ); Facility will be dismantled ( ); Facility will be sold and relocated ( ).

( ) Diverted to another permitted wastewater treatment system Please identify the facility to which flow has been diverted _____ and the approximate date the diversion occurred _____.

I also certify that there are no materials remaining at the permitted site which endanger ground or surface water quality.

(Signature)

409/241-4000
(Telephone No.)

April 12, 1996
(Date)

TO: I.O. Coleman, Celanese Bay City FROM: Susie Lopez, EPA
(409) 241-4197

SUBJECT: Status of WDW-110

SUMMARY:

I called I.O. regarding the status of WDW-110. WDW-110 was recompleted from the Lower Miocene into the Upper Miocene in 1993. The petition approval for WDW-110 is for the Lower Miocene. EPA received the Closure Plan for all 4 of the Class I injection wells in December 1995. I.O. sand WDW-110 may be held as a standby well and not plugged immediately. WDW-14 was P&A'd the end of March 1996. WDW-32 and WDW-49 are planned to be plugged in October 1996.

WDW-110 is operating at this time but injects only non-hazardous waste. I.O. thought the State permit for WDW-110 was a non-hazardous permit.

I called Chuck Green with TNRCC (512) 239-6634 regarding the permit for WDW-110. Chuck said the permit was for a hazardous well. I told him that WDW-110 had and exemption for the Lower Miocene but Celanese had never submitted a modification requesting the Upper Miocene for WDW-110. Chuck said he would note in the State file that WDW-110 did not have an exemption for restricted hazardous waste in the Upper Miocene. WDW-110 will be able to continue to inject non-hazardous and nonrestricted hazardous waste.

CONCLUSIONS/ACTIONS

COPIES TO:

Celanese Bay City File

IOC-080-95

Hoechst Celanese Corporation
Bay City Plant
PO Box 509
Highway 3057
Bay City, TX 77404-0509

FEDERAL EXPRESS MAIL

Mr. Ben K. Knape - Head
UIC Team
UIC, Uranium and Hazardous Waste Division
Texas Natural Resource Conservation Commission
12100 Park Circle
P. O. Box 13087
Austin, Texas 78711-3087

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DEC 1 1 1995
6 W-S

Subject: WDW-14, WDW-32, WDW-49 and WDW-110
PROPOSED CLOSURE PROCEDURES
Hoechst Celanese Chemical Group, Inc.
Bay City Plant, Bay City, Texas

Dear Mr. Knape:

Enclosed herewith are the proposed Closure Procedures to plug and abandon WDW-14 (WELL NO. 2), WDW-32 (WELL NO. 3), WDW-49 (WELL NO. 4) and WDW-110 (WELL NO. 1-A) which are provided for your review and approval. WDW-14 is scheduled to commence closure during the first quarter, 1996. The closure schedule for WDW-32, WDW-49 and WDW-110 will be submitted to the Agency as soon as the are finalized.

We hope that the presentation at your office on November 14, 1995 will facilitate the review process. Your earliest consideration, review and approval of the proposed closure pro cedures are appreciated.

Please do not hesitate to contact me at 409/241-4197 or Mr. H. R. Horton at 409/241-4076 if you have questions concerning this matter.

Very truly yours

I. O. Coleman, Jr.

I. O. Coleman, Jr.

cc: Mr. Charles J. Green, Geologist
UIC Team
Texas Natural Resource Conservation Commission
P. O. Box 13087
Austin, Texas 7871-13087

Mr. Phil Dellinger
UIC State Programs Section (6W-SU)
Environmental Protection Agency

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DEC

November 16, 1994

I. O. Coleman
Hoechst Celanese Chem. Group, Inc.
P.O. Box 509
Bay City, TX 77414

Dear Mr. Coleman:

EPA recently sent you a revised copy of the EPA Region 6 Health Based Limits (HBL) Guideline and an outline showing basic elements of a no migration petition. The purpose of these documents is to assist operators petitioning for exemption to the land disposal restrictions or modifying existing exemptions. No action is required on your part in response to these documents. The HBL guidelines were recently updated to incorporate recent EPA regulations. The outline was developed to assist petitioners in submitting complete documents in an effort to streamline the petition review process.

If you have any questions, please contact Gary Ishibashi at (214) 665-7157 or me at (214) 665-7142.

Sincerely yours,

Phil Dellinger
Unit Leader
UIC State Programs/Land Ban

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DELLINGER

Hoechst Celanese Corporation
Bay City Plant
PO Box 509
Highway 3057
Bay City, TX 77404-0509

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GWS

September 26, 1994
IOC-090-94

FEDERAL EXPRESS MAIL

Mr. Ben Knape, Head
Underground Injection Control Unit
Texas Natural Resource Conservation Commission
P. O. Box 13087
1700 North Congress Avenue
Austin, Texas 78711-3087

Subject: WDW-32 (Plant Injection Well No. 2)
Notification Of Plan To Remove From Service
And Brine Well In To Evaluate Loss Of Brine
Hoechst Celanese Chemical Group, Inc.
Bay City Plant, Bay City, Texas

Dear Mr. Knape:

During a recent routine inspection of our Waste Disposal Well facilities, it was observed that the brine level in the brine pot associated with the leak detection system of WDW-32 had decreased. In response, brine was added to the brine pot to bring the level back to the full position. However, during a subsequent inspection, a loss of brine level was again observed.

Our plan is to take WDW-32 out of service and brine it in during the week of October 10, 1994 to evaluate the loss of brine and our options. As we evaluate our waste water disposal requirements via injection wells, WDW-32 will remains out of service. We, therefore request an extended schedule of 24 months to allow maximum flexibility in addressing future requirements.

Also, since WDW-32 will be taken out of service during the week of October 10th we will not perform the required annual mechanical integrity testing which is scheduled the latter part of October. We are aware that the mechanical integrity testing will have to be performed prior to placing the well back in service if indeed this is the option of choice.

Your earliest consideration and approval of our request are appreciated.

Hoechst Celanese Corporation
Bay City Plant
PO Box 509
Highway 3057
Bay City, TX 77404-0509

94 OCT -7 PM 2:37
GW-S

September 26, 1994
IOC-090-94

FEDERAL EXPRESS MAIL

Mr. Ben Knape, Head
Underground Injection Control Unit
Texas Natural Resource Conservation Commission
P. O. Box 13087
1700 North Congress Avenue
Austin, Texas 78711-3087

Subject: WDW-32 (Plant Injection Well No. 2)
Notification Of Plan To Remove From Service
And Brine Well In To Evaluate Loss Of Brine
Hoechst Celanese Chemical Group, Inc.
Bay City Plant, Bay City, Texas

Dear Mr. Knape:

During a recent routine inspection of our Waste Disposal Well facilities, it was observed that the brine level in the brine pot associated with the leak detection system of WDW-32 had decreased. In response, brine was added to the brine pot to bring the level back to the full position. However, during a subsequent inspection, a loss of brine level was again observed.

Our plan is to take WDW-32 out of service and brine it in during the week of October 10, 1994 to evaluate the loss of brine and our options. As we evaluate our waste water disposal requirements via injection wells, WDW-32 will remains out of service. We, therefore request an extended schedule of 24 months to allow maximum flexibility in addressing future requirements.

Also, since WDW-32 will be taken out of service during the week of October 10th we will not perform the required annual mechanical integrity testing which is scheduled the latter part of October. We are aware that the mechanical integrity testing will have to be performed prior to placing the well back in service if indeed this is the option of choice.

Your earliest consideration and approval of our request are appreciated.

409/241-4197.

Very truly yours,

I. O. Coleman, Jr./gs

I. O. Coleman, Jr.

UIC, uranium and Radioactive Waste Section
Industrial and Hazardous Waste Division
Texas Natural Resource Conservation Commission
P. O. Box 13087
1700 North Congress Avenue
Austin, TX 78711-3087

Mr. Chuck Green,
Texas Natural Resource Conservation Commission
P. O. Box 13087
Austin, TX 78711-3087

Mr. Phil Dellinger, USEPA Region VI
Environmental Protection Agency, Region VI
Emergency Response Branch (6E-E)
1445 Ross Ave.
Dallas, Tx 75202-2733

(mh)

I. O. Coleman
Hoechst Celanese Chem. Group, Inc.
P.O. Box 509
Bay City, TX 77414

Dear Mr. Coleman:

Enclosed is the Region 6 Land Ban Health Based Limits Guideline. This guideline should be consulted prior to performing waste transport modeling, in conjunction with applications for exemptions to the Land Disposal Restrictions (petitions). It has been prepared as a logical extension to EPA Guidance 71, which established Health Based Limits (HBLs) for Class I hazardous waste injection well no migration petitions. This extension of Guidance 71 was made necessary because many operators in Region 6 began requesting petition approvals for waste constituents that are not listed in Guidance 71. In order to enable operators to petition for these constituents, and to provide consistency in the review process, this guideline was developed.

In use, either Column 5, "Land Ban HBL (mg/l) or Column 7, "Detection Limit (mg/l) should be employed in the calculation of the Concentration Reduction Factor (CRF), which is an input in waste transport modeling. This should be done by dividing the HBL or the detection limit (mg/l) by the maximum wellhead constituent concentration (mg/l). This calculation should be performed for each constituent for which a petition approval is sought, when submitting waste transport modeling to the Region for review. The format of this submission must be as follows:

The configuration and ordering of Columns 1 through 8 should be as they appear in the guideline. No substitutions or additions will be accepted without prior consent of the Region. The wellhead concentration must appear in Column 9, and the CRF in Column 10. The ordering of the rows should also not change except by deletions of those rows containing unwanted constituents. It is preferred that only the primary chemical name, as it appears in the guideline, be employed for each row. Only those waste codes which are requested for approval should appear in Column 2. Other

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should not change. Failure to comply with this format will cause the Region to reprioritize its workload, and will greatly delay the review of the application.

All waste constituents and waste codes listed in Part 261 are present in this document. HBLs were assigned based on the following available data, in order of preference:

a) Maximum Contaminant Levels (MCLs)

b) The lower of the Reference Dose (RfD) or Risk Specific Dose (RSD).

c) Detection limits.

d) Reference molecule detection limits.

With the exception of d), "reference molecule detection limits", this methodology follows that which is outlined in Guidance 71. Reference molecule detection limits is a new concept that was not considered in Guidance 71. This concept was developed because many waste constituents do not have MCLs, RfDs, RSDs, or published detection limits in SW-846, the EPA approved source for detection limit information. It was reasoned that in those instances that the detection limit of another waste constituent, structurally similar to the one in question, could be employed.

The term "detection limit" as loosely used in this document is, in most cases, actually a Practical Quantitation Limit (PQL). Some detection methods, such as 8250, list the detection limits of constituents and separately provide a set of matrix multipliers, which can be applied to the detection limit to obtain a matrix dependant PQL. If this was the case, the matrix multiplier for ground water was employed. Other methods, such as 7191, only provided detection limits. For simplicity, it was decided that the term "detection limit" would be used to refer to both cases. The detection limits listed in this document do not in all cases agree with the PQLs listed in Part 264 Appendix IX. This is because in some instances the PQLs listed in Part 264 Appendix IX appear to have been rounded off from those listed in SW-846. In a few instances, Part 264 Appendix IX listed a method for a particular constituent, but that method did not specifically list the constituent. In those instances, the lowest detection limit listed for any constituent in the method was used.

By inspecting the constituent listings in this document, it can be seen that some reference molecules, such as vinyl chloride which substitutes for acetyl chloride, also have an MCL, RfD, or

detection limit, when substituting it for another constituent. However, although there is much scientific precedent for the substitution of detection limits based on structural-activity relationships, there is no such precedent for the substitution of health based information. In fact, even isomers of the same chemical often exhibit significantly different toxicological effects. Consequently, the Region did not take this approach.

The Eleventh Edition of the Merck Index and the Integrated Risk Information System (IRIS) was employed as a source for Chemical Abstract Numbers and many commonly used synonyms. MCLs were taken from the December, 1993 version of the Drinking Water Regulations and Health Advisories. IRIS was the source for all RfDs and some RSDs. The source for the majority of the Risk Specific Doses RSDs was Guidance 71. Additional RSDs were found in the Final Rule for Waste Codes K149, K150, and K151. A detailed reference listing can be found at the end of this letter.

In all cases, the most current data was employed. Consequently, many of the MCLs and RfDs listed in this document differ from those in Guidance 71 due to revisions in these values. Also, some constituents have different sources for their HBLs than those in Guidance 71 (i.e. from RfD to MCL). Lastly, some constituents, which previously had RfDs in Guidance 71, now are assigned detection limits because their RfDs have been dropped from IRIS.

It is envisioned that this guideline will form the basis for a revision to Guidance 71. In any case, until a national revision to Guidance 71 is available, the Region intends to employ this document. In the future, the information contained within this document may be programmed into a database so that it can be queried by CAS number, waste code, constituent, etc., as a general reference. The Region invites comments concerning the construction and implementation of this data base. In addition, this information may be made available through an electronic bulletin board so that it can be down-loaded via modem.

If you have any questions pertaining to this Guideline, please contact Joe Kordzi at (214) 655-7186.

Sincerely yours,

Mac A. Weaver, P.E.
Chief
UIC State Programs

cc: cc: Ben Knape, TNRCC

1. *Code of Federal Regulations*, 40 CFR Parts 261, 264, and 268, July 1, 1992.

2. U.S.E.P.A.: "Determination of Hazardous Levels for No Migration Demonstrations Pursuant to 40 CFR Section 148.20;" Underground Injection Control Guidance No. 71. October 17, 1990.

3. U.S.E.P.A.: "Test Methods for Evaluating Solid Wastes-Physical/Chemical Methods," Second Ed. Government Printing Office (GPO) 055-002-81001-2. EPA SW-846. Washington D.C.

4. U.S.E.P.A.: "Integrated Risk Information System."

5. Merck & Company, Inc., *The Merck Index*, Eleventh ed., 1989.

6. U.S.E.P.A.: "Hazardous Waste Management System: "Identification and Listing of Hazardous Waste and CERCLA Hazardous Substances Designation; Reportable Quantity Adjustment, Chlorinated Toluenes Production Wastes, Final Rule," October 15, 1992, 57 FR 47378-47385.

7. U.S.E.P.A.: "Identification and Listing of Hazardous Waste; CERCLA Hazardous Designation; Reportable Quantity Adjustment; Coke By-Products Waste, Final Rule," August 18, 1992, 57 FR 37305.

8. U.S.E.P.A., Office of Water: "Drinking Water Regulations and Health Advisories", December 1993.

Hoechst Celanese

Chemical Group
Hoechst Celanese Corporation
Bay City Plant
PO Box 509
Highway 3057
Bay City, TX 77404-0509

December 6, 1995
IOC-080-95

FEDERAL EXPRESS MAIL

Mr. Ben K. Knape - Head
UIC Team
UIC, Uranium and Hazardous Waste Division
Texas Natural Resource Conservation Commission
12100 Park Circle
P. O. Box 13087
Austin, Texas 78711-3087

RECEIVED
DEC 11 1995
6 W-S

Subject: WDW-14, WDW-32, WDW-49 and WDW-110
PROPOSED CLOSURE PROCEDURES
Hoechst Celanese Chemical Group, Inc.
Bay City Plant, Bay City, Texas

Dear Mr. Knape:

Enclosed herewith are the proposed Closure Procedures to plug and abandon WDW-14 (WELL NO. 2), WDW-32 (WELL NO. 3), WDW-49 (WELL NO. 4) and WDW-110 (WELL NO. 1-A) which are provided for your review and approval. WDW-14 is scheduled to commence closure during the first quarter, 1996. The closure schedule for WDW-32, WDW-49 and WDW-110 will be submitted to the Agency as soon as the are finalized.

We hope that the presentation at your office on November 14, 1995 will facilitate the review process. Your earliest consideration, review and approval of the proposed closure pro cedures are appreciated.

Please do not hesitate to contact me at 409/241-4197 or Mr. H. R. Horton at 409/241-4076 if you have questions concerning this matter.

Very truly yours

I. O. Coleman, Jr.

I. O. Coleman, Jr.

cc: Mr. Charles J. Green, Geologist
UIC Team
Texas Natural Resource Conservation Commission
P. O. Box 13087
Austin, Texas 7871-13087

Mr. Phil Dellinger
UIC State Programs Section (6W-SU)
Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733

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Hoechst

SOLUTIONS, INC.

Hoechst Celanese Chemical Group, Inc.
Bay City Plant, Texas

Closure Plan For Class I Injection Wells
WDW-14, WDW-32, WDW-49 & WDW-110

ECO Solutions, Inc.
9800 Richmond Avenue
Suite 320
Houston, Texas 77042
(713) 780-1955
FAX (713) 780-0870

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CLOSURE PLAN

SUMMARY

The following class I injection well closure plan was prepared for Hoechst Celanese Chemical Group's (HCCG's) facility located at Bay City, Texas. The proposed closure plan incorporates procedures to maximize the long term protection of the environment and significantly exceeds the minimum closure standards set by the TNRCC. These procedures include secondary cementing of the protection casing to insure zonal isolation of the injected waste and formation waters from USDWs.

Similar procedures are proposed for wells WDW-14, WDW-32, WDW-49 and WDW-110. Well schematics are included to illustrate the proposed plugging procedures. The schematics indicate section milling above the injection packers and perforating/squeeze cementing at the base of the surface casing(s).

A high compressive strength cement slurry is placed in the annular area in selected intervals *behind* the protection casing. These areas are 1) the area above the injection interval or packer and 2) the area immediately beneath the surface casing.

There are two (2) common techniques of placing cement in these areas:

a) *Squeeze perforations* - "shoot" holes in the protection casing at specified depths and then force high compressive strength cement through the perforations into the annular space, i.e. "squeeze cementing technique".

b) *Section milling/underreaming* - physically remove a portion of the protection casing in key sections in the wellbore using a downhole mill. The cement behind the milled section is then underreamed out to the formation face. Finally, a column of high compressive strength cement is placed in the underreamed portion of the wellbore. The net result is a +/-50' continuous "block" of solid, high compressive strength cement is left where the protection casing had been.

The inside of the protection casing is then filled back to the surface with high compressive strength cement. Proper sequencing of this portion of the closure plan depends upon the technique implemented.

Closure on WDW-14 is scheduled to be completed by the end of the first quarter, 1996. The closure schedules of WDW-32, WDW-49 and WDW-110 will be submitted to the TNRCC as soon as they are finalized.

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WELL CLOSURE PROCEDURES

SEQUENTIAL PROCEDURES

1) Submit closure plan to TNRCC for approval. Meet with the TNRCC if there are any questions or comments.

2) Prepare well location for field operations. Line and dike surface area surrounding wellsite- specifically in the area where the workover rig, pumps, tanks and pipe racks will rig up.

3) Move in and rig up workover rig and peripheral equipment.

4) Rig up slick line unit and go in hole with pressure recording memory tool. Set tool immediately above packer and measure stabilized bottom hole pressure.

5) Triple rinse injection string and flush annular area with 9.8 ppg brine.

6) Pull out of the hole laying down injection string and TIW seal assembly on pipe racks. HCCG personnel will remove injection string and TIW seal assembly from wellsite.

7) Pick up casing scraper and 2+7/8" drill pipe work string. Go in hole with casing scraper to the top of the injection packer. Pull out of the hole with same.

8) Move in and rig up wireline unit to set cement retainer. Pick up junk basket and gauge ring and go in the hole to the top of the injection packer. Pull out of the hole with the junk basket and gauge ring. Go in the hole with wireline cast iron cement retainer and set same at approximately 10' above the top of the injection packer. Pull out of the hole and rig down wireline unit.

9) Pick-up cement retainer shifting assembly with work string and go in the hole with same. Engage cement retainer with shifting assembly and test annulus to 500 psi to confirm that the cement retainer is properly set.

10) Rig up Halliburton, or equivalent service company, to squeeze cement (permanently abandon) the injection zone. Pumping through retainer fill injection interval with high compressive strength cement slurry. Close cement retainer and disengage from same. Leave a 50' column of cement above cement retainer and pull out of the hole with shifting assembly.

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11) Pick up section mill and drill collars on work string and go in the hole with same. Mill out approximately 50' section above the top of the cement column. Pull out of the hole and remove section mill.

12. Pick up underreamer and drill collars and go in the hole with same. Underream sectioned interval out to approximately 14" diameter borehole. Pull out of the hole with underreamer.

13. Go in the hole open-ended to set cement plug #2. The plug will extend up across the sectioned interval and an additional 300' - 400' above the section. Rig up Halliburton, or equivalent, and set balanced cement plug with high compressive strength cement. Pull out of the hole and wait on cement plug #2 to cure (approximately 12 hours).

14. Go in the hole with 8+3/4" drill bit and drill pipe to confirm the top of the column of cement. "Dress off" top of plug #2 to confirm cement has had sufficient time to properly cure.

15. Rig up Halliburton, or equivalent, and set cement plug #3 with high compressive strength cement. Set balanced cement plug. Cement column to extend from the previous plug up to approximately 200' beneath the base of surface casing. Pull out of the hole and wait on cement plug #3 to cure (approximately 12 hours).

16. Go in the hole with 8+3/4" drill bit and drill pipe to confirm the top of cement column. "Dress off" the top of plug #3 to confirm that cement has had sufficient time to properly cure. Pull out of the hole.

17. Move in and rig up wireline truck to perforate for squeeze job at the base of the surface casing. Perforate the protection casing 2' at 4 shots per foot (8 shots) approximately 10' beneath the surface casing seat. Pull out of the hole and rig down wireline unit.

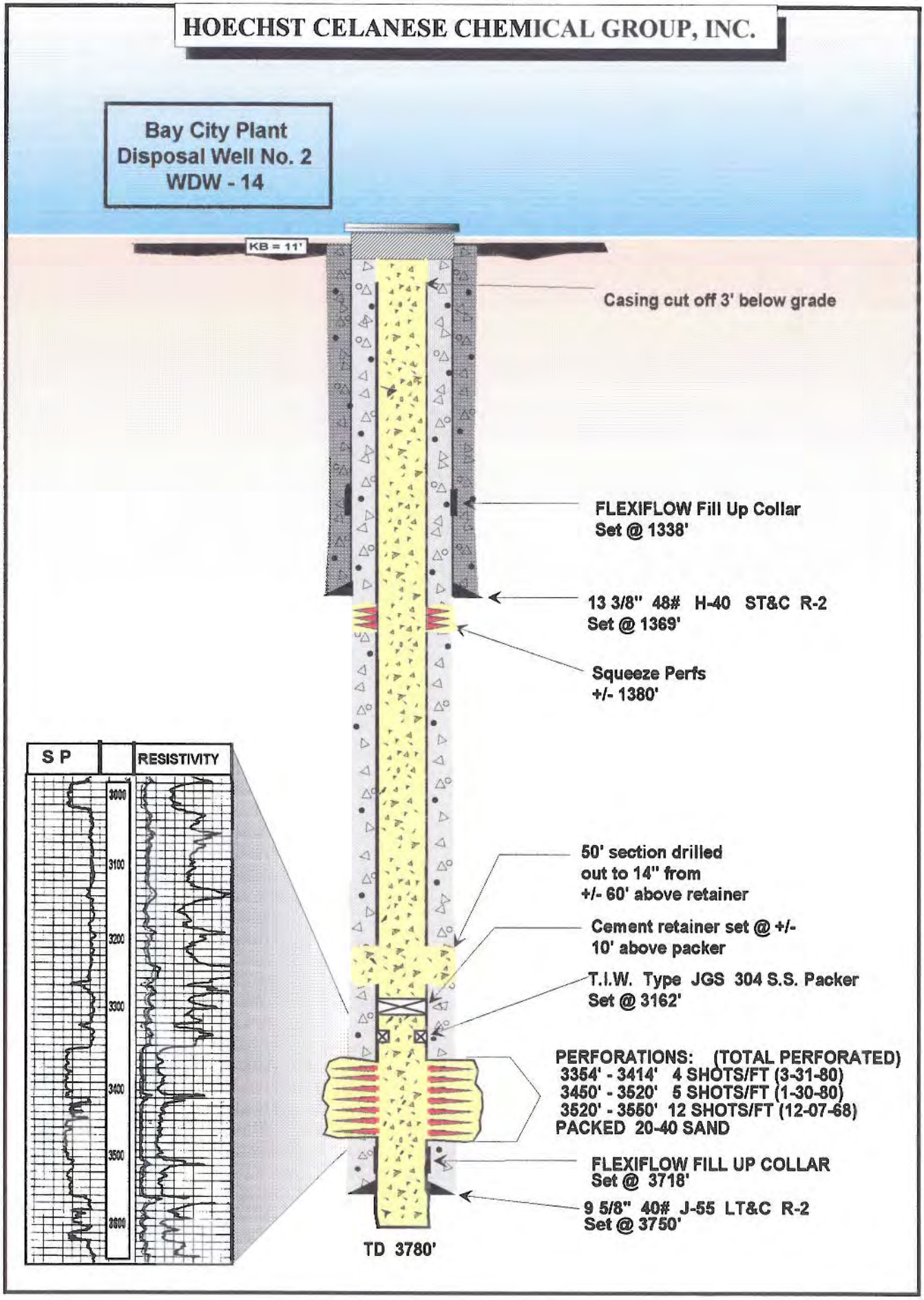
18. Rig up Halliburton, or equivalent, and set cement plug #4 with high compressive strength cement. Set balanced cement plug. Cement column will extend from the top of plug #3 back to the surface. Pull out of the hole. Apply pressure to cement column to squeeze cement out through the perforations. Wait on cement plug #4 to cure (approximately 12 hours).

19. Go in the hole with 8+3/4" drill bit and drill pipe to confirm the top of cement column. "Dress off" the top of plug #4 to confirm that cement has had sufficient time to properly cure. Fill balance of protection casing with high compressive strength cement as required. Pull out of the hole. Wash out blowout preventors.

20. Rig down and release workover rig. Cut off casings 3' below grade and weld 1/2" steel plate over all casing strings. Inscribe plate with well identification and other pertinent data as required.

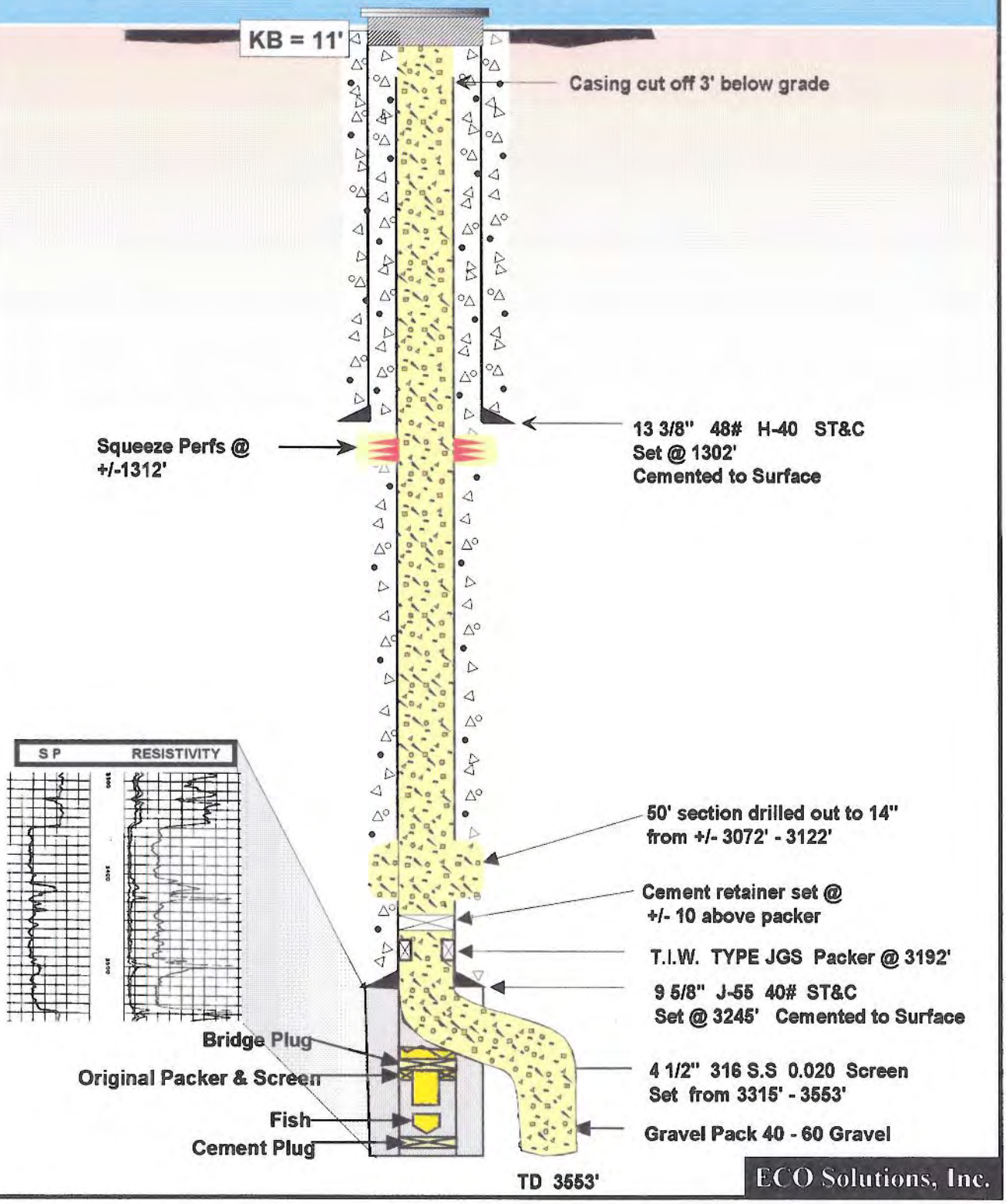
21. Prepare summary report for submittal to TNRCC and USEPA Region 6. *Project Complete.*

HOECHST CELANESE CHEMICAL GROUP, INC.



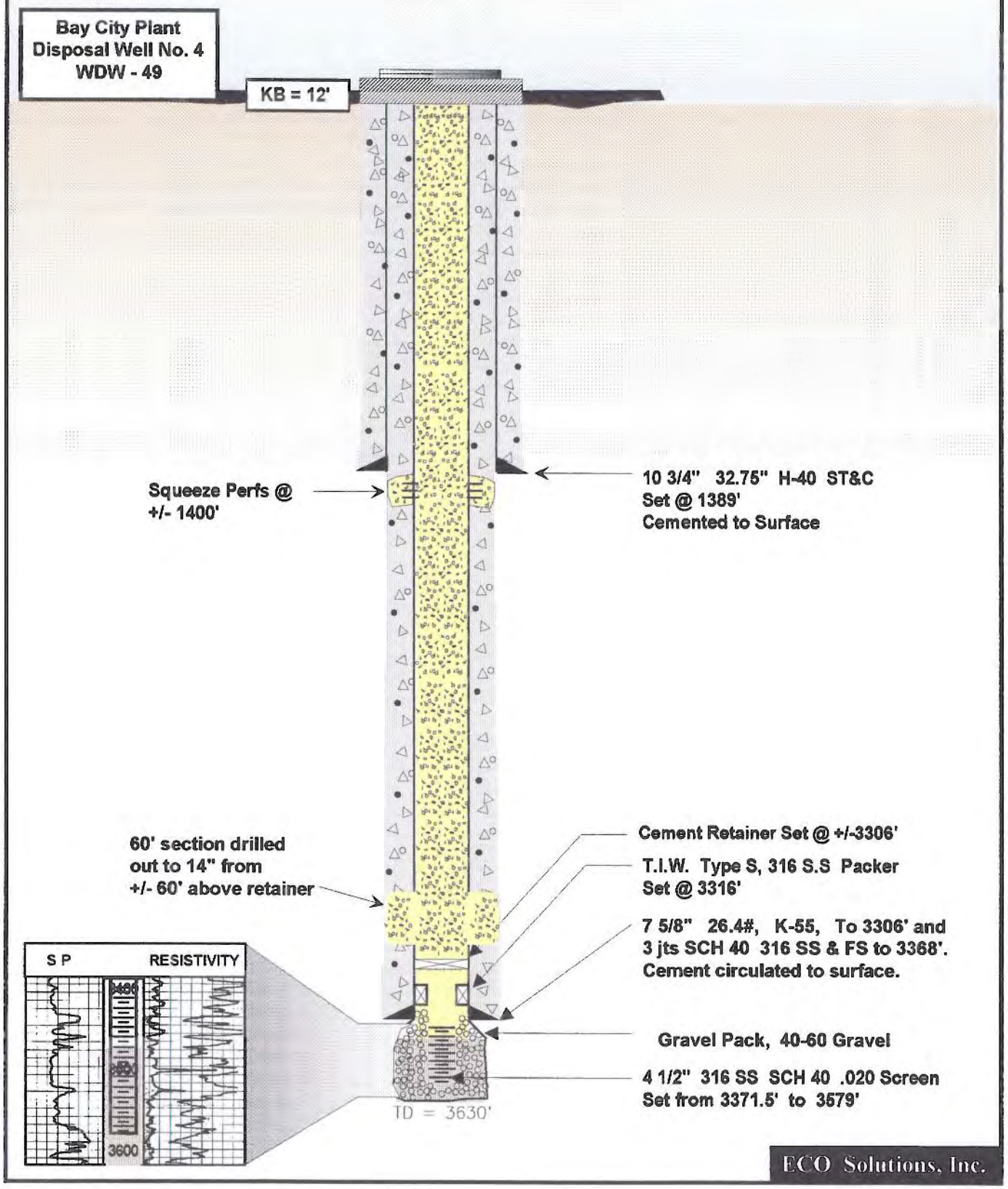
HOECHST CELANESE CHEMICAL GROUP, INC.

Bay City Plant
Disposal Well No. 3
WDW - 32



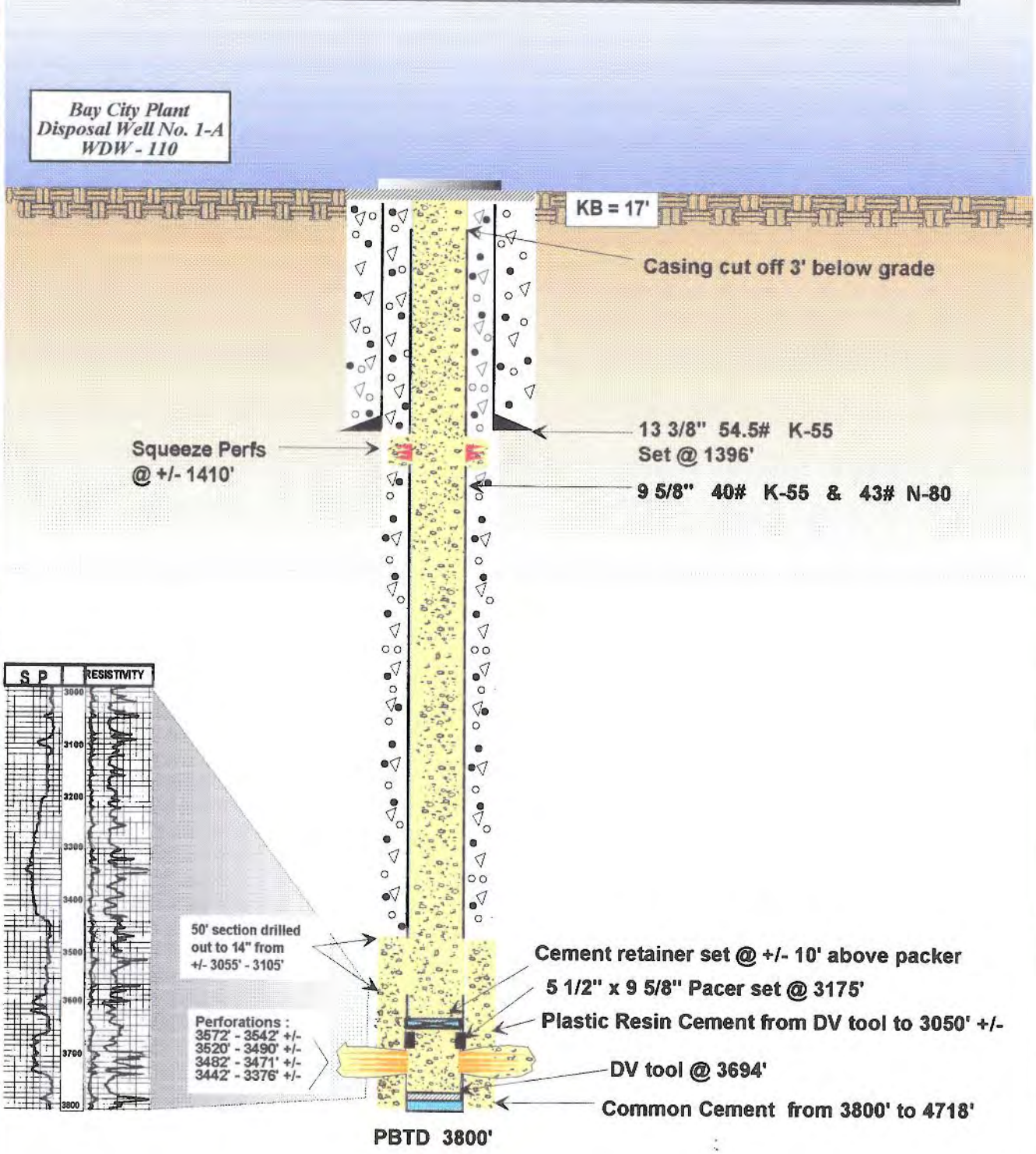
ECO Solutions, Inc.

HOECHST CELANESE CHEMICAL GROUP, INC.



ECO Solutions, Inc.

HOECHST CELANESE CHEMICAL GROUP, INC.



ECO Solutions, Inc.

DESIGNER / DB / PA-110A4 / 10-05-95

Hoechst Celanese

Chemical Group
Hoechst Celanese Corporation
Bay City Plant
PO Box 509
Highway 3057
Bay City, TX 77404-0509

November 27, 1995
IOC-077-95

FEDERAL EXPRESS MAIL

Mr. Phil Dellinger
Underground Injection Control Program
Environmental Protection Agency
1445 Ross Avenue, Suite #1200
Dallas, Texas 75202-2733

Subject: WDW-32 (PLANT WELL NUMBER 3)
1995 MECHANICAL INTEGRITY TESTING AND
BOTTOM HOLE PRESSURE/FALLOFF SURVEY REPORT
HOECHST CELANESE CHEMICAL GROUP, INC.
BAY CITY PLANT, BAY CITY, TEXAS

Dear Mr. Dellinger:

Please find enclosed herewith a copy of a letter from Mr. Wesley W. Smith, ECO Solutions, Inc., dated November 13, 1995, with the referenced 1995 Mechanical Integrity Testing and Bottom Hole Pressure/Falloff Survey Report for WDW-32.

This report is provided for your information and file. Two copies of the report were hand delivered to the Texas Natural Resource Conservation Commission Underground Injection Control personnel on Tuesday, November 14, 1995.

I can be contacted by telephone at 409/241-4197 if you have questions.

Very truly yours,

I. O. Coleman, Jr./gj

I. O. Coleman, Jr.
Staff Environmental Chemist

DS-M 9

cc: Mr. Ben Knape, Head
Underground Injection Control Unit
Texas Natural Resource Conservation Commission
P. O. Box 13087
12100 Park 35 Circle
Austin, Texas 78711-3087

SOLUTIONS, INC.

Final Report

Hoechst Celanese Chemical Group, Inc.
Bay City, Texas
MIT/Fall-off Report
Injection Well WDW-32 (Well No. 3)
October 24 - 26, 1995

ECO Solutions, Inc.
9800 Richmond Avenue
Suite 320
Houston, Texas 77042
(713) 780-1955
FAX (713) 780-0870

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1.0 INTRODUCTION AND EXECUTIVE SUMMARY

1.1 INTRODUCTION

Hoechst Celanese Chemical Group, Inc. (HCCG) contracted ECO Solutions, Inc. (ECO) to perform the annual mechanical integrity testing on their Class I nonhazardous injection well, WDW-32 (Well No. 3), located at their Bay City facility. A schematic drawing of WDW-32 is included as Figure 1. The attached report details the data and test results associated with the mechanical integrity testing.

The following provides an overview of the key elements of the testing on WDW-32 (Well No. 3).

- An Annulus Pressure Test (APT) was conducted to satisfy the annual mechanical integrity test (MIT) requirements of the Texas Natural Resource Conservation Commission's (TNRCC), Underground Injection Control (UIC) Program.
- A Radioactive Tracer (RAT) survey was conducted to satisfy the annual MIT requirements of the TNRCC.
- Bottom Hole Pressure (BHP) falloff testing was conducted to satisfy the annual ambient monitoring requirements of the U.S. Environmental Protection Agency (EPA) and the TNRCC

HCCG personnel contacted the TNRCC personnel to inform them of the MIT schedule on WDW-32 and whether a field inspector would be present. TNRCC personnel informed HCCG that no field inspector would be present for this particular MIT.

The APT on WDW-32 (Well No.3) was conducted on Thursday, October 26, 1995, and was witnessed by Mr. Wesley Smith of ECO and Mr. Ray Horton of HCCG. The RAT was conducted on Thursday, October 26, 1995, and was witnessed by Mr. Wesley Smith of ECO and Mr. Ray Horton of HCCG.

The BHP/falloff test was conducted on Tuesday, October 24, 1995 through Thursday, October 26, 1995 and was witnessed by Mr. Wes Smith of ECO and Mr. Ray Horton of HCCG.

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1.2 EXECUTIVE SUMMARY

Based on the successful results of the MIT conducted on October 26, 1995 on WDW-32, HCCG is able to return WDW-32 to injection service if required. Also, based on a decision by HCCG's Bay City management WDW-32 was brined in on October 27, 1995 using 150 barrels (42 gallons/barrel) of 10 pound per gallon (ppg) brine and left shut-in until closure operations are commenced. A summary of the results of the MIT and BHP/Falloff survey are as follows:

Radioactive Tracer Survey

The analysis of the RAT survey performed on October 26, 1995 demonstrated that no upward fluid movement from the injection interval is occurring. Additionally, this determination can be made as a result of (1) the favorable comparison of the before and after base gamma ray surveys, (2) the two multiple pass tracer surveys and the two stationary surveys conducted 20' above the packer path. All four tests showed no evidence of upward migration. This interpretation was supported by an independent evaluation provided by Atlas Wireline Services (Atlas) and is included in Appendix A together with the RAT log.

Annulus Pressure Test

A demonstration of internal mechanical integrity was supported by an APT conducted on October 26, 1995. The annulus was pressurized to a maximum of 1109 pounds per square inch gauge (psig). The APT was monitored for eighty minutes. During the final 30 minutes the pressure loss was measured from 1102 to 1101 psig, or 1 pound per square inch (psi) (0.1%), which is well within the 5% pressure loss criteria set by the TNRCC. The APT plot is included in Appendix B.

Bottom Hole Pressure Falloff Survey

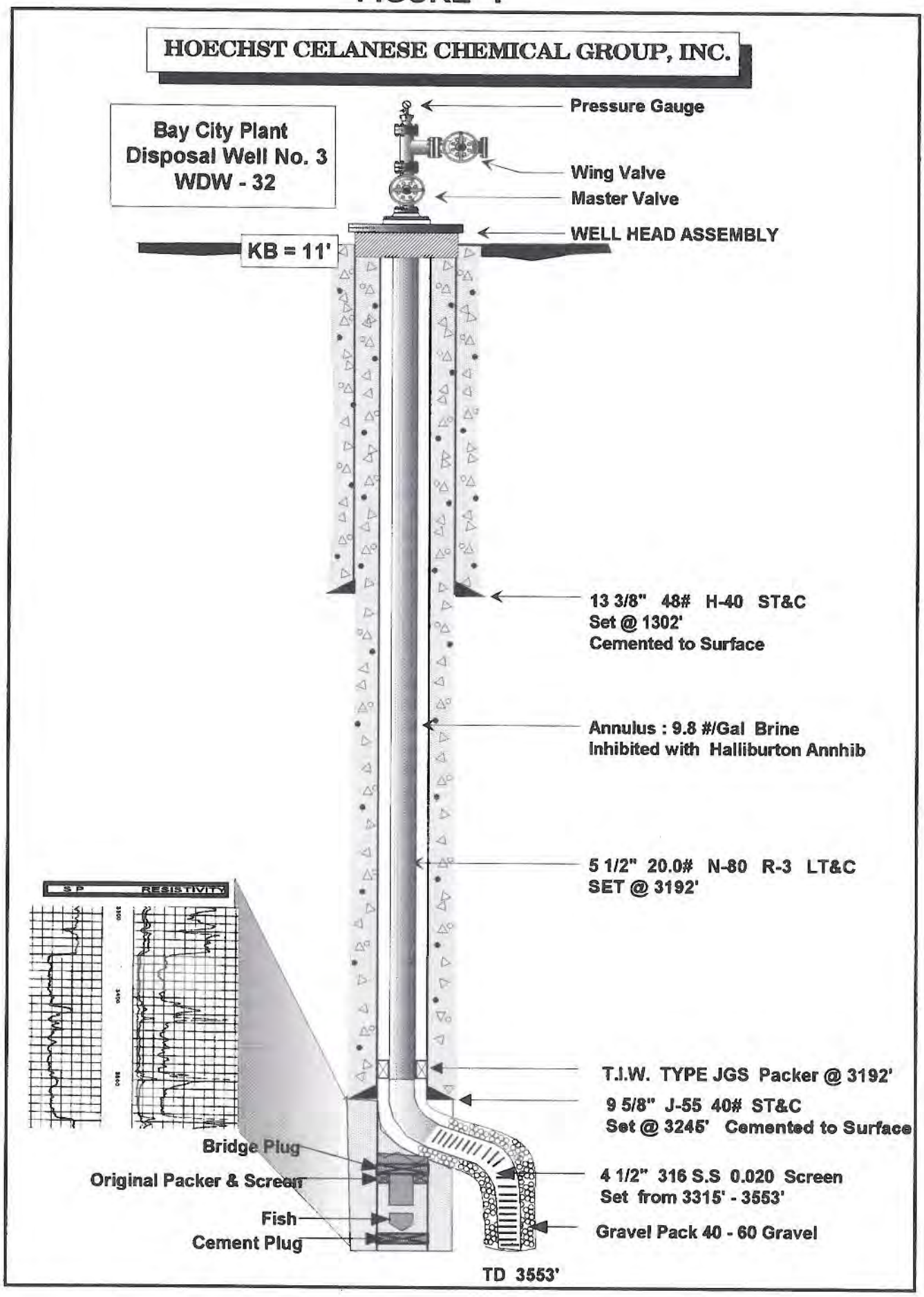
Waste stream fluid was injected into WDW-32 at a steady rate of 150 gpm for 96 hours and was shut-in for a total of 34 hours. The shape of both the pressure and pressure derivative curves on a log-log plot at early times are reasonable, but are similar to the test conducted in January 1995. A full discussion of the falloff analyses is presented in Section 4.0.

Overall Field Work Conclusion

All field work associated with the MIT/BHP/Falloff survey on HCCG's WDW-32 at the Bay City Plant conducted from October 24 through 27, 1995 was successfully completed. WDW-32 is considered to be mechanically sound at this time and is suitable for further use as a Class I waste injection well.

In accordance with the TNRCC/UIC Program, 31TAC, 331.4 and 331.43, the mechanical integrity test conducted on WDW-32 demonstrated that (1) 'there is no significant leak in the casing, tubing or packer" and (2) 'there is no significant fluid movement into an underground source of drinking water (USDW) through vertical channels adjacent to the injection borehole."

FIGURE 1


HOECHST CELANESE CHEMICAL GROUP, INC.
Bay City Plant
Disposal Well No. 3
WDW - 32
Pressure Gauge
Wing Valve
Master Valve
WELL HEAD ASSEMBLY
KB = 11'
13 3/8" 48# H-40 ST&C
Set @ 1302'
Cemented to Surface
Annulus : 9.8 #/Gal Brine
Inhibited with Halliburton Annhib
5 1/2" 20.0# N-80 R-3 LT&C
SET @ 3192'
SP
RESISTIVITY
T.I.W. TYPE JGS Packer @ 3192'
9 5/8" J-55 40# ST&C
Set @ 3245' Cemented to Surface
Bridge Plug
Original Packer & Screen
Fish
Cement Plug
4 1/2" 316 S.S 0.020 Screen
Set from 3315' - 3553'
Gravel Pack 40 - 60 Gravel
TD 3553'

2.0 FIELD OPERATIONS SUMMARY

2.1 BOTTOM HOLE PRESSURE FALLOFF SURVEY

Friday, October 20, 1995

Brought injection up to 150 gallons per minute (gpm) at 1800 hours.

Saturday, October 21 - Monday, October 23, 1995

Continued injecting at steady rate of 150 gpm.

Tuesday, October 24, 1995

Arrived at plant location at 0700, checked in with front gate. After meeting with Mr. Paul Richardson and Mr. Ray Horton, went to site of WDW-32 at 0740 hours. Effluent was being injected at well head pressure (WHP) = 610 pounds per square inch gauge (psig). At 0830 hours Mr. Ray Horton processed Wes Smith (ECO), Doug Beall and Mike Staley Milton M. Cooke Company (Cooke) through HCCG's contractor safety orientation check list. Cooke wireline rigged up on well. NOTE: All depths are referenced to rotary drive bushing (RKB) at 11' above ground level.

WDW-110 (Well No. 1-A)	out of service
WDW-14 (Well No. 2)	out of service
WDW-32 (Well No. 3)	active/injecting
WDW-49 (Well No. 4)	out of service

Checked with Paul Richardson @ control room. WDW-32 injecting approximately 150 gpm. At 0840 made run through gauge calibrations:

EPG 520 Serial # 85954 (Surface ReadOut) - Range 0 - 2500 psia.
EMS 725 Serial # 79993 (Back-up, Memory gauge)

Met with Ray Horton at 0900 hours to review test procedures and current condition of well. At 0910 hours placed tool string in lubricator (18 ft. length) as follows:

Length	Description
0.5'	Cable head
1'	Collar locator
1-1/2'	EPG 520 (SRO gauge)
4-1/2'	EPG 725 (memory gauge)
5'	weight bar
5'	weight bar

At 1045 hours opened master valve, pressured up lubricator, and prepared to go in hole. At 1056 hours check SRO gauge (WHP = 613.66 pounds per square inch absolute (psia)), going in hole. Prepare to tie into packer (RAT survey) with casing collar locator (CCL). Turned on CCL, making passes correlating strip chart. At 1200 hours tool @ 3204 ft., begin logging up hole.

Finished CCL log at 1140 hours, set gauges @ 3192 feet. Monitor injection bottom hole pressure and temperature.

At 1244 hours began monitoring injection period of test.

Injection rate	150 gpm
Down hole injection pressure	1843 psia
Surface injection pressure	610 psig

Continue monitoring injection period of test. Readings at 1600 hours:

Injection rate	150 gpm
Down hole injection pressure	1843 psia
Surface injection pressure	610 psig

Met with shift supervisor, prepared to shut-down injection operations. Stop injection pumps at 1800 hours and begin fall-off test. Double block @ injection line manifold.

Final injection conditions:

Injection rate	150 gpm
Down hole injection pressure	1842.22 psia
Surface injection pressure	610 psig

Continue monitoring fall-off period of test at 2200 hours.

Shut-in down hole pressure	1472.16 psia
Surface	72 psig

Wednesday, October 25, 1995

Continue monitoring fall-off period of test (0800 hours).

Shut-in down hole pressure	1469.80 psia
Surface shut-in pressure	69 psig

2200 hours continue monitoring fall-off period of test.

Shut-in down hole pressure	1469 psia
Surface shut-in pressure	68 psig

Thursday, October 26, 1995

0200 hours continue monitoring fall-off period of test.

Shut-in down hole pressure	1468 psia
Surface shut-in pressure	67 psig

At 0400 hours stop recording downhole pressures, download ASCII data file, and perform preliminary analysis. Pull out of hole with tool, making static gradient stops (15 minutes/stop) at 3000', 2500', 2000', 1500', 1000', 500' and surface.

Final shut-in pressures/temperature

Shut-in down hole pressure	1468 psia
Shut-in down hole temperature	104 Deg. F
Surface shut-in pressure	67 psig

At 0700 hours gauges in lubricator and end of pressure falloff survey. Begin rigging down wireline equipment. Cooke crew leaving location at 0930 hours.

2.2 MECHANICAL INTEGRITY TEST

Thursday, October 26, 1995

At 0730 hours Wes Smith of ECO and Ray Horton of HCCG met at the front entrance to the Bay City plant and traveled to WDW-32 and met with Mr. Wilson Cupples with HCCG's instrument group. WDW-32 was shut-in with 200 psig on the tubing gauge and 67 psig on the annulus. Also, HCCG's site recorder was operational. A certified calibrated pressure instrument, Eaton Pressure Sensor, Type UPC 5000 BACB with

ranges from zero to 400, zero to 1,000 and zero to 2,000 psig, was installed onto the annulus outlet. NOTE: The zero to 2,000 psig range was utilized for this test. HCCG personnel pressurized the annulus system using nitrogen. The annulus was tested to a maximum pressure of 1109 psig. The annulus was monitored for 80 minutes. During the final 30 minute period, the pressure loss on the annulus was measured from 1102 to 1101 psig, or 1 psi (0.1%). After completion of the APT, the nitrogen gas was bled off and the annulus pressure lowered to 175 psig. WDW-32 was left shut-in.

At 1030 hours Atlas Wireline Service (Atlas) personnel arrived at HCCG's Bay City plant, checked through security and Atlas' personnel went through safety orientation. Moved in and rigged up Atlas' wireline unit including radioactive (RA) tools on WDW-32. At 1350 hours started the RAT survey as witnessed by Mr. Ray Horton of HCCG and Mr. Wes Smith of ECO. Ran tool to a maximum depth of 3250', or slightly above the disposal interval, due to damaged tubulars located immediately below this depth. Ran base gamma ray (GR) log, a short repeat section and one statistical check. Ran multiple pass survey from 3250' to 2900' with an injection rate of 50 gpm, depicting that all injected fluid was entering the lower injection interval. Repeated multiple pass survey and obtained similar positive results. Set the RAT tool at 3172' for a stationary survey, injected a RA at the same injection rate and monitored for 20 minutes with no upward flow indicated. Repeated stationary log with same results. Ran the final baseline GR log from 3250' to 2900' with no hot spots indicated. Completed the RAT survey at 1720 hours and pulled the tool out of the hole. Rigged down Atlas and moved the unit off site. WDW-32 was left shut-in. Note: Plan to brine in WDW-32 on October 27, 1995.

3.0 MECHANICAL INTEGRITY TESTING

3.1 ANNULUS PRESSURE TEST

An APT was conducted on Thursday, October 26, 1995 in order to demonstrate internal mechanical integrity. The APT was witnessed by Mr. Ray Horton of HCCG and Mr. Wesley Smith of ECO. The annulus was pressurized to a maximum pressure of 1109 psig with 67 psig on the tubing. The APT was monitored for eighty (80) minutes using a certified calibrated pressure gauge and facility recorder. During the final 30 minutes the pressure loss was measured from 1102 to 1101 psig, or 1 psi (0.1%), which was well within the 5% pressure loss criteria set by the TNRCC. An APT plot is included in Appendix B.

3.2 RADIOACTIVE TRACER SURVEY

On Thursday, October 26, 1995 a RAT survey was conducted by Atlas to insure that all fluids are entering the injection interval. Analysis of the RAT showed no upward fluid movement. Atlas and ECO conducted the RAT as follows:

1. Ran API gamma-ray (GR) tie-in strip.
2. Ran initial baseline GR log from 3250' to 2900'.
3. Ran repeat gamma-ray log from 3250' to 3000' to confirm tool repeatability.
4. Ran 5-minute statistical check at 3172'.
5. Made multiple pass survey #1 with RA slug ejected at 2900' and a pump rate of 50 gpm.
6. Made multiple pass survey #2 with a RA slug ejected at 2800' and a pump rate of 50 gpm.
7. Ran stationary survey #1 at 3172'. Watched RA slug pass tool and monitored for 20 minutes. Pump rate 50 gpm.
8. Ran stationary survey #2 at 3172'. Watched RA slug pass tool and monitored for 20 minutes. Pump rate 50 gpm.
9. Ran after survey base log from 3250' to 2900'.

3.3 ESTIMATED TIME TO RUN STATIONARY SEQUENCE

The purpose of the estimate is to calculate the "worst case" time for the radioactive slug to move from the GR tool (1) down the tubing, (2) into the screen, and (3) up the liner/casing/borehole annulus to the tool depth.

Basic Data:

Capacities:	5-1/2" tubing	-	0.9314 gal/ft.
	4-1/2" screen	-	0.653 gal/ft.
	4-1/2" screen x 12-1/4" borehole	-	5.296 gal/ft.
	9-5/8" casing x 12-1/4" borehole	-	2.343 gal/ft.
Pump Rate:	50 gpm		

Note: RAT detection tool was held stationary at 3172 feet, or 143 feet above the top of the screened liner.

Worst Case Calculations:

Volumes:	Tubing	- 20 ft. x 0.9134 gal/ft.	=	18.6
	Screen	- 123 ft. x 0.653 gal/ft.	=	80.3
	Screen/borehole	- 123 ft. x 5.296 gal/ft.	=	651.4
	Casing/borehole	- 20 ft. x 2.343 gal/ft.	=	46.9
		TOTAL		797.2 gallons

Calculated time to circulate RA slug around the end of the tubing and screen liner strings:

= 797.2 gal / 50 gpm

= 15.9 minutes

Note: Actual time surveys were run = 20 and 21 minutes

4.0 BOTTOM HOLE PRESSURE FALLOFF

Purpose Of Test: Required annual Reservoir Evaluation Test for year **1995.** Calculate the following reservoir characteristics: permeability, skin damage, pressure drop due to skin and flow efficiency.

4.1 FALLOFF TEST SUMMARY OF RESULTS

Method Of Interpretation: The following analysis was performed by utilizing both Semi-Log and Log-Log analysis. **A)** The Semi-Log curve was generated by plotting the standard Horner plot, **Pressure vs** $[(t_p+\Delta t)/\Delta t]$, using an injection time (t_p) of 96 hours. The semi-log straight line was calculated by linear regression through the infinite acting flow period of the curve. The slope **m**, P_{1hr}, and **P*** values were obtained from this curve and utilized for permeability and skin calculations. **B)** The Log-Log curves were generated by plotting **ΔP** and **Pressure derivative** vs the Agarwal Equivalent time function, $[t_p\ \Delta t/(t_p+\Delta t)]$. The Log-Log curves were simultaneously positioned over Gringarten type curves until a solution match was obtained. Permeability and skin values were calculated from this match and then compared with those obtained from the Semi-Log analysis.

A. Semi-Log (Horner) The straight line area of the semi-log curve was identified by first using the 1-1/2 log cycle rule to estimate the end of wellbore storage effects. Secondly, the time of the plat portion from the Pressure Derivative curve was used in determining the area of the semi-log curve in which the straight line was drawn. The semi-log straight line yielded a slope value of **4.876 psi/cycle** and a P_{1hr} of **1475.9 psi.** The pressure difference between P_{1hr} and the injection pressure, P_{inj} of **1843.2** psi followed with the calculated slope would give indications of positive skin damage and high permeability.

B. Non-Linear Regression Using a homogeneous storage-skin-boundaries model, a non-linear regression routine was accessed to estimate the permeability, skin effect, and storage capacity that best fit the pressure data. The results of these computations are shown in the accompanying tables and are in excellent agreement with the results of the Horner plot.

C. Log-Log (Pressure and Pressure Derivative Plots) Figure 4 is a type-curve plot of the measured pressure data. Because of the high skin-effect and the high permeability of the formation, the pressure data lie above the existing type curves; consequently, type-curve analysis was not possible. However, the derivative plot shows that the middle time flow regime had been reached.

Conclusions This particular well was diagnosed to be injecting into a homogeneous reservoir with a calculated permeability of **737.5 (md)** and skin damage of **79.8** utilizing an h_{net} value of **165** feet. The flow efficiency of **19%** suggests that the near wellbore properties have a large affect on the injection volume limitations. The total pressure drop is primarily due to formation damage within a small radius from the well.

The following Table is provided to give comparative results with the previous tests and calculations. The primary variables affecting the calculated results are included.

Table 4.1

Summary of Results

Date MM/YY	Rate gpm	h_{net} ft	μ_w cp	slope psi/cycle	kh/μ	kh md-ft	k md	Skin
10/95	150	165	0.7100	4.876	171387	121685	738	+80
01/95	144	165	0.7100	3.848	208622	148122	897	+99
10/93	133	165	0.7017	4.558	163594	114789	696	+83

The calculated results indicate a difference in transmissibility, (kh/μ) of **17.8%** coupled with a **19.2%** difference in skin values between January and October 1995. In addition, the results calculated from non-linear regression analysis compare favorably to those calculated from the semi-log straight line analysis thus supporting the integrity of the calculated results. This compares to the petition transmissivity of 313,700 md-ft/cp.

The start time of the infinite acting flow period exceeded the time to exit the waste front, therefore the viscosity of the original reservoir fluid was used for the final analysis. The program used for final analysis and well simulation was "FAST", marketed by Fekete.

The formation pressures predicted by the model assume no formation damage effects or other near-bore well conditions. The measured flowing pressures corrected for skin effects and maximum predicted operational pressures are presented in the Table below:

Table 4.2

Formation Pressures

Well Name	Flowing Formation Pressures, psia	Skin Pressure Loss, psia	Revised Formation Pressure, psia	Maximum Modeled Pressure, psia
WDW-32 (Well No. 3)	1950.27 @ 3440'	338	1612	1641

The measured flowing pressure is below the maximum modeled operational pressure by more than 29 psi for WDW-32. A graph of the modeled pressures for WDW-32 is included as Appendix E. The graph shows the yearly predicted operations formation pressure (1991 through the end of 2000) using maximum modeled injection rates (250 gpm in each well). All predicted operational pressures correspond to a depth of 3440 feet below ground level and an original estimated formation pressure for the upper Miocene injection interval of 1555 psia.

The measured static formation pressures from the well tests, corrected to a depth of 3440 feet below ground level, show a formation pressure increase of 21 psi. This illustrates that injection operations at the plant have had limited impact on formation pressures and should continue to have limited impact on formation pressures in the future.

Table 4.3

Static Formation Pressure

Well	Static Formation Pressure, psia @ 3440'	Formation Pressure Increase, psia
WDW-32 (Well No. 3)	1576	+21

Table 4.4
Well Information

Well Type - INJECTION
Perforations: 3315' - 3553' (Gravel Pack Screen)

Gauge Depth 3192 feet

[Input Parameters]

Reservoir Pressure	psia	P	1469
Reservoir Temperature	Deg F	T	98
Final Static Pressure	psia	P_{si}	1469
Final Injection Pressure	psia	Pinj	1843.2
Water Flow Rate	gal/min	qw	150
Sand Thickness	feet	h_{net}	165
Wellbore Radius	feet	r_w	0.5830
Formation Porosity	%	ϕ	33.0
Extrapolated Pressure	psia	P*	1466.2
Extrapolated Press @ 1hr	psia	P_{1hr}	1475.9
Semi-Log Slope	psi/cycle	M	4.876
Production Time	hrs	t_p	96
Shut-in Time	hrs	t_{si}	34

[Fluid Properties]

Fluid Viscosity	cp	μw	7.1000E-01
Formation Volume Factor	RB/STB	βw	1.0
Fluid Compressibility	1/psi	Cw	3.0E-06
Total Compressibility	1/psi	Ct	6.0E-06

Table 4.5
Calculated Results

[Semi-Log Analysis - Horner Method]

Transmissibility	md-ft/cp	kh/u	171,387
Flow Capacity	md-ft	kh	121,685
Permeability	md	k	737.5
Skin Damage	total	S	+79.8
Pressure Drop due to Skin	psi	dP	+338
Flow Efficiency	%	FE	+19
Drainage Radius	feet	r_d	1179

Figure 2 Semi-Log (Horner)

Figure 3 Semi-Log (Horner Expanded View)

Figure 4 Semi-Log (Horner Simulated Data)

Figure 5 Dimensionless (Type Curve)

Figure 6 Derivative (Type Curve)

FIGURE 2

HORNER
PRESSURE FALLOFF PLOT

HOECHST CELANESE
WDW-32 NO.3

PRESSURE FALL-OFF TEST
OCTOBER 24-26, 1995

$[k_1/u]_t$=1038.71 k_1=737.49 md s=79.8 p*=1466.2

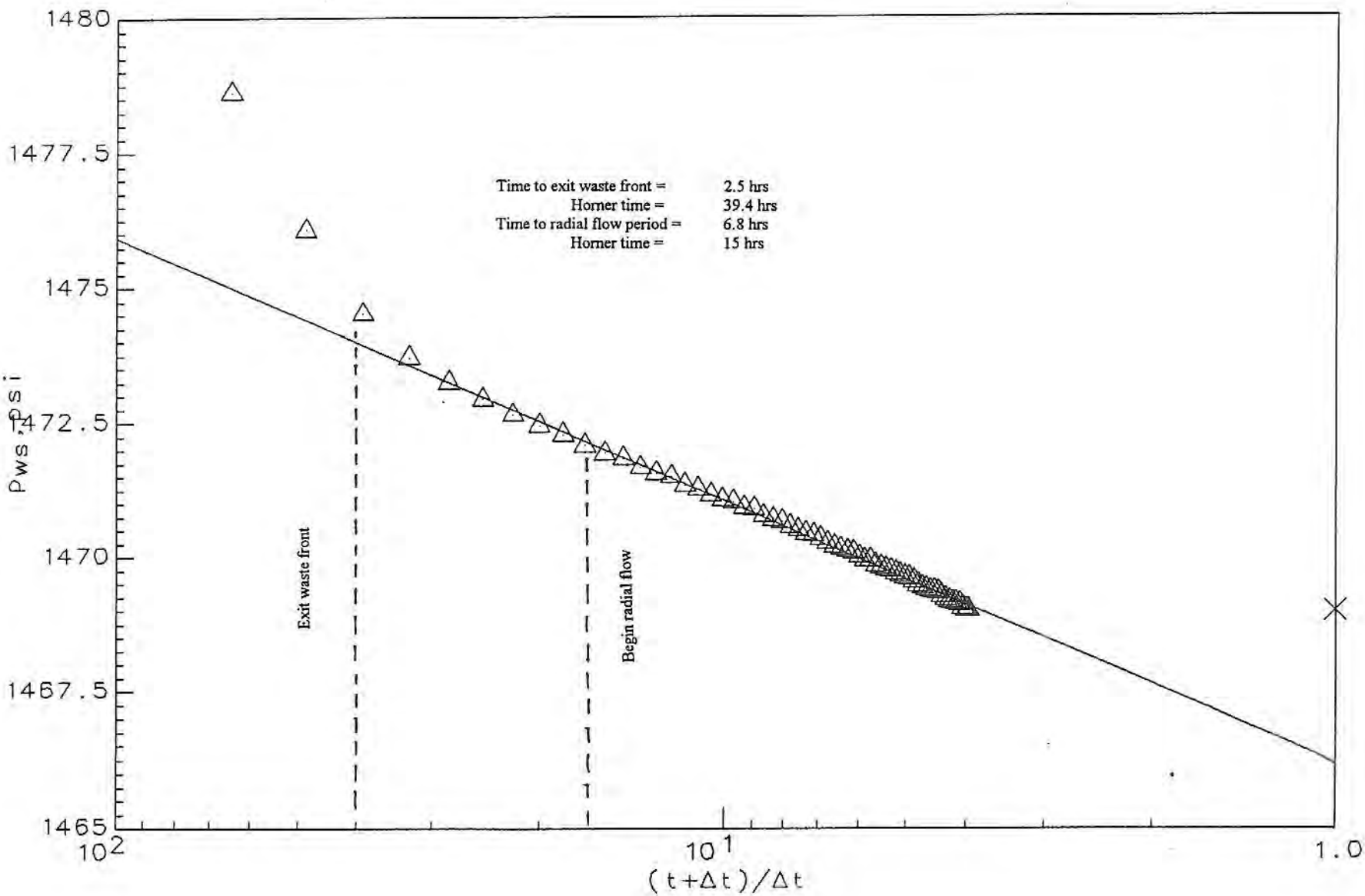


FIGURE 3

HORNER
PRESSURE FALLOFF PLOT

HOECHST CELANESE
WDW-32 NO.3

PRESSURE FALL-OFF TEST
OCTOBER 24-26, 1995

$[k_1/u]_t$=1038.71 k_1=737.49 md s=79.8 p^*=1466.2

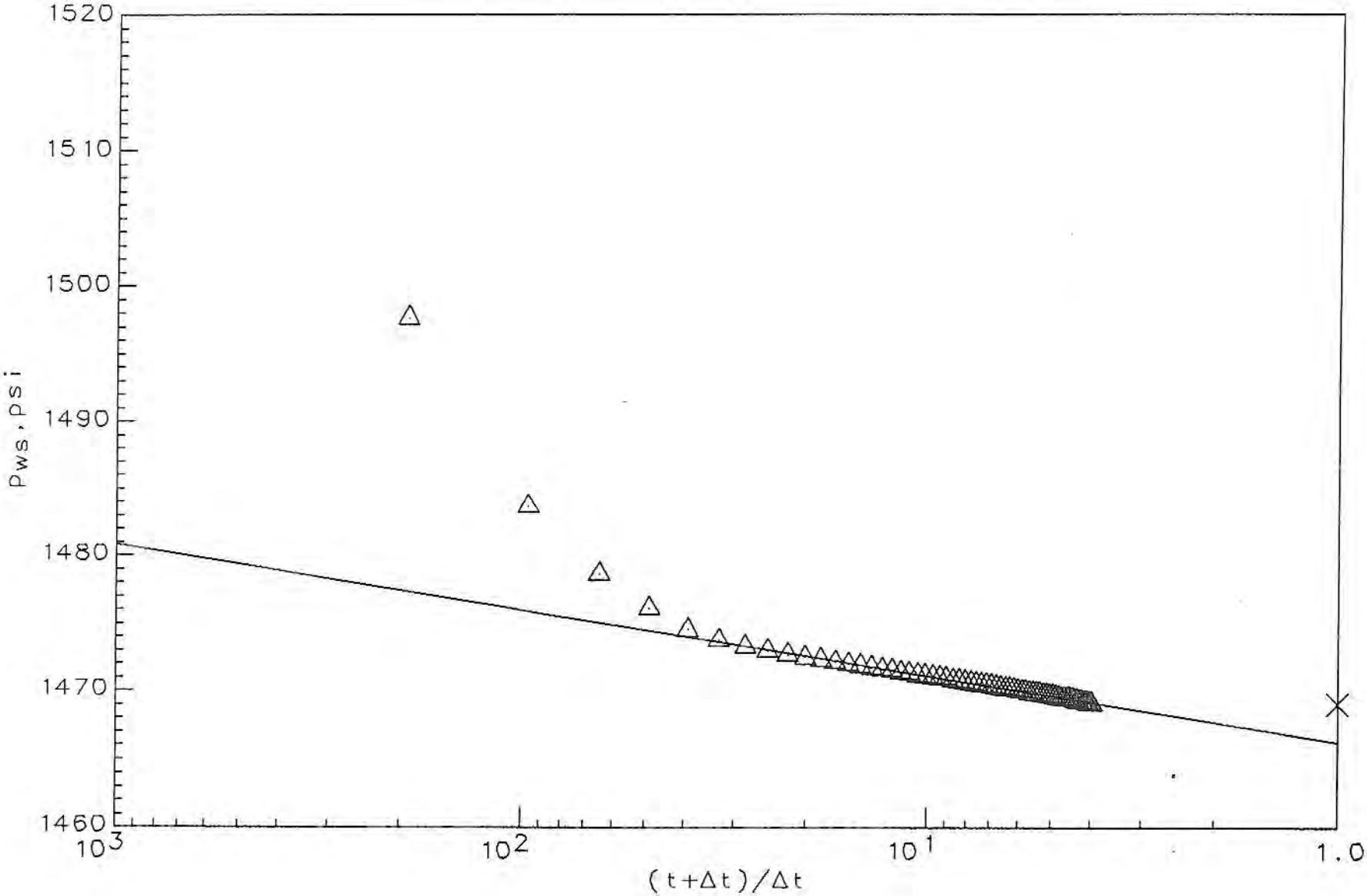


FIGURE 4

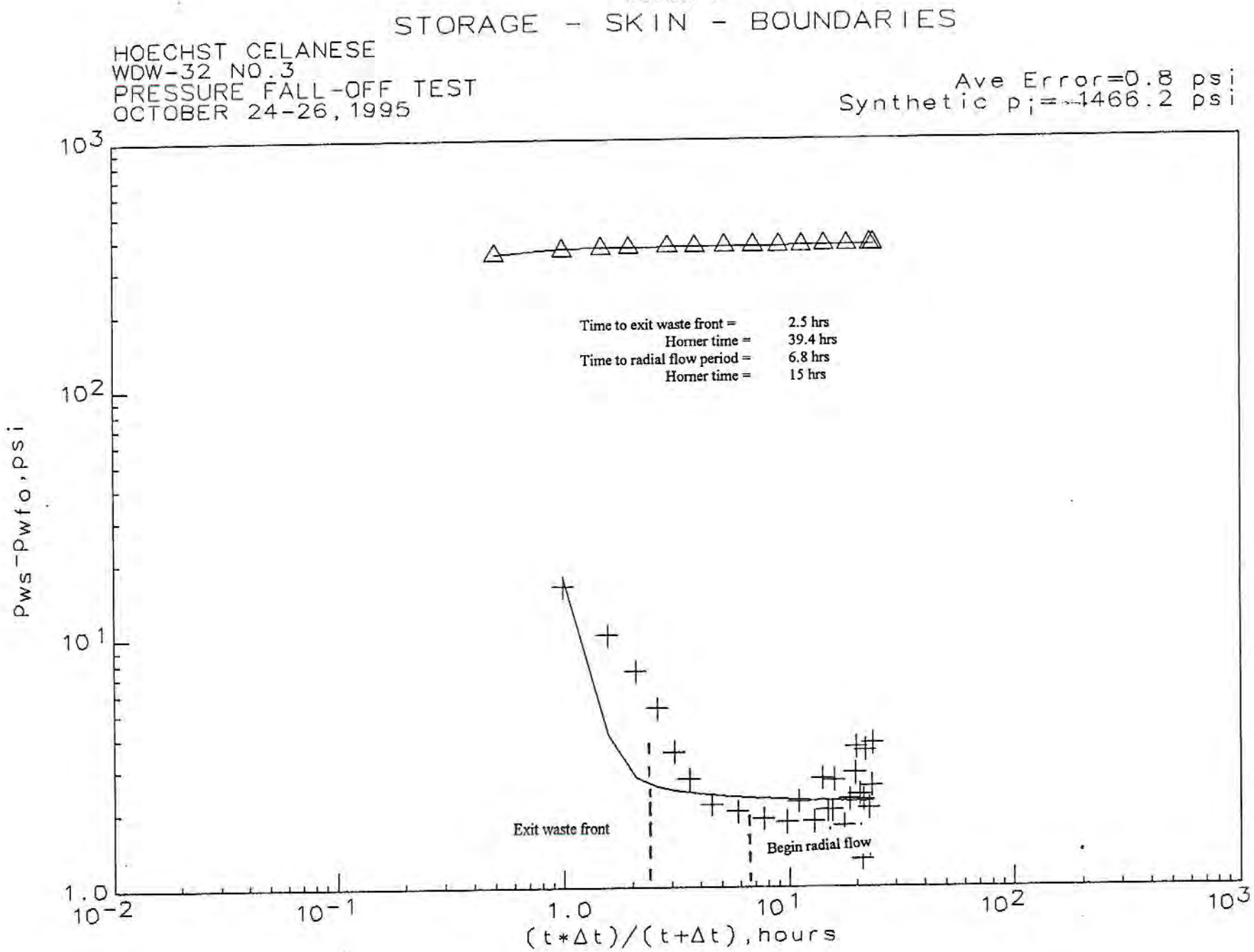

STORAGE - SKIN - BOUNDARIES
HOECHST CELANESE
WDW-32 NO.3
PRESSURE FALL-OFF TEST
OCTOBER 24-26, 1995
Ave Error=0.8 psi
Synthetic pi=1466.2 psi
Time to exit waste front = 2.5 hrs
Horner time = 39.4 hrs
Time to radial flow period = 6.8 hrs
Horner time = 15 hrs
Exit waste front
Begin radial flow
pws-pwfo, psi
(t*Δt)/(t+Δt), hours
10^3
10^2
10^1
1.0
10^-2
10^-1
1.0
10^1
10^2
10^3

FIGURE 5

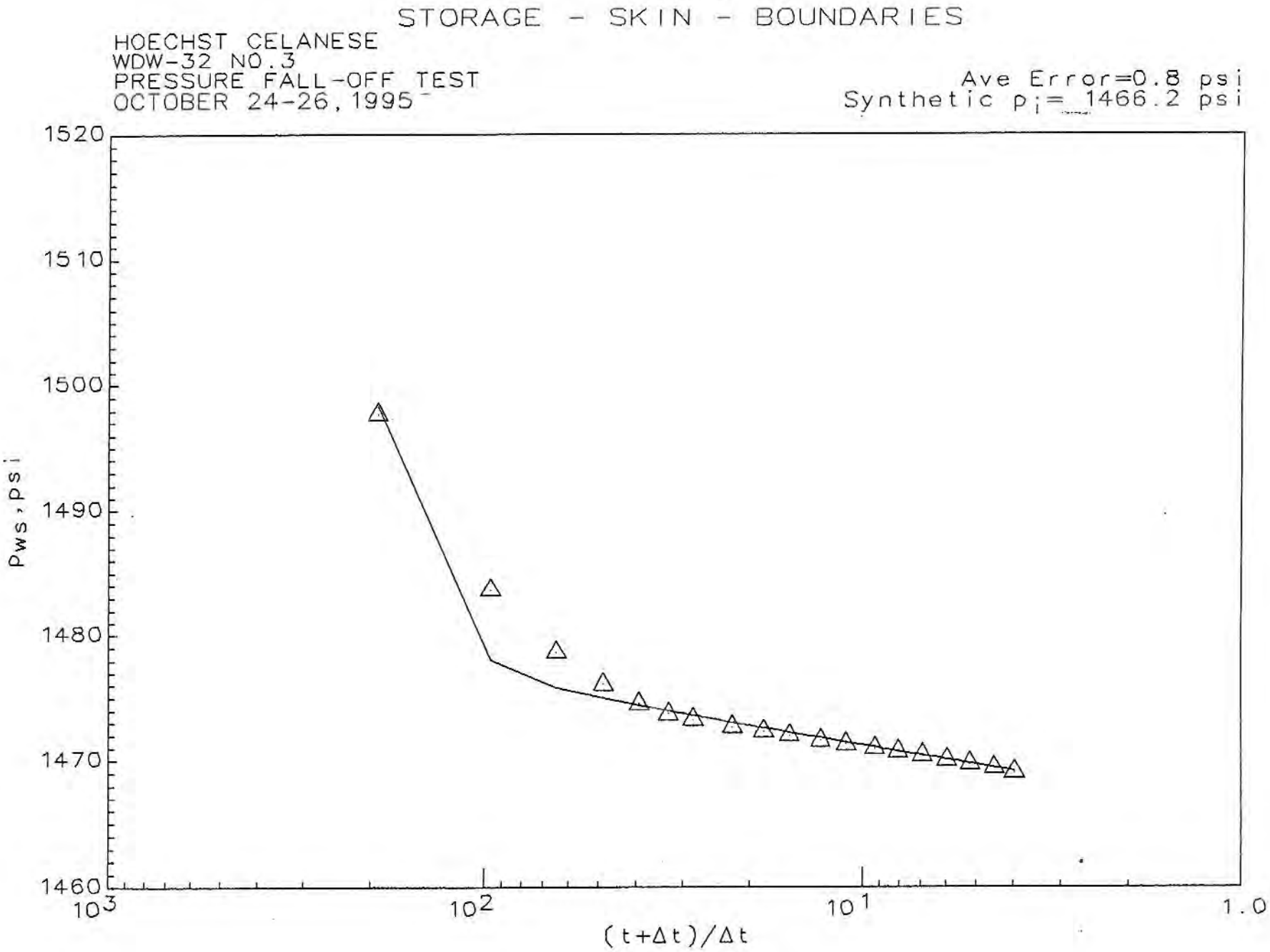

STORAGE - SKIN - BOUNDARIES
HOECHST CELANESE
WDW-32 NO.3
PRESSURE FALL-OFF TEST
OCTOBER 24-26, 1995
Ave Error=0.8 psi
Synthetic pi= 1466.2 psi
1520
1510
1500
1490
1480
1470
1460
Pws, psi
10^3
10^2
10^1
1.0
(t+Δt)/Δt

FIGURE 6

STORAGE AND SKIN TYPECURVE (Bourdet et al)

PRESSURE FALLOFF PLOT

HOECHST CELANESE
WDW-32 NO.3

PRESSURE FALL-OFF TEST
OCTOBER 24-26, 1995

$[k_1/u]_t$=744.09 k_1=528.30 C_D=1900 s= -

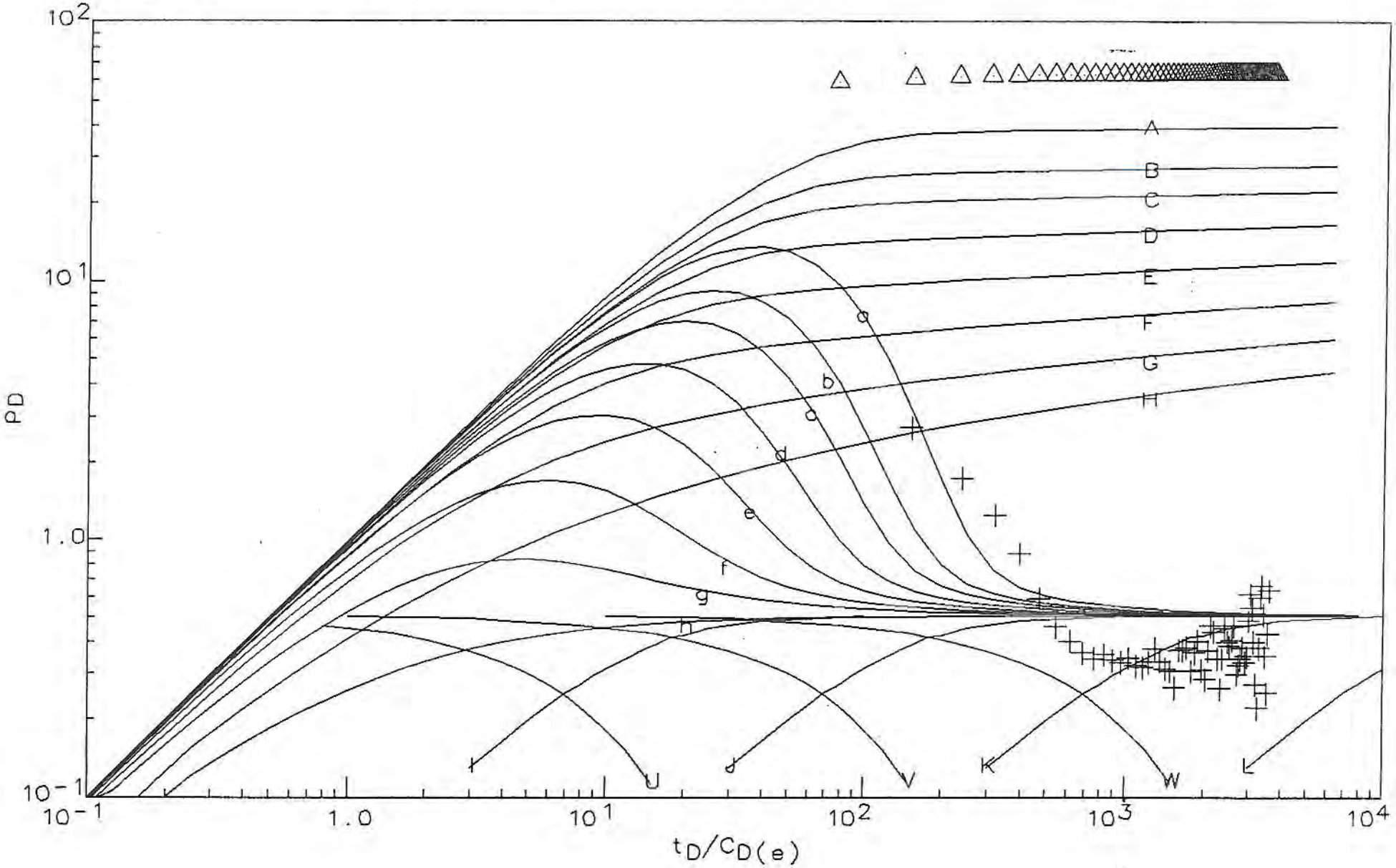


Table 4.6
FALLOFF TEST

Radial Flow Analysis

(Horner Time)

HOECHST CELANESE
WDW-32 (WELL NO. 3)

PRESSURE FALL-OFF TEST
OCTOBER 24-26, 1995

Reservoir Parameters

Net Pay	h =	165.00	ft	
Total Porosity	phit =	33.00	%	
Water Saturation	Sw =	0.00	%	
Wellbore Radius	r_w =	0.58	ft	
Formation Temperature	T =	98.00	deg F	
Formation Compressibility	c_f =	3.000×10^{-06}	psi^{-1}	
Total Compressibility	c_t =	6.000×10^{-06}	psi^{-1}	<DEF>

Table 4.6 (Continued)

Radial Flow Analysis

(Horner Time)

HOECHST CELANESE
WDW-32 (WELL NO. 3)

PRESSURE FALL-OFF TEST
OCTOBER 24-26, 1995

Zone 1

Pressures

Initial Pressure	pi =	1469.0	psi
Extrapolated Pressure	p* =	1466.2	psi
Average Reservoir Pressure	pR =	-	psi
Final Flowing Pressure	pwfo =	1843.2	psi

Straight Line Results

Total Sandface Rate	QTBT =	5143.00	bbl/d
Semilog Slope	msl =	4.9	psi/cycle
Transmissivity (Total)	kh/mu =	171387.54	md.ft/cp
Mobility (Total)	k/mu =	1038.712	md/cp
Flow Capacity (Oil)	kh =	121685.15	md.ft
Permeability (Oil)	k =	737.49	md
Skin Effect (Total)	s =	79.813	
Pressure Drop Due To Skin	delps =	338.2	psi
Flow Efficiency	FE =	0.19	
Damage Ratio	DR =	5.18	
Radius Of Investigation	r(inv) =	-	ft
@ Time Of Investigation	t(inv) =	-	hr

Table 4.6 (Continued)

Radial Flow Analysis

(Horner Time)

HOECHST CELANESE
WDW-32 (WELL NO. 3)

PRESSURE FALL-OFF TEST
OCTOBER 24-26, 1995

Zone 1

Extended Rates

3 - Month Constant Rate	=	-	bbl/d
6 - Month Constant Rate	=	-	bbl/d

Stabilized Rate

Time To Stabilize	ts =	5.038	hr
Stabilized Rate @ Current Skin	qs =	-5811.16	bbl/d
Stabilized Rate @ Skin Of 0	qs =	-65862.12	bbl/d
Stabilized Rate @ Skin Of -4	qs =	-136615.27	bbl/d

Table 4.7

Model Parameters

Storage - Skin - Boundaries Model

HOECHST CELANESE
WDW-32 (WELL NO. 3)

PRESSURE FALL-OFF TEST
OCTOBER 24-26, 1995

Synthetic Initial Pressure	=	1466.2	psi

Formation Parameters

Transmissivity (Total)	kh/mu =	168683.15	md.ft/cp
Mobility (Total)	k/mu =	1022.322	md/cp
Flow Capacity	kh =	119765.03	md.ft
Permeability	k =	725.85	md
Skin	s =	78.434	
Wellbore Storage Constant (dim.)	CD =	810.75	
Inter Porosity Coeff	Lambda =	-	
Storativity Ratio	Omega =	-	

N.B. Origin At Lower Left Corner

Reservoir Length	(xe) =	100000	ft
Reservoir Width	(ye) =	100000	ft
Active Well At	xw =	50000	ft
Active Well At	yw =	50000	ft

Table 4.8
SYNTHESIZER

Storage - Skin - Boundaries Model

HOECHST CELANESE
WDW-32 (WELL NO. 3)

PRESSURE FALL-OFF TEST
OCTOBER 24-26, 1995

Injection Pressure

Final Injection Rate	qo =	-5143.00	bbl/d
Final Flowing Pressure	Pwfo =	1843.2	psi

Fluid Properties

Reference Pressure	pRef =	500.0	psi
Solution Gas Oil Ratio	Rso =	1.0	scf/bbl

Reservoir Parameters

Net Pay	h =	165.00	ft
Total porosity	phit =	33.00	%
Water Saturation	Sw =	0.00	%
Wellbore Radius	rw =	0.58	ft
Formation Temperature	T =	98.00	deg F
Formation Compressibility	cf =	$3.000 \times 10^{-06} psi^{-1}$	
Total Compressibility	ct =	$6.000 \times 10^{-06} psi^{-1}$	<DEF>

Table 4.8 (Continued)
SYNTHESIZER

Storage - Skin - Boundaries Model

HOECHST CELANESE
WDW-32 (WELL NO. 3)

PRESSURE FALL-OFF TEST
OCTOBER 24-26, 1995

Synthesis Results

Average Error	=	0.8	psi
Initial Pressure	pi =	1469.0	psi
Average Reservoir Pressure	pR =	1466.2	psi
Pressure Drop Due To Skin	delps =	-	psi
Flow Efficiency	FE =	1.90	
Damage ratio	DR =	0.53	

Extended Rates

3 - Month Constant Rate	=	-5052.60	bbl/d
6 - Month Constant rate	=	-5032.69	bbl/d
1 - Year Constant Rate	=	-5008.53	bbl/d
1 - Year Constant Rate @ Skin Of 0	=	-39209.68	bbl/d
1 - Year Constant Rate @ Skin Of -4	=	-60160.14	bbl/d

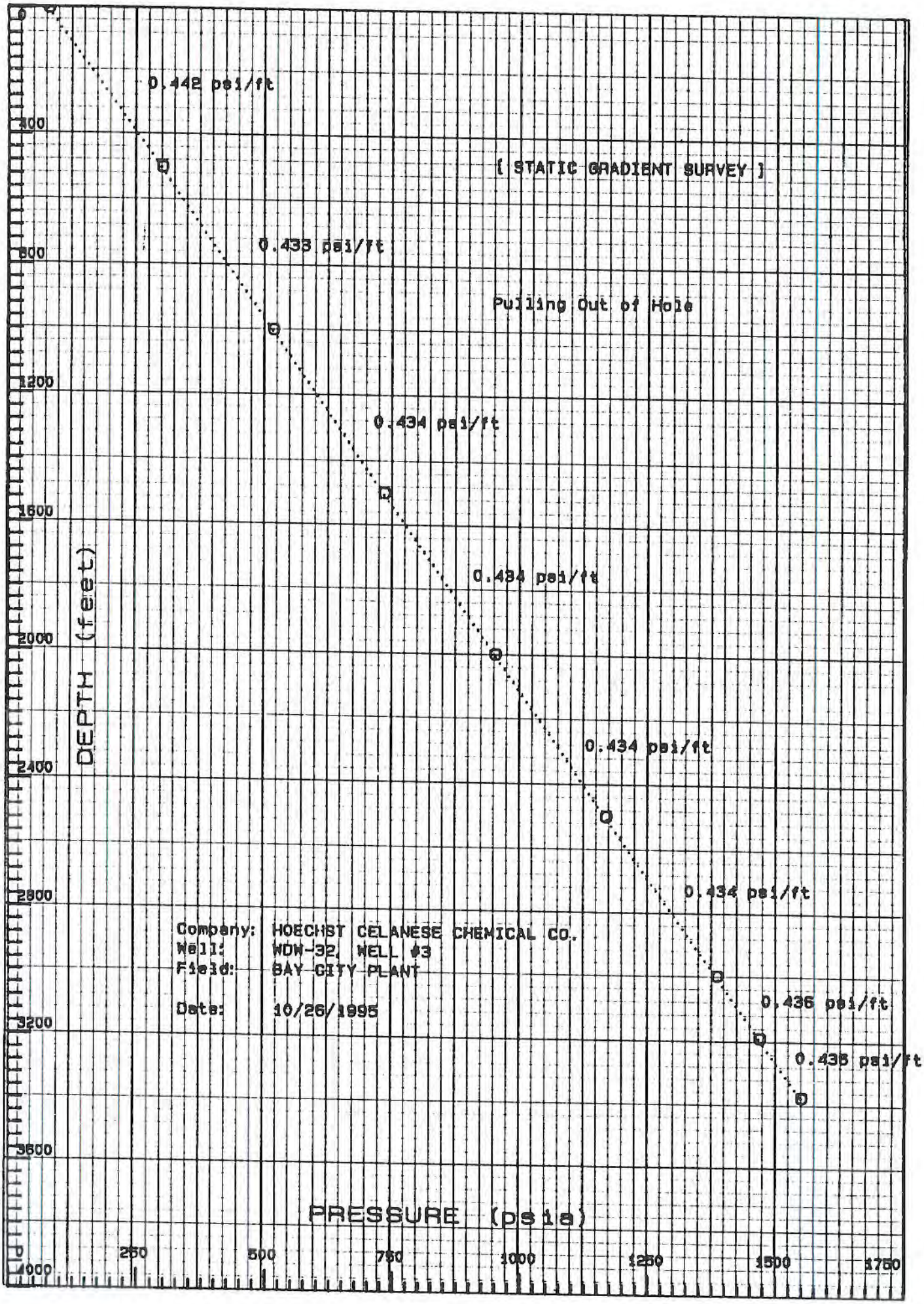
4.2 STATIC GRADIENT SURVEY

A static gradient survey was conducted while pulling out of the hole immediately following the bottom hole pressure falloff test. Stops were made at 3000', 2500', 1500', 1000', 500' and surface. Data collected during the static gradient survey is included in Appendix G and presented graphically in Figure 7. Data collected at each stop were as follows:

Table 4.9
Static Gradient Survey Results

Depth (ft)	Pressure (psia)	PSI/ft
0	78.16	
500	299.23	0.442
1000	515.91	0.433
1500	732.94	0.434
2000	950.13	0.434
2500	1167.31	0.434
3000	1384.43	0.434
3192	1468.15	0.436
3440*	1576.28	0.436

* Pressure extrapolated to mid-point perforations.


0.442 psi/ft
{ STATIC GRADIENT SURVEY }
0.433 psi/ft
Pulling Out of Hole
0.434 psi/ft
0.434 psi/ft
0.434 psi/ft
0.434 psi/ft
0.436 psi/ft
0.435 psi/ft
Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-32, WELL #3
Field: BAY CITY PLANT
Date: 10/26/1995
DEPTH (feet)
0
400
800
1200
1600
2000
2400
2800
3200
3600
4000
PRESSURE (psia)
0
250
500
750
1000
1250
1500
1750

APPENDIX A

RADIOACTIVE TRACER LOG AND ATLAS WIRELINE'S INTERPRETATION LETTER

RECEIVED
NOV 30 1995
6W-SU

Western Atlas International

ATLAS WIRELINE SERVICES

PRODUCTION LOGGING SERVICES

FILE NO.

API NO.

FINAL PRINT

R.A.T.

COMPANY HOECHST CELANESE CHEMICAL GROUP

WELL WASTE DISPOSAL WELL NO.32

FIELD BAY CITY PLANT

COUNTY MATAGORDA STATE TEXAS

LOCATION:

BAY CITY PLANT

SEC N/A TWP N/A RGE N/A

OTHER SERVICES

NONE

PERMANENT DATUM GROUND LEVEL ELEV. N/A

LOGGING MEASURED FROM K.B. 11' FT. ABOVE P.D.

DRILLING MEASURED FROM K.B.

ELEVATIONS

KB N/A
DF N/A
GL N/A

DATE	26-OCT-95	
RUN	1	
SERVICE ORDER	165067	
DEPTH-DRILLER	3553'	
DEPTH-LOGGER	3250'	
BOTTOM LOGGED INTERVAL	3250'	
TOP LOGGED INTERVAL	2800'	
TYPE FLUID IN HOLE	-----	
SALINITY PPM CL.	-----	
DENSITY LB/GAL.	-----	
LEVEL	FULL	
MAX. REC. TEMP. DEG. F	-----	
OPR. RIG TIME	6 HRS.	
EQUIP. NO. / LOC.	HL-6418 HOUSTON	
RECORDED BY	D. MCCLEMMON	
WITNESSED BY	MR. SMITH	

BOREHOLE RECORD

NO.	BIT	FROM	TO

IN MAKING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL GIVE CUSTOMER THE BENEFIT OF THEIR BEST JUDGEMENT, BUT SINCE ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS, WE CANNOT, AND WE DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION. WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COST, DAMAGES, OR EXPENSES WHATSOEVER INCURRED OR SUSTAINED BY THE CUSTOMER RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

FOLD HERE

CASING RECORD

SIZE	WGT	FROM	TO
9.625	40.0	SURFACE	3192'
5.500	20.0	SURFACE	3316'
2.375	4.7	SURFACE	3192'

REMARKS RUN (1)

NO SIGN OF CHANNELING OR LEAKS DETECTED
THE INJECTION RATE WAS 50 GPM

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIAL NO.	SERIES NO.	POSITION
1	1	CCL			

PURPOSE OF SURVEY:
TEST THE MECHANICAL INTEGRITY
OF WELL NO. 3 (WDW-32).

CONCLUSION;
AT THE TIME OF SURVEY,
THE PACKER WAS INTACT AND ALL
INJECTED FLUIDS WERE ENTERING
THE COMPLETION ZONE BELOW 3250′
WITH NO UPWARD CHANNELING INDICATED.

REMARKS:
THE PUMP RATE FOR BOTH TRACER NO.1
AND TRACER NO.2 WAS 50 GPM.

NOTE:
ALL DEPTHS ARE CORRELATED TO BOTTOM
DETECTOR.

LOG CORRELATED TO PACKER DEPTH SHOWN ON R.A.T. SURVEY 1/20/95

RADIOACTIVE TRACER DATA

TRACER NO.1

PASS NO.	DEPTH START	DEPTH STOP	TIME START	TIME STOP	SLUG DEPTH
	2900′	----	1535	----	FIRE
1	3050′	3015′	1536	1537	3040
2	3200′	3030′	1539	1541	3190
3	3250′	3180′	1543	1544	NONE

TRACER NO.2

	2800′	----	1547	----	FIRE
1	2950′	2910′	1549	1549	2930
2	3050′	2920′	1551	1553	3050
3	3250′	3040′	1554	1558	3248
4	3250′	3140′	1559	1600	NONE

1	2950′	2910′	1549	1549	2950
2	3050′	2920′	1551	1553	3050
3	3250′	3040′	1554	1558	3248
4	3250′	3140′	1559	1600	NONE

BASE LOG BEFORE ANY SLUGS FIRED
TIME 1500

****

FILE: 2

CURVE DELAY REPORT

CURVE	DELAY	PHYS. UNITS
TDET	3.50	FT
BDET	0.00	FT
CCL	9.00	FT
VDC	0.00	FT

PARAMETERS

*** NONE ***

DISPLAY SCALE CHANGES

*** NONE ***

COMPANY: HOECHST CELANESE CHEMICAL GROUP RUN: 1

WELL NAME: WASTE DISPOSAL WELL NO. 32 TRIP: 1

SERVICE: F 150A FILE: 2 DATE: 10/26/95 TIME: 14:54:22

REVISION: FSYS REV. J001 VER. 1.1 MODE: RECORD

CCL

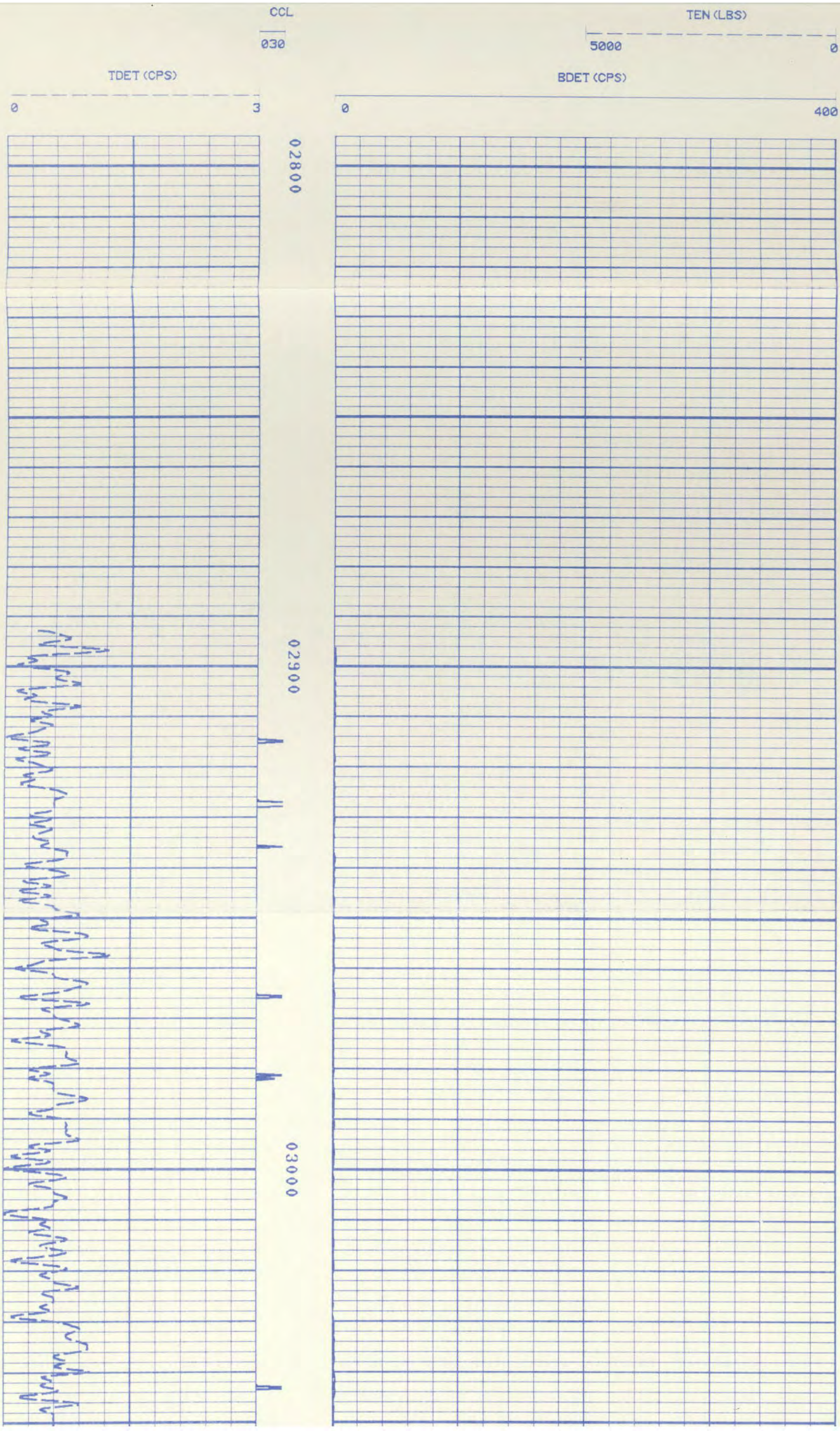
030

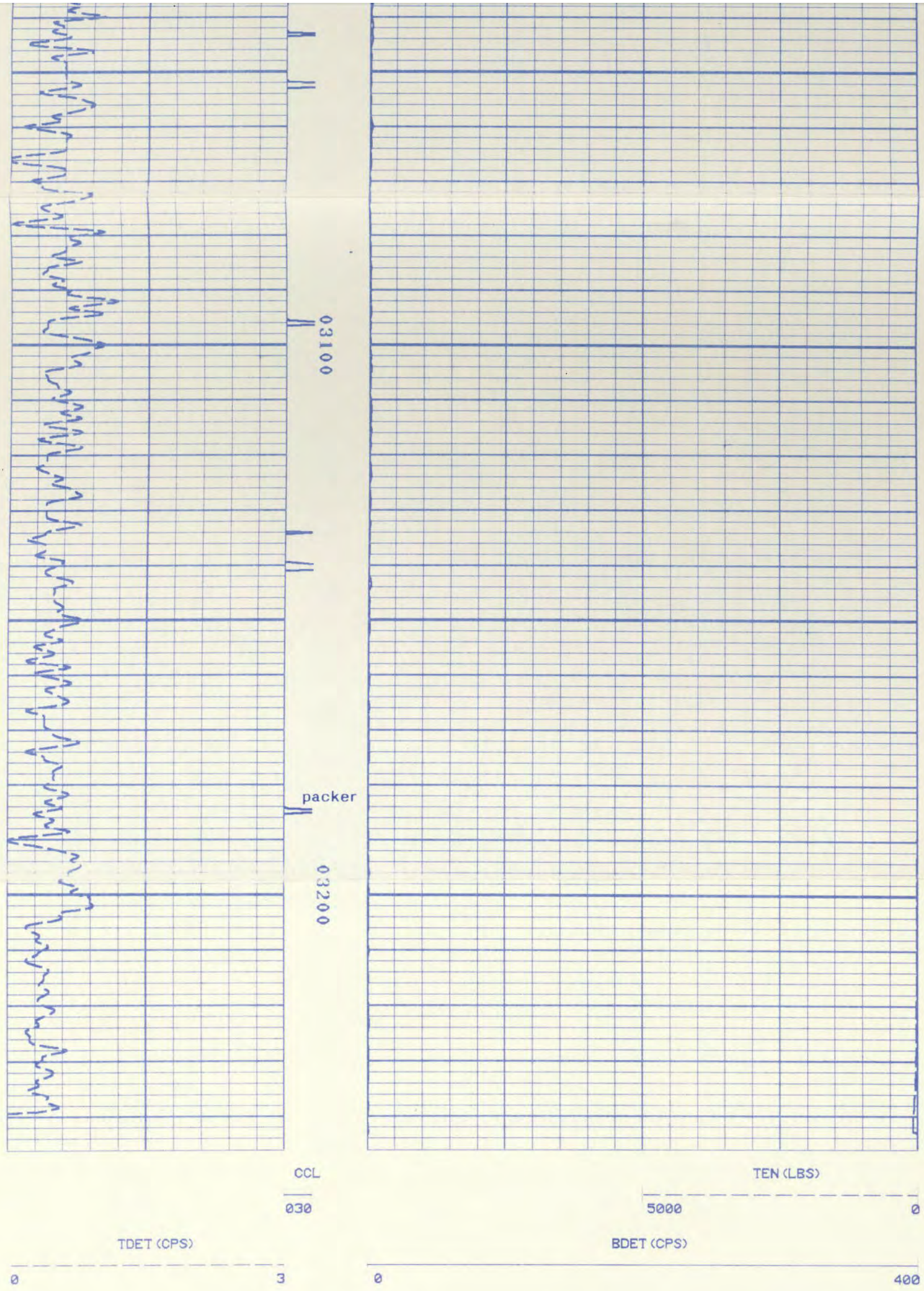
TEN (LBS)

5000 0

TDET (CPS)

BDET (CPS)


CCL
030
TEN (LBS)
5000
0
TDET (CPS)
0
3
BDET (CPS)
0
400
02800
02900
03000



FILE: 2

****

REPEAT OF BASE LOG BEFORE FIRING SLUGS

REPEAT OF BASE LOG BEFORE FIRING SLUGS

****

FILE: 3

CURVE DELAY REPORT

CURVE	DELAY	PHYS. UNITS
TDET	3.50	FT
BDET	0.00	FT
CCL	9.00	FT
VDC	0.00	FT

PARAMETERS

*** NONE ***

DISPLAY SCALE CHANGES

*** NONE ***

COMPANY: HOECHST CELANESE CHEMICAL GROUP

WELL NAME: WASTE DISPOSAL WELL NO. 32

SERVICE: F 150A FILE: 3 DATE: 10/26/95

REVISION: FSYS REV. J001 VER. 1.1

RUN: 1

TRIP: 1

TIME: 15:07:56

MODE: RECORD

CCL

020

TEN (LBS)

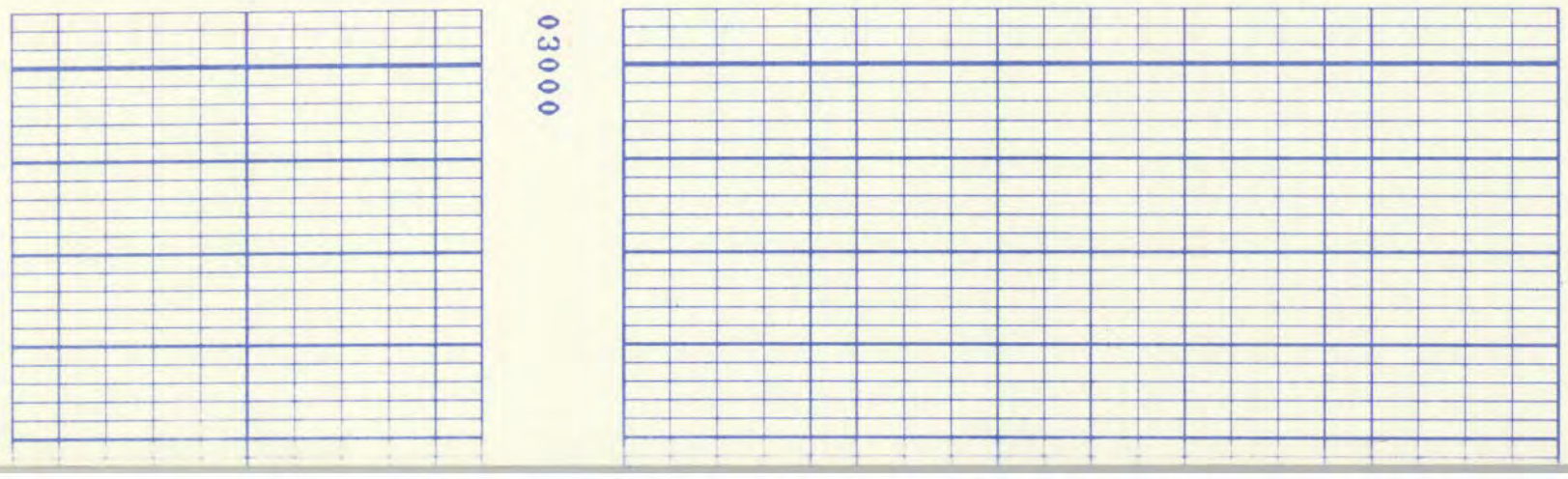
5000 0

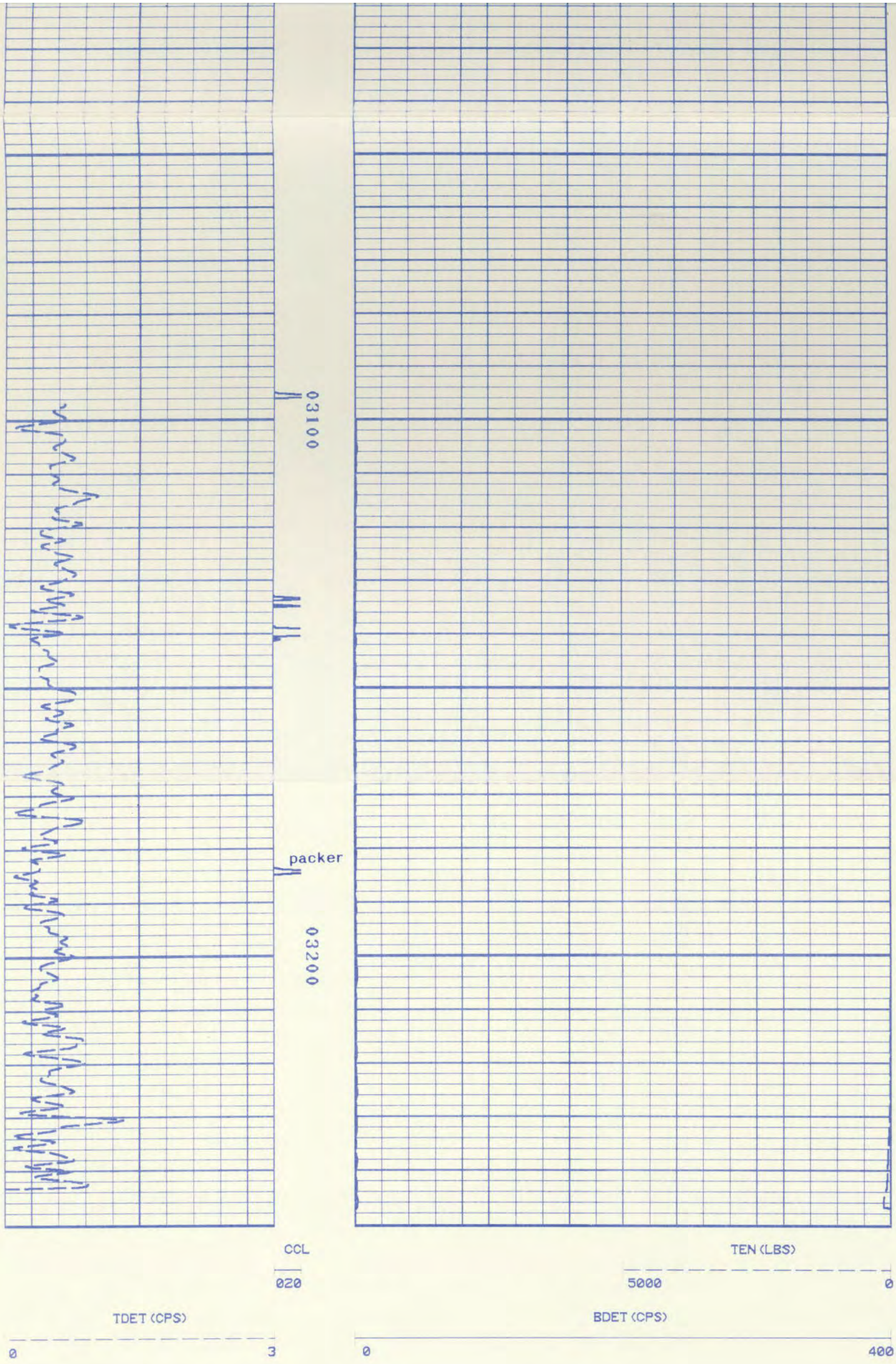
TDET (CPS)

0 3

BDET (CPS)

0 400




03100
packer
03200
CCL
020
TEN (LBS)
5000
0
TDET (CPS)
0
3
BDET (CPS)
0
400

FILE: 3

TDET (CPS) 0 3

BDET (CPS) 0 400

FILE: 3

****

STATIONARY STAT CHECK, DEPTH 3172'
TIME 1520 7.5 minutes

****

FILE: 4

COMPANY: HOECHST CELANESE CHEMICAL GROUP RUN: 1

WELL NAME: WASTE DISPOSAL WELL NO. 32 TRIP: 1

SERVICE: F 150A FILE: 4 DATE: 10/26/95 TIME: 15:15:15

REVISION: FSYS256 REV:G002 VER:2.0 MODE: PLAYBACK

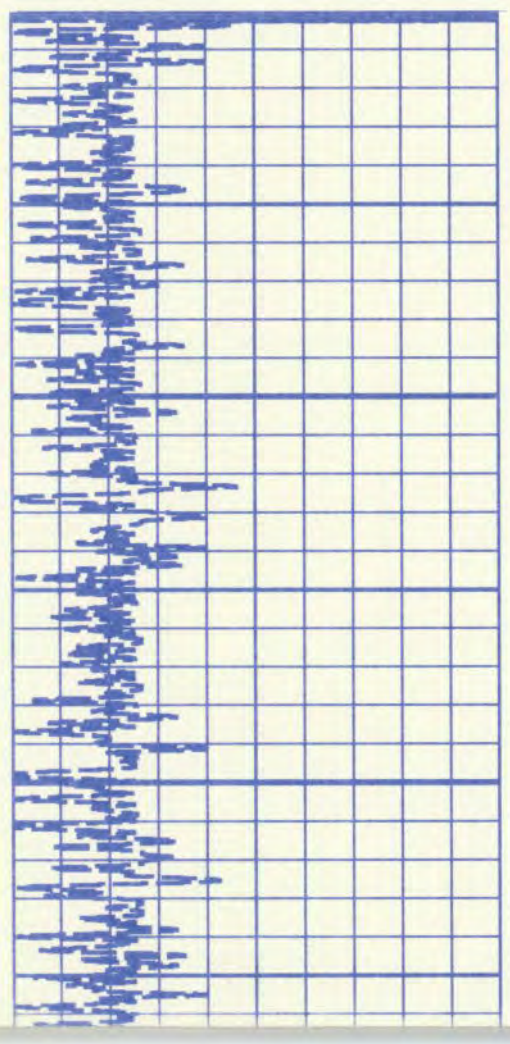
DEPTH: 3172

TDET (CPS) 0 3

BDET (CPS) 0 400

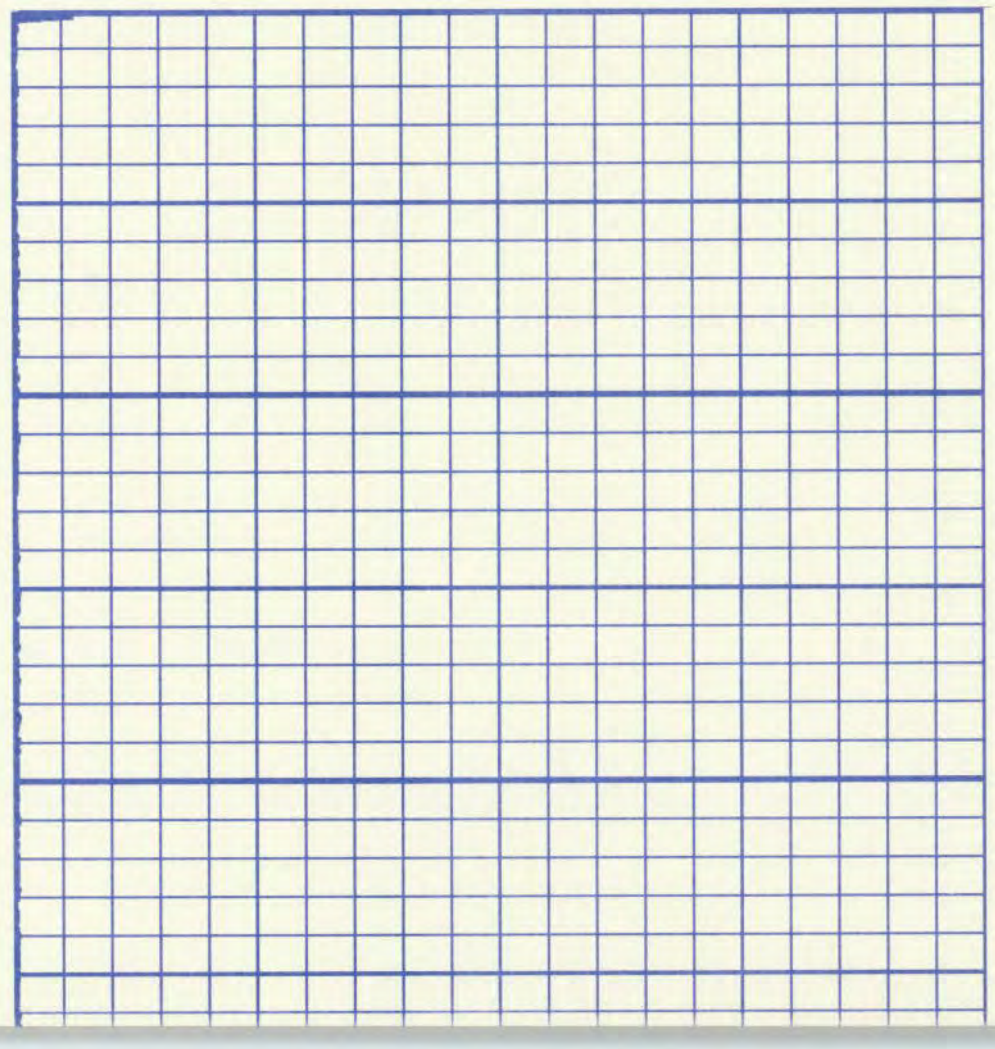
CCL 0100

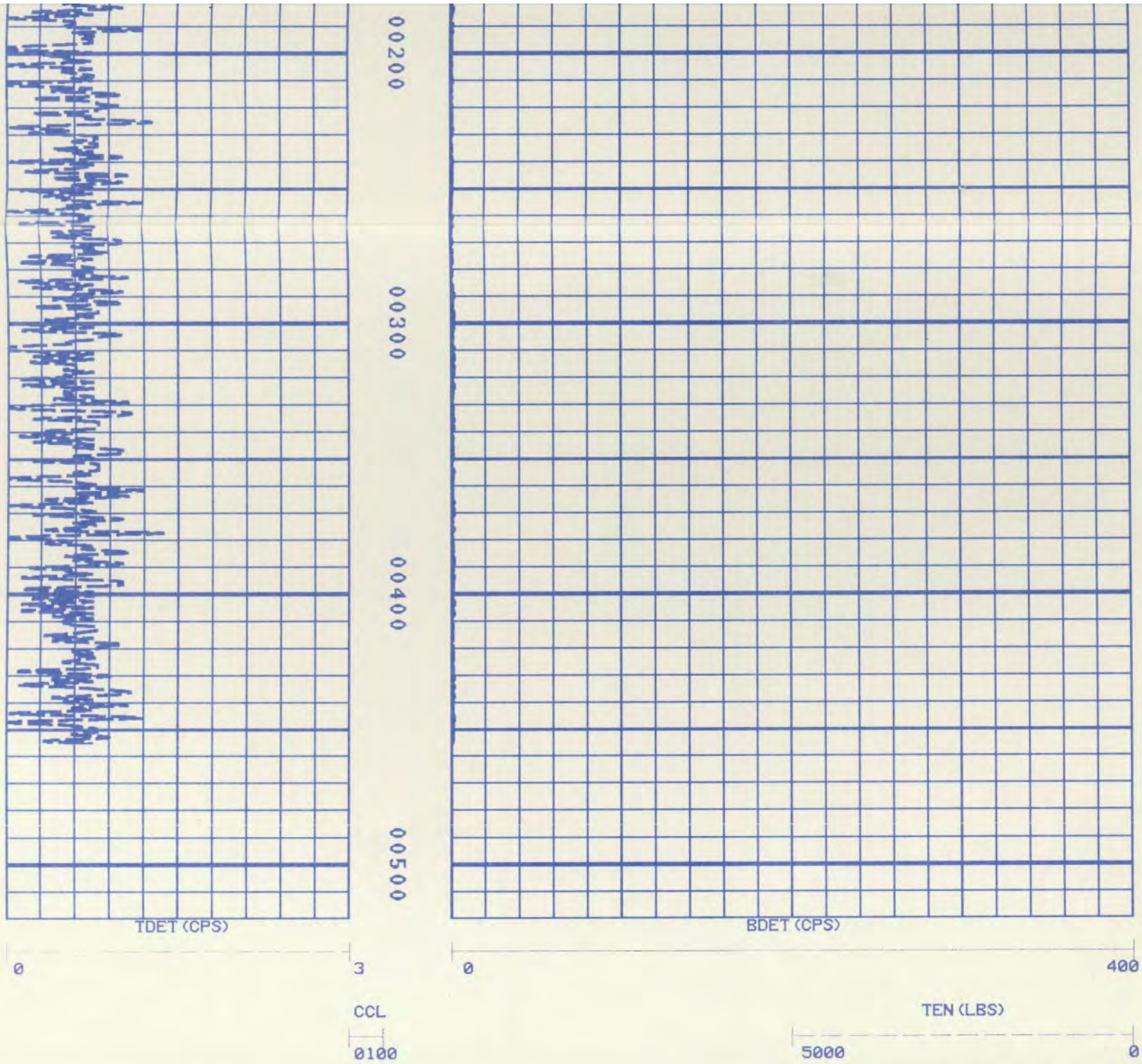
TEN (LBS) 5000 0



00100

00200





DISPLAY SCALE CHANGES

*** NONE ***

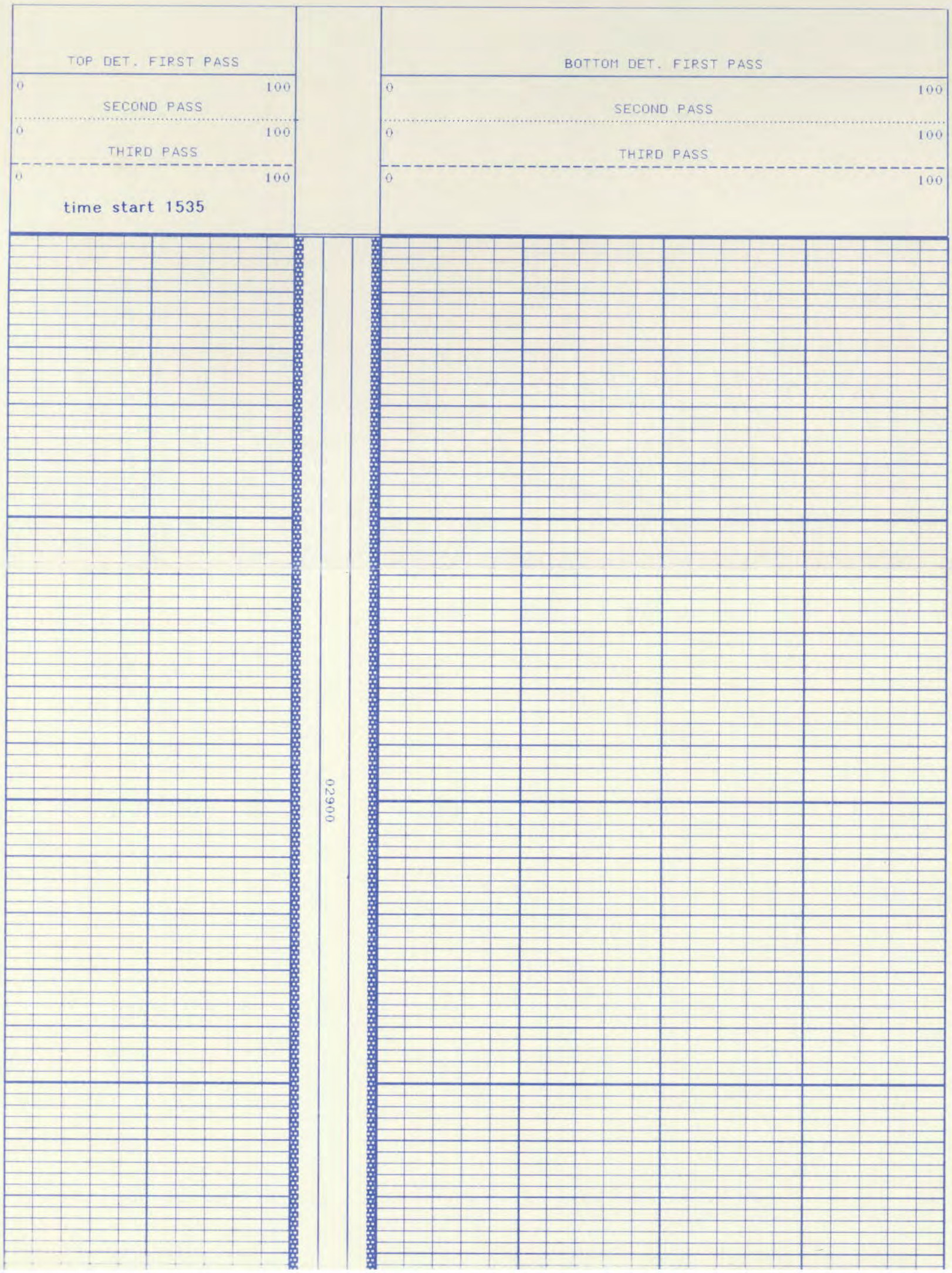
PARAMETERS

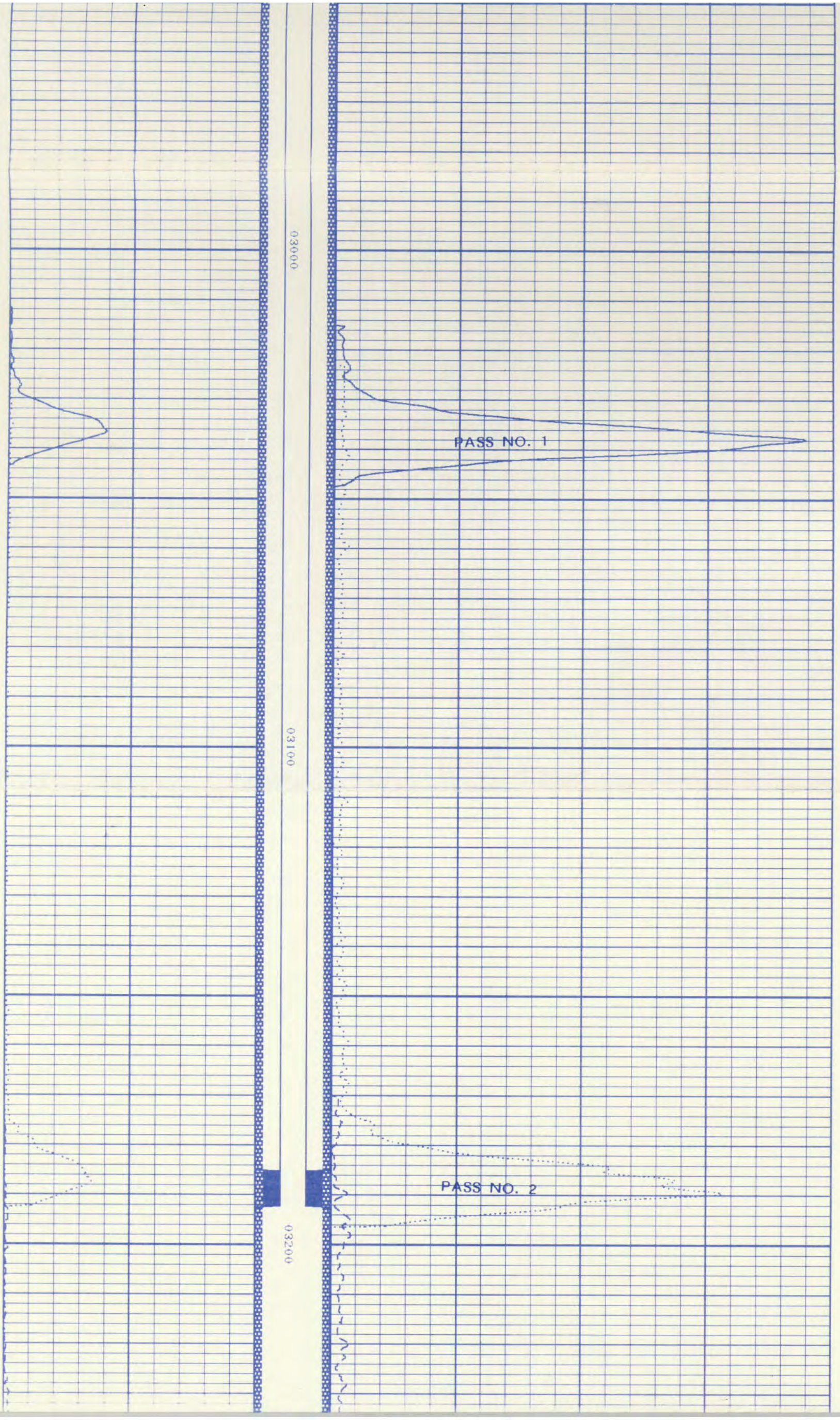
*** NONE ***

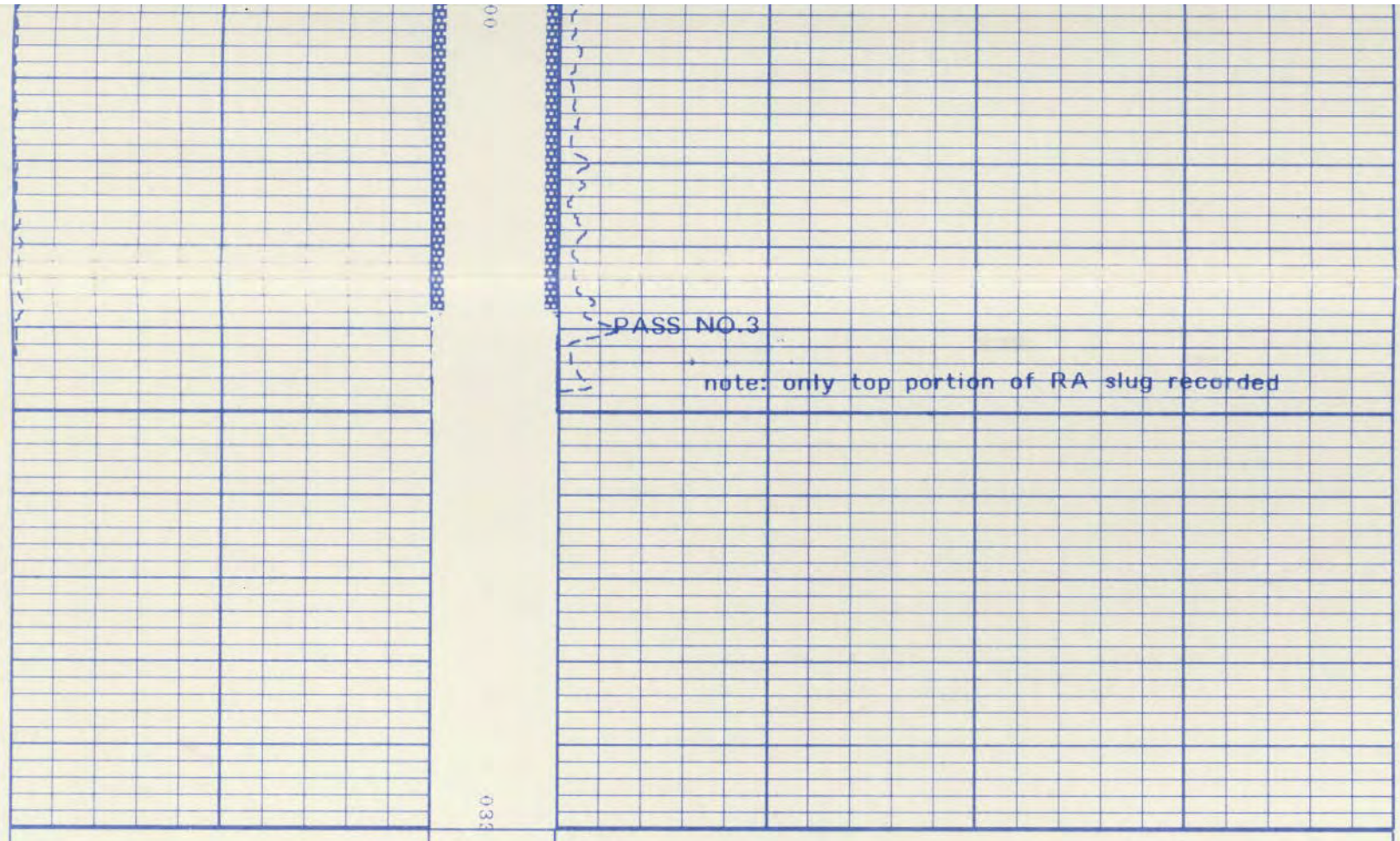
MERGED TRACER PASSES, TWO SLUGS FIRED WITH THREE PASSES ON FIRST SLUG AND FOUR PASSES ON SECOND SLUG.

FOUR PASSES ON SECOND SLUG.

FIRST SHOT & PASSES SHOT FIRED AT 2900




03000
03100
03200
PASS NO. 1
PASS NO. 2



TOP DET. FIRST PASS

0 100

SECOND PASS

0 100

THIRD PASS

0 100

time end 1544

BOTTOM DET. FIRST PASS

0 100

SECOND PASS

0 100

THIRD PASS

0 100

TOP DET. FIRST PASS

0 100

SECOND PASS

0 100

THIRD PASS

0 100

FOURTH PASS

0 100

time start 1547

BOTTOM DET. FIRST PASS

0 100

SECOND PASS

0 100

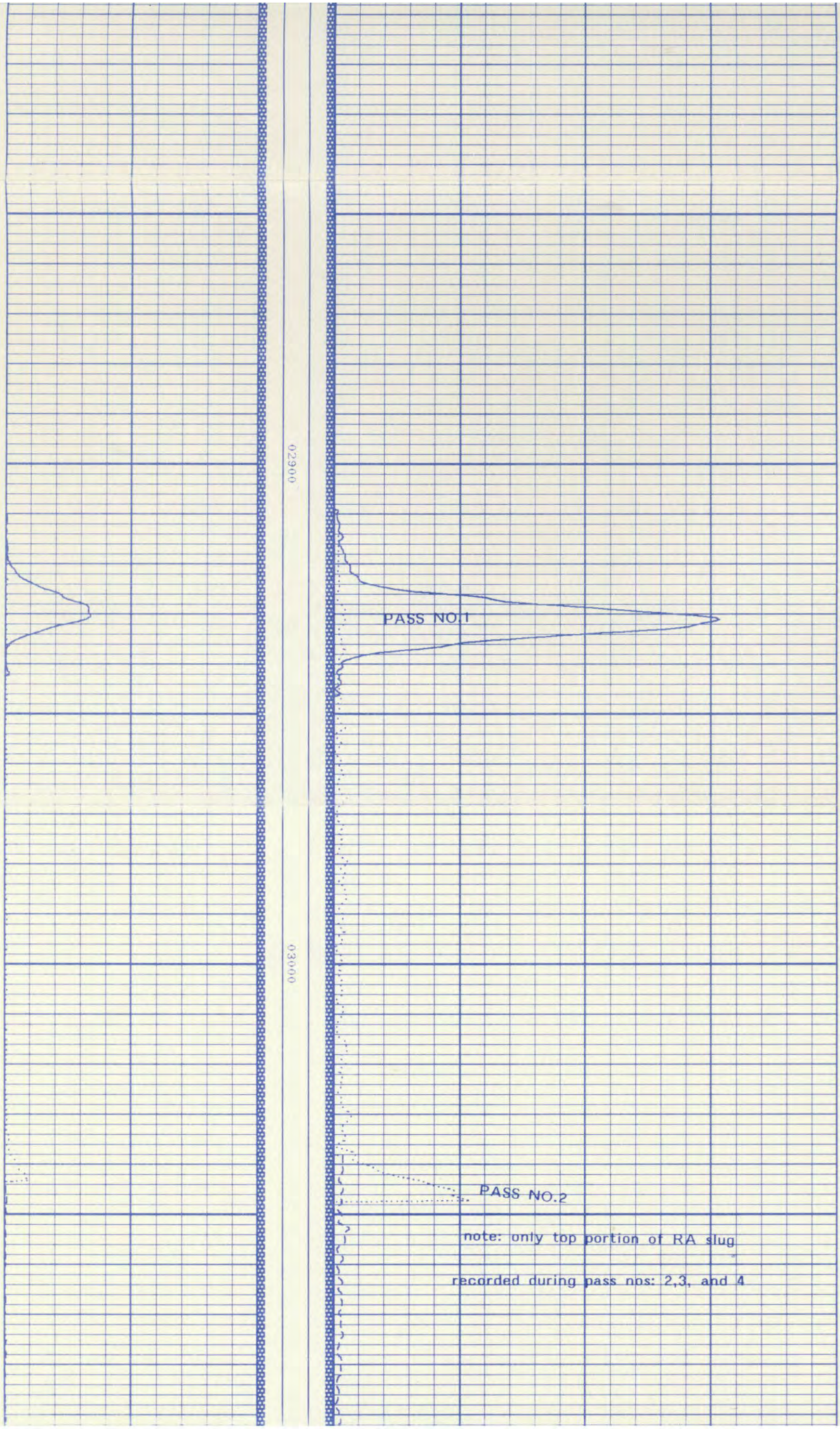
THIRD PASS

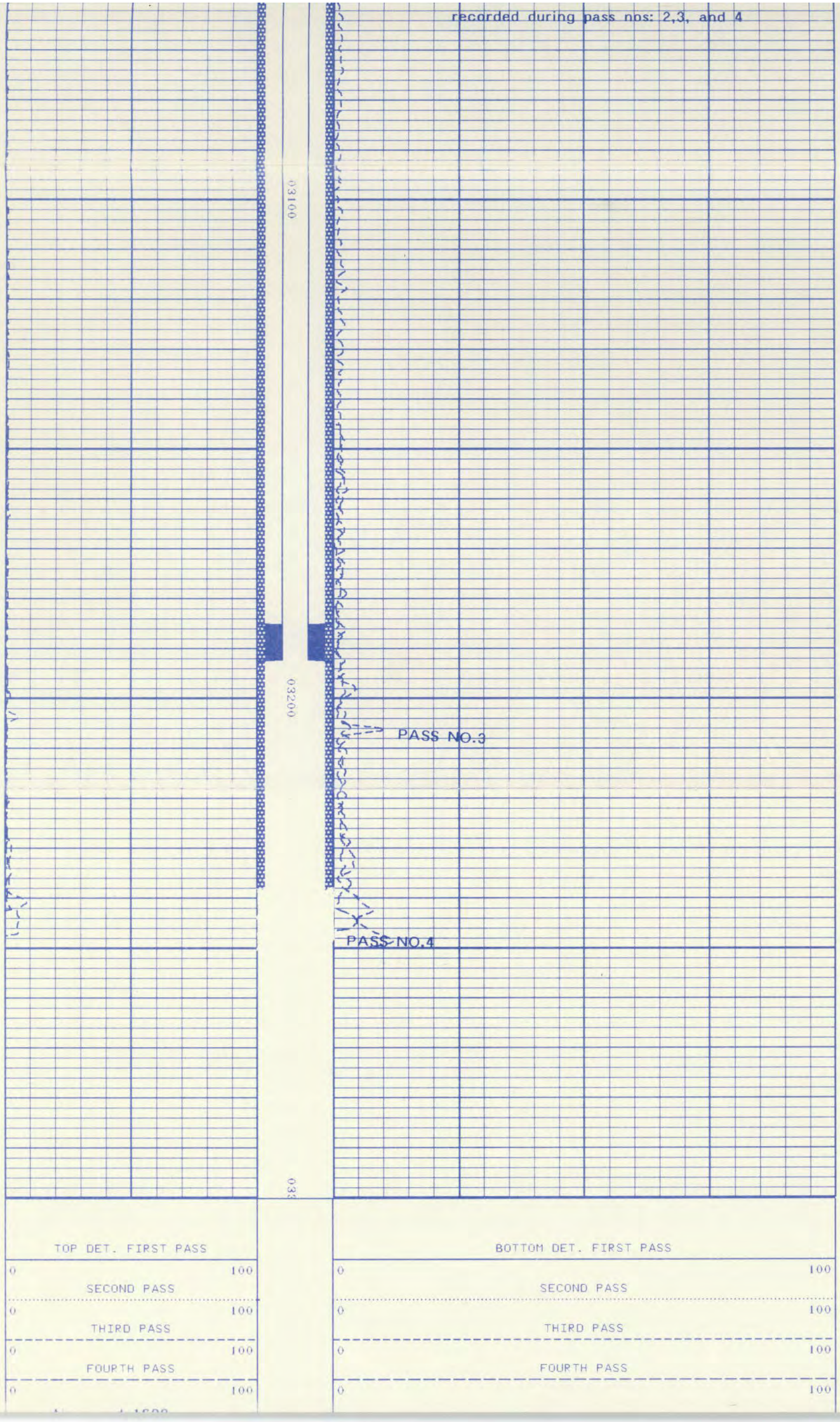
0 100

FOURTH PASS

0 100

SECOND AND PASSES SHOT FIRED at 2800


02900
03000
PASS NO.1
PASS NO.2
note: only top portion of RA slug
recorded during pass nos: 2,3, and 4


recorded during pass nos: 2,3, and 4
03100
03200
PASS NO.3
PASS NO.4
TOP DET. FIRST PASS
0
100
SECOND PASS
0
100
THIRD PASS
0
100
FOURTH PASS
0
100
BOTTOM DET. FIRST PASS
0
100
SECOND PASS
0
100
THIRD PASS
0
100
FOURTH PASS
0
100

TOP DET. FIRST PASS	BOTTOM DET. FIRST PASS
0 — 100	0 — 100
SECOND PASS	SECOND PASS
0 — 100	0 — 100
THIRD PASS	THIRD PASS
0 — 100	0 — 100
FOURTH PASS	FOURTH PASS
0 — 100	0 — 100
time end 1600	

****

TIME DRIVE TEST ON 1 SEC/FT
2"/100 SCALE. TIME OF SLUG 1624
TOOL STATIONARY AT 3172
pump rate approximently 50 gpm

****

FILE: 13

COMPANY: HOECHST CELANESE CHEMICAL GROUP — RUN: 1

WELL NAME: WASTE DISPOSAL WELL NO. 32 — TRIP: 1

SERVICE: F 150A — FILE: 13 — DATE: 10/26/95 — TIME: 16:19:34

REVISION: FSYS256 REV:G002 VER:2.0 — MODE: PLAYBACK

DEPTH: 3171

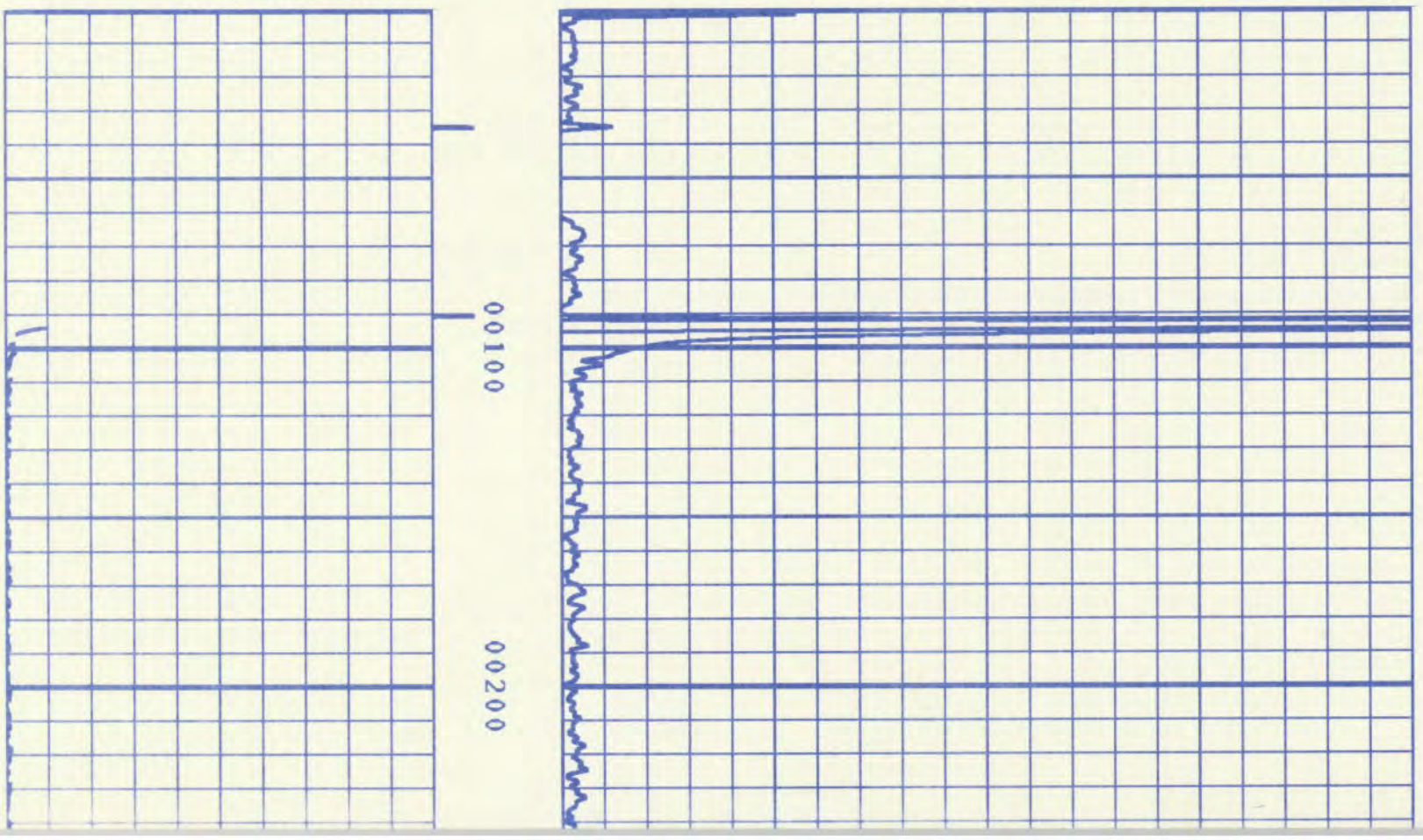
TDET (CPS) 0 — 100

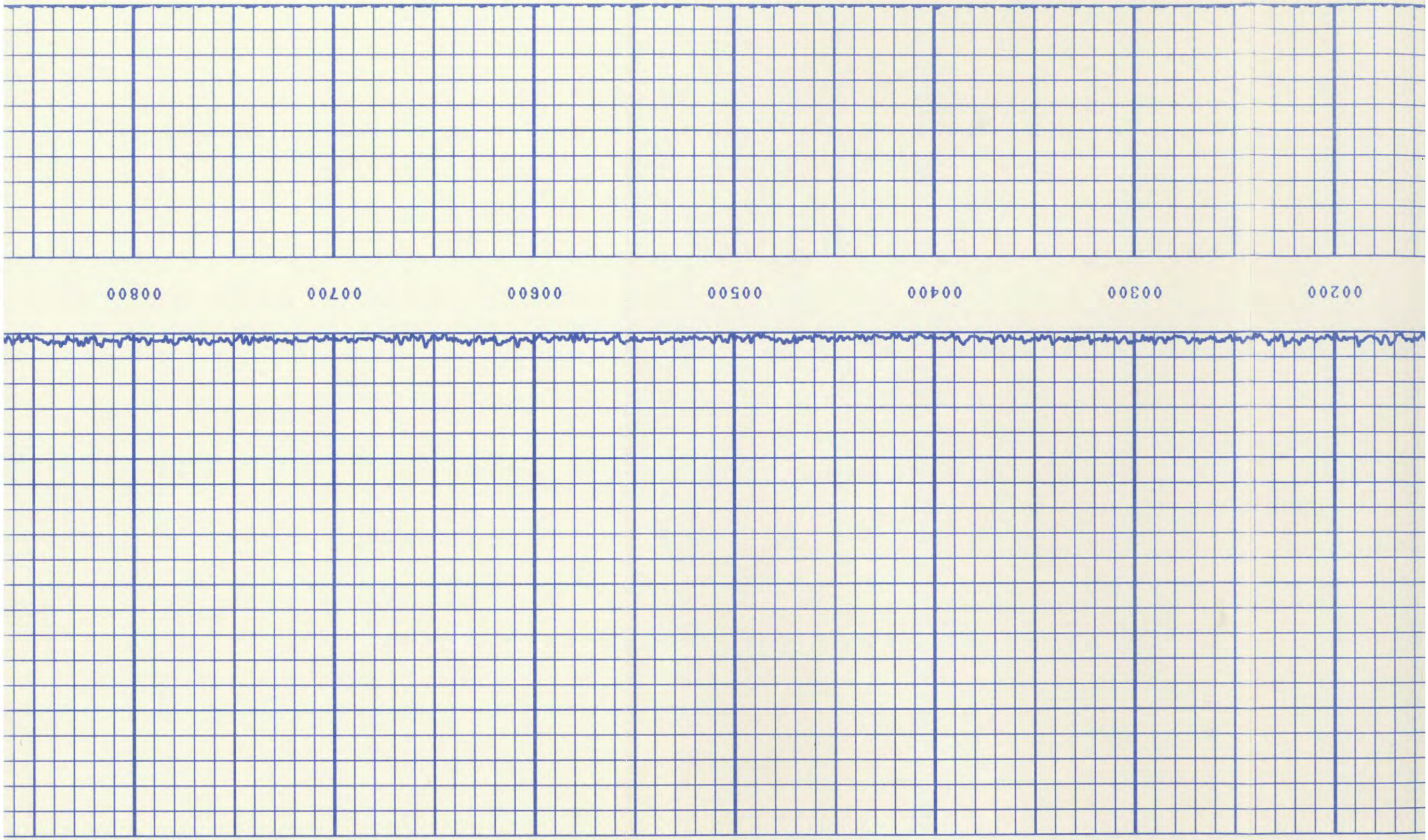
BDET (CPS) 0 — 100

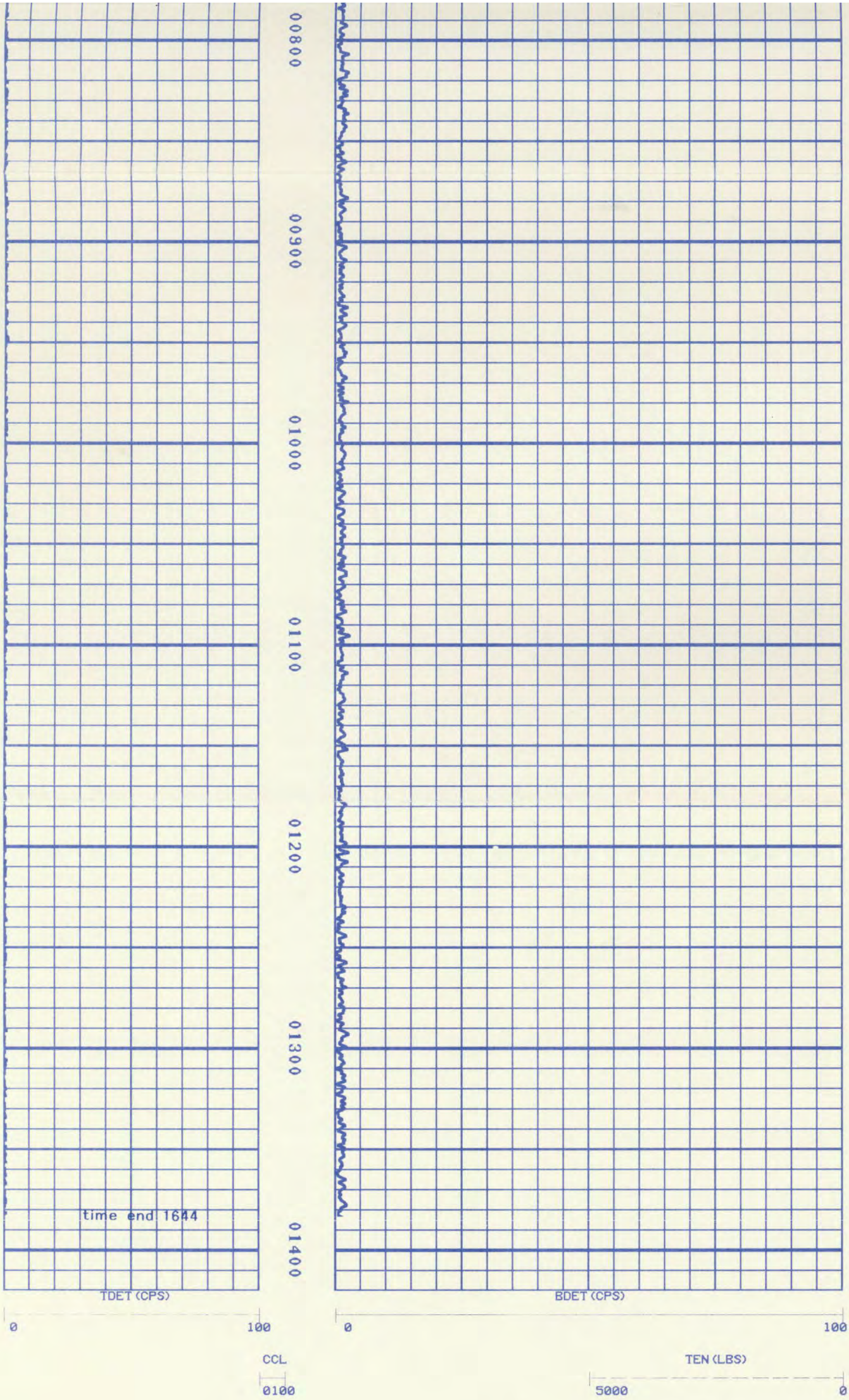
CCL 0100

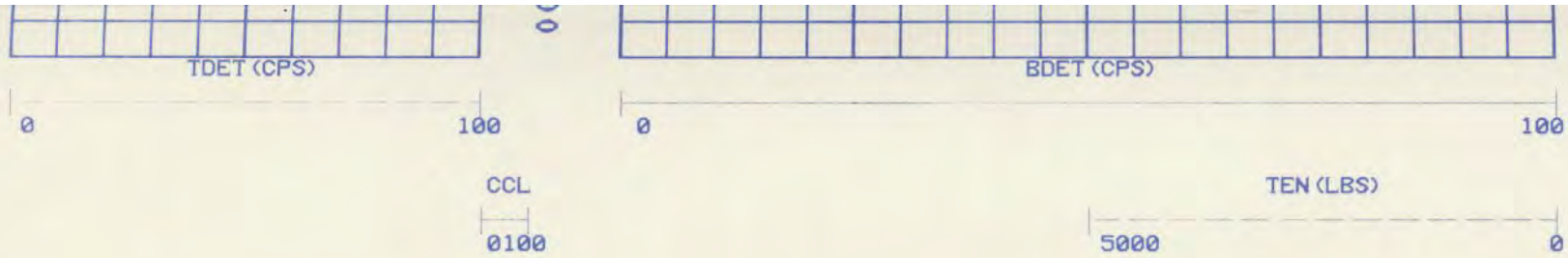
TEN (LBS) 5000 — 0

time start 1624




00200
00300
00400
00500
00600
00700
00800


00800
00900
01000
01100
01200
01300
01400
time end 1644
TDET (CPS)
0
100
CCL
0100
BDET (CPS)
0
100
TEN (LBS)
5000
0



DISPLAY SCALE CHANGES

*** NONE ***

PARAMETERS

*** NONE ***

FILE: 13

****

TIME DRIVE TEST ON 1 SEC/FT
2 "/100 SCALE. TIME OF SLUG 1647
TOOL STATIONARY AT 3172'
pump rate approximently 50 gpm

****

FILE: 14

COMPANY: HOECHST CELANESE CHEMICAL GROUP

RUN: 1

WELL NAME: WASTE DISPOSAL WELL NO. 32

TRIP: 1

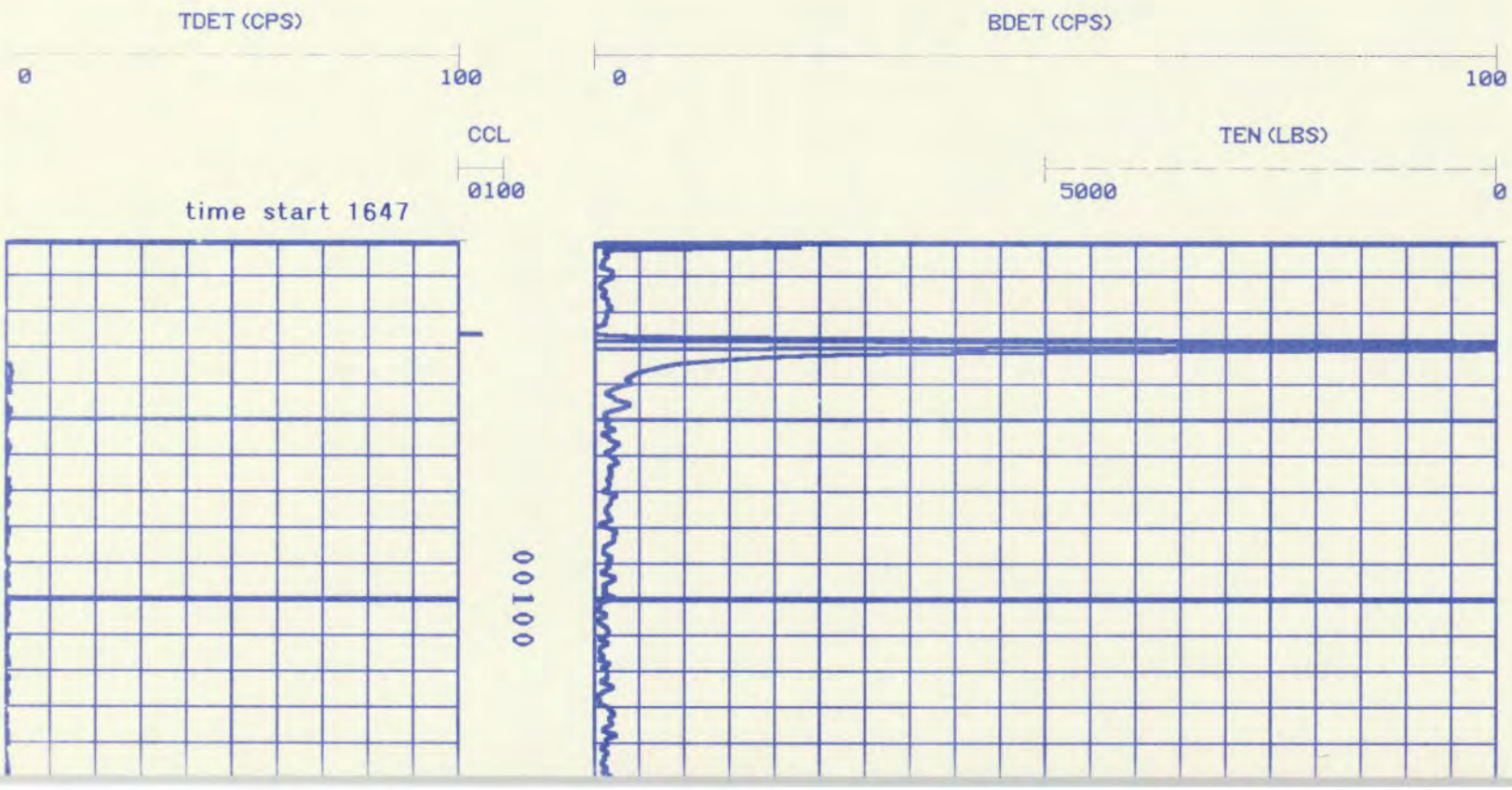
SERVICE: F 150A FILE: 14 DATE: 10/26/95

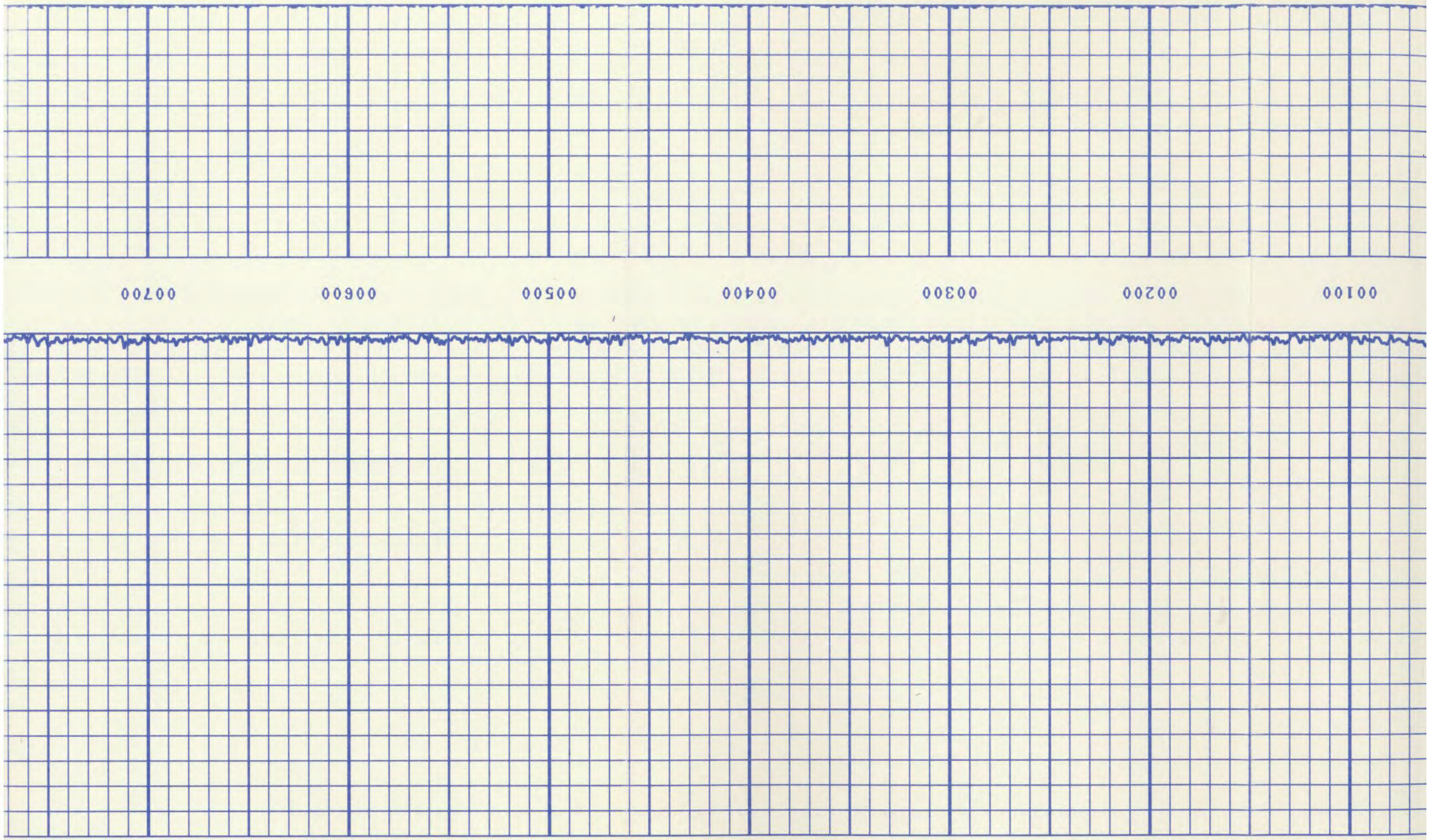
TIME: 16:43:31

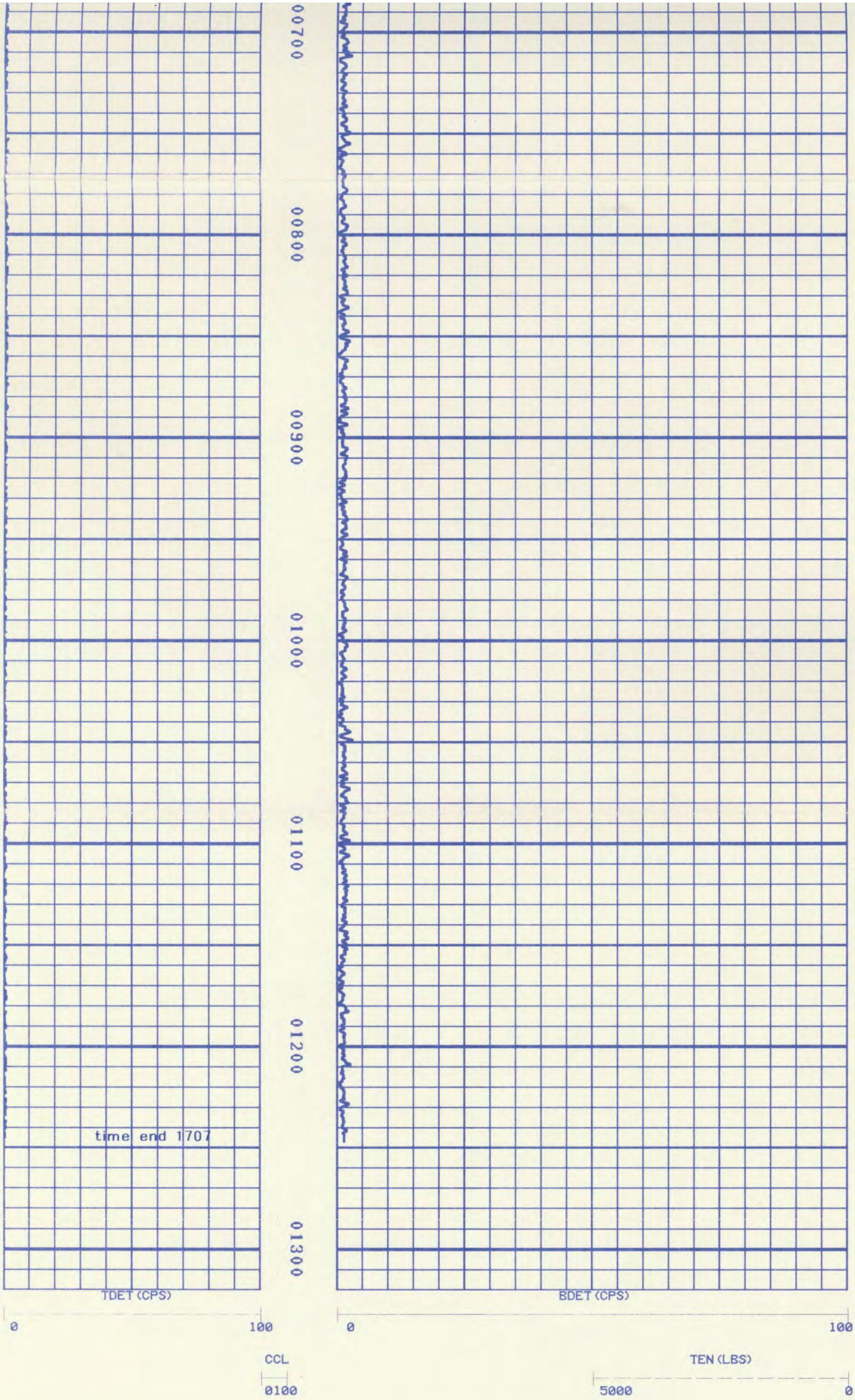
REVISION: FSYS256 REV:G002 VER:2.0

MODE: PLAYBACK

DEPTH: 3171




00100
00200
00300
00400
00500
00600
00700


00700
00800
00900
01000
01100
01200
01300
time end 1707
TDET (CPS)
0
100
BDET (CPS)
0
100
CCL
0100
TEN (LBS)
5000
0

TDET (CPS)

0 100

BDET (CPS)

0 100

CCL

0100

TEN (LBS)

5000 0

DISPLAY SCALE CHANGES

*** NONE ***

PARAMETERS

*** NONE ***

FILE: 14

****

FINAL BASE LOG AFTER FIRING ALL SLUGS
TIME 1709

COMPANY: HOECHST CELANESE CHEMICAL GROUP

RUN: 1

WELL NAME: WASTE DISPOSAL WELL NO. 32

TRIP: 1

SERVICE: F 150A FILE: 15 DATE: 10/26/95

TIME: 17:06:14

REVISION: FSYS REV. J001 VER. 1.1

MODE: RECORD

CCL

020

TEN (LBS)

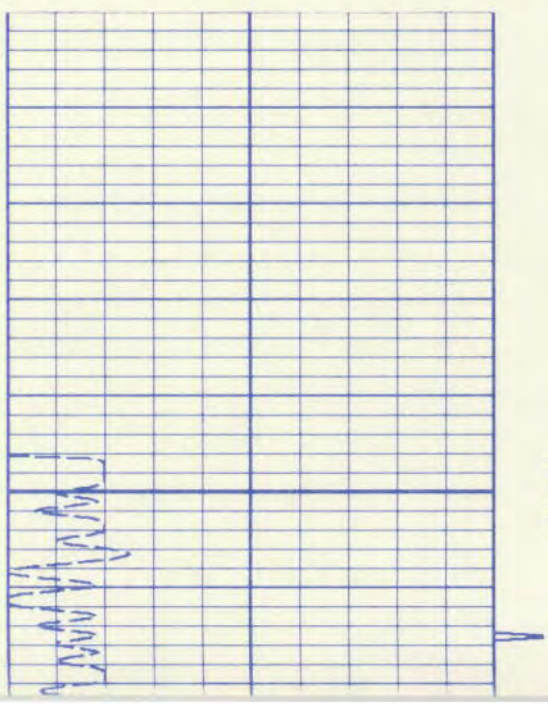
5000 0

TDET (CPS)

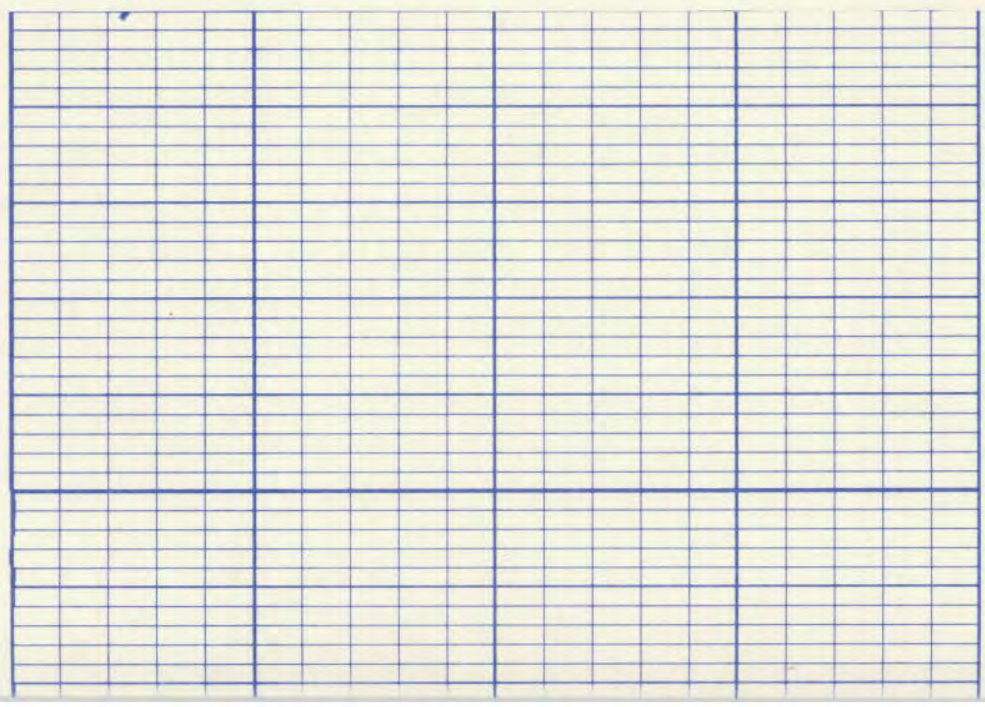
0 3

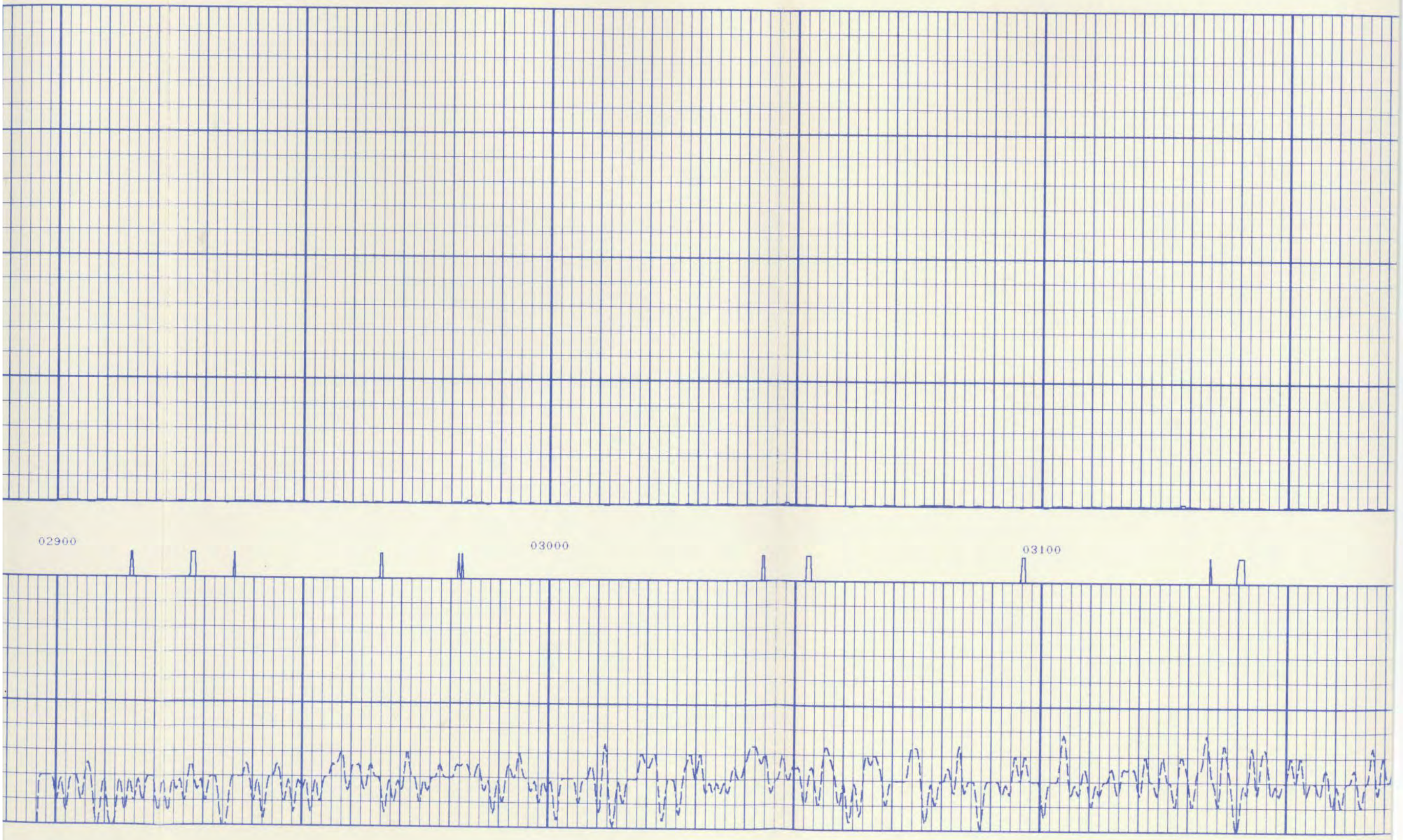
BDET (CPS)

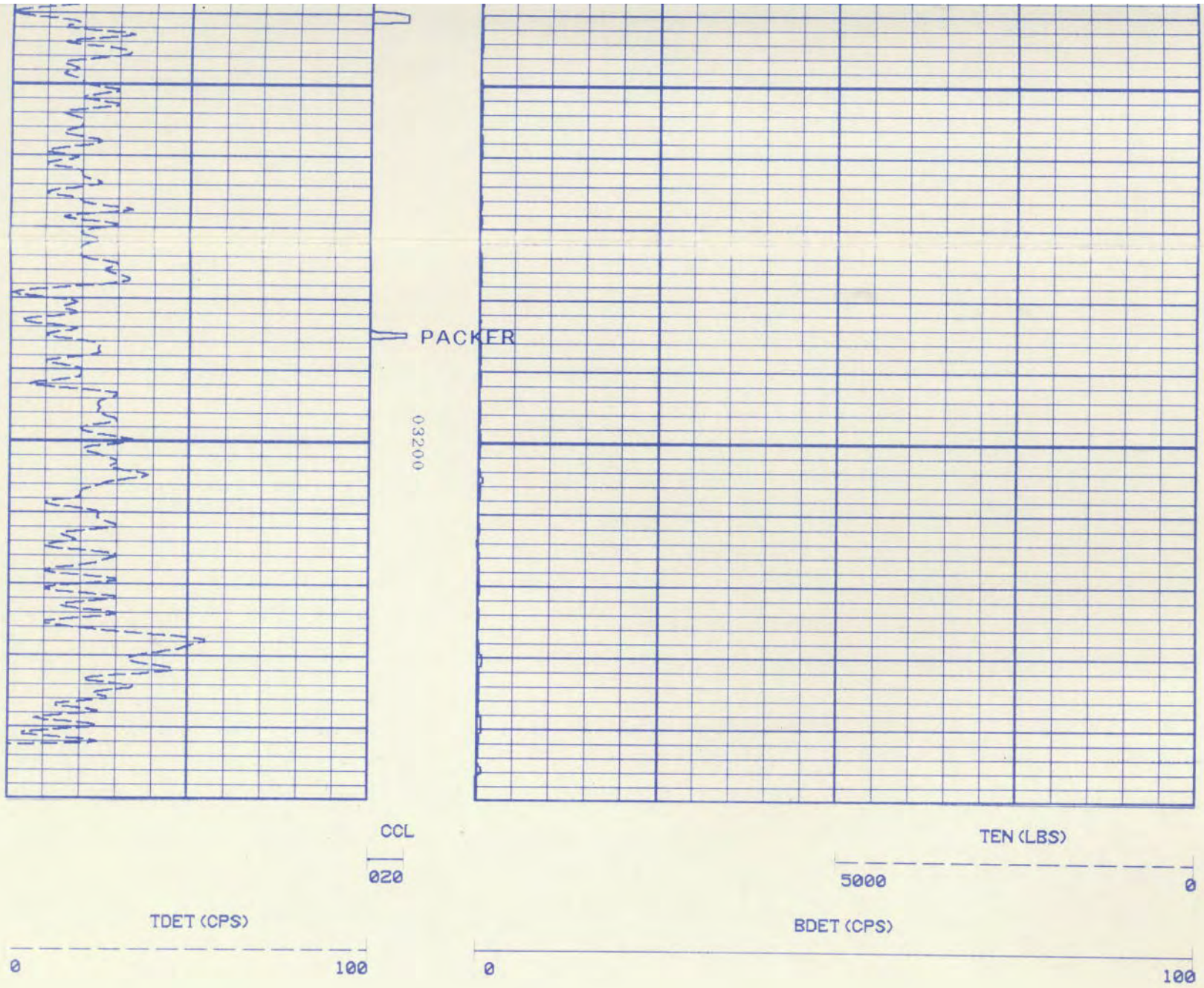
0 400



02900




02900
03000
03100


PACKER
03200
CCL
020
TDET (CPS)
0
100
TEN (LBS)
5000
0
BDET (CPS)
0
100

DIAGNOSTIC RADIOACTIVE TRACERLOG

Hoechst Celanese Chemical Group, Inc.
Waste Disposal Well #32
Bay City Plant
Matagorda County, Texas

Prepared for
ECO Solutions, Inc.
Houston, Texas

WESTERN ATLAS LOGGING SERVICES
WESTERN ATLAS INTERNATIONAL

October 26, 1995

Prepared by Freeman Hill, III

DISCLAIMER

In making interpretations of logs, our employees will give Customer the benefit of their best judgement, but since all interpretations are opinions based on inferences from electrical or other measurements, we cannot, and we do not guarantee the accuracy or the correctness of any interpretation. We shall not be liable or responsible for any loss, cost, damages, or expenses whatsoever incurred or sustained by the Customer resulting from any interpretation made/by any of our employees.

Disposal Well Background

The Hoechst Celanese Chemical Group, Inc.'s waste disposal well #32, located at the Bay City facility has been used for underground injection of waste fluids. In addition to surface casing, the well contains a string of 9 5/8 inch O.D. casing cemented from surface to 3,192 ft. From 3,306 to 3,368 ft. this casing is composed of stainless steel. Five and a half inch pipe (5 1/2 inch) is within the 9 5/8" casing, and is from surface to 3,316 ft. Also, 2 3/8" tubing is tied into a packer and injection assembly. Measured depth were at 3,240 ft.

A logging program consisting of a Radioactive Tracerlog (ejector and two detector instrument), was used to evaluate the integrity of the casing and cement. This should also verify that the injection interval is accepting the disposed fluids.

Radioactive Tracerlog Survey

1. Logged base gamma ray detector pass from 3,240 ft. to 2,893 ft.

   Purpose: Base-line for radioactive tracer instrument and comparison for post survey.

   Analysis: Gamma ray instruments respond to naturally occurring and manmade radiation. For this logging run, we will only consider the naturally occurring radiation (e.g., potassium, uranium, and thorium) found in formations. Normally, shaly formations tend to contain more of these gamma ray producing elements than a sand formation.

2. Repeat step (1.) Base gamma ray pass from 3,244 ft. depth to 3,096 ft.

   Analysis: No anomalies noted.

3. Statistical stationary check. (5 minute)(3,172 ft)

   Purpose: To establish stability of instrumentation before proceeding with testing.

   Analysis: No anomalies found. Tool operating properly and stable.

4. Repeat step (3.) Statistical stationary check. (7.5 minute)(3,351 ft.)

   Analysis: Tool operating properly and stable.

5. While injecting into the well at a rate of 50 gpm, radioactive material (Iodine-131) was ejected from the radioactive tracer instrument (@ 2,900 ft.). The instrument was lowered further into the well and then logged in the upward direction in order to intercept

radioactive slug as it moved down the well. By repeating this process of lowering the instrument and logging in the upward direction, the radioactive slug was traced through the casing packer and into the injection interval located below.

Purpose: Ensure injected fluids move through the tubing in a downward direction and that no upward or out of zone fluid movement through a cement channel is detected.

Analysis: The following table depicts the depths where the detectors intercepted the radioactive slug as it moved with the surface-injected fluids downward toward the injection interval.

Interception Number	Depth, ft.(Bottom Detector) (BDET)
1	3,038
2	3,189
3	Dispersing in zone.

The radiation peak responses from the first pass to the third pass, become smaller, but cover a longer vertical interval, due to the movement of the wireline and instrument mixing the radioactive slug with the injected fluids. No anomalies seen.

6. Repeat step (5.) (50 gpm)

Analysis: The following table depicts the depths where the detector intercepted the second radioactive slug as it moved with the injected fluids downward toward the injection interval.

Interception Number	Depth, ft.(Bottom Detector) (BDET)
1	2,931
2	3,047 (Did not catch all of the peak with instrument)
3	3,206
4	Dispersing in zone.

The radioactive peak responses from the first to the 4th pass, become smaller, but cover a longer vertical interval, due to the movement of the wireline and instrument mixing the radioactive slug with the injected fluids. The radioactive material appears to continually move in the downward direction and into the disposal interval. There is no evidence of any problems.

7. The tool was stationed at 3,172 ft., above the disposal interval, for a stationary reading. The radioactive isotope is released and after the initial response to the isotope passing by the detector in a downward motion, then the isotope or an increase in radiation, should not be monitored again. If the isotope is seen again, then communication (channel behind the pipe) is highly possible.

   Purpose: Ensure injected fluids move downward and not back up on the outside of casing in a channel. (Pump rate 50 gpm) (21 minute test.)

   Analysis: After initial response to the radioactive slug, the isotope did not come back in the tool's vicinity. No channel indicated.

8. Repeat step (7.) (Pump rate = 50 gpm) (21 minute test.)

   Purpose: Ensure injected fluids are not channeling up.

   Analysis: After the initial response to the radioactive slug, the isotope did not come back in the tool's vicinity. No channel indicated.

9. Logged gamma ray detectors from 3,230 ft. to 2,896 ft.

   Purpose: Monitor any anomalies or changes in background baseline.

   Analysis: No anomalies found.

Conclusion:

In my opinion, the Hoechst Celanese Waste Disposal Well #32, located in the Bay City Plant, does not have any integrity problems that would result in disposed fluids migrating to intervals other than the injection interval. The logging program consisting of a radioactive tracer ejector and detector instrument should satisfy the annual mechanical integrity requirement.

APPENDIX B

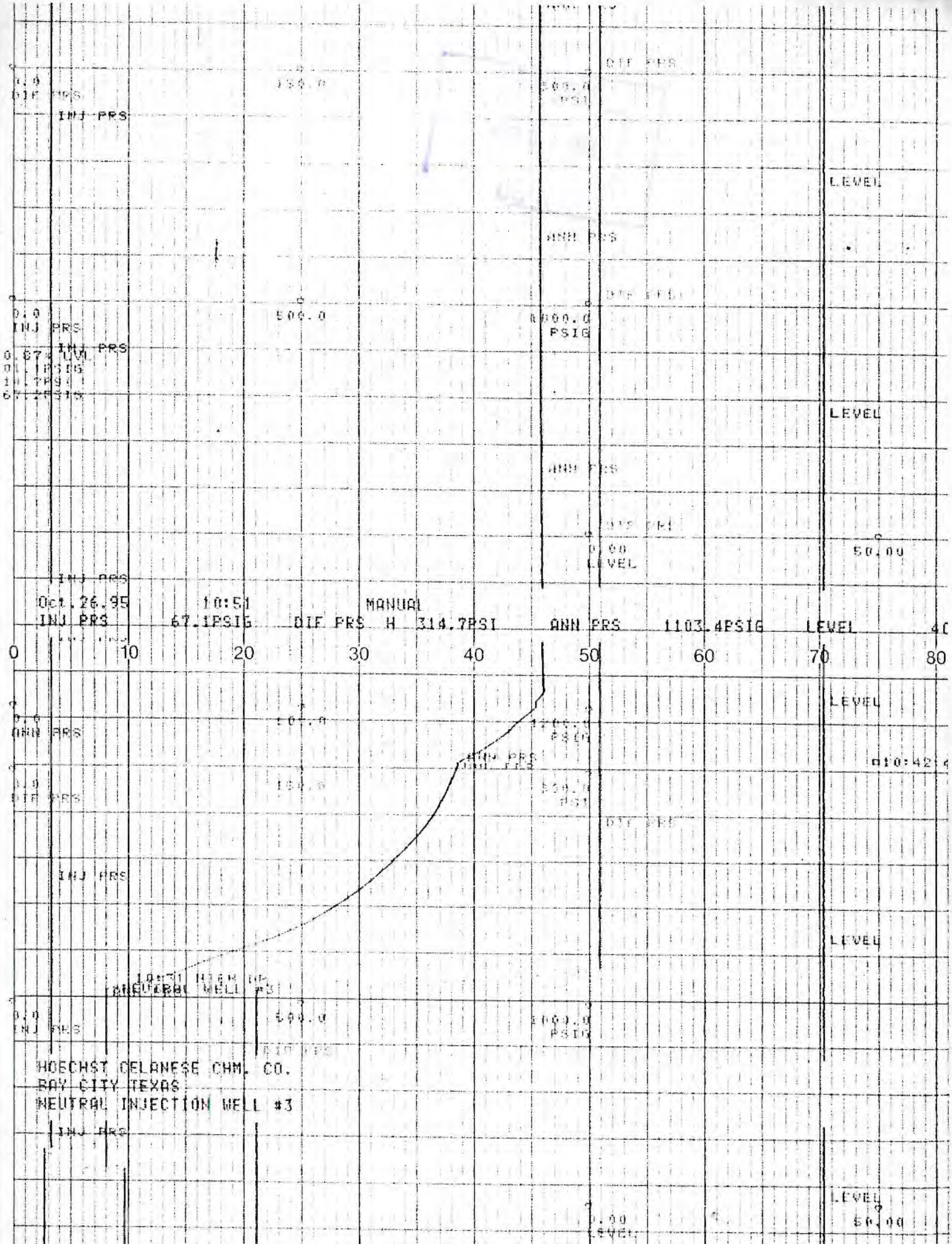
ANNULUS PRESSURE TEST DATA AND PLOT

ANNULUS PRESSURE DATA
HOECHST CELANESE CHEMICAL GROUP, INC.
Bay City Plant
Waste Disposal Well 32 (Plant Well No. 3)
October 26, 1995

Time (am)	Tubing Pressure (psig)	Casing Pressure (psig)	Remarks
9:49	67	200	Well shut-in +/-24 hours
10:00	67	200	Rig up to perform APT
10:30	67	200	Prepare to pressure up
10:33	67	200	Start pressuring up
10:34	67	330	Pressurize well
10:36	67	450	
10:38	67	650	
10:40	67	750	
10:42	67	850	
10:44	67	900	
10:40	67	980	
10:51	67	1100	
10:53	67	1109	
10:55	67	1107	
11:00	67	1105	Start APT
11:05	67	1104.5	
11:10	67	1104	
11:10	67	1103	
11:20	67	1103	
11:25	67	1102.5	
11:30	67	1102	
11:35	67	1102	
11:40	67	1101.5	
11:45	67	1101.5	
11:50	67	1101	
11:55	67	1100.5	
12:00 PM	67	1100.5	End APT
12:05	67	1100.5	
12:10	67	1100.5	
12:15	67	1100.5	
12:20	67	900	Bled off pressure
12:25	67	177	Shut-in well

Presure was measured using HCCG's certified calibrated pressure instrument, a portable digital Eaton Pressure Sensor, Type UPC BACB, Serial No. A1258, with optional ranges from zero to 400 psig, zero to 1,000 psig and zero to 2000 psig and was installed onto the annulus outlet. Note: The zero to 2000 psig range was utilized for this test. A certificate of calibration, included in Appendix C, shows that the pressure sensor was calibrated on December 6, 1994.

HCCG's facility digital transmitter pressure/flow rate and other parameters recorder normally has a pressure range from zero to 1000 psig. However, for the APT the range was modified by Mr. Wilson Cupples and Mr. Ray Horton to a range of zero to 1200 psig. A copy of the computer run (included in Appendix C) shows that the annulus transmitter and recorder were calibrated as an "End to End" unit on August 18, 1995. Also, the same calibration standard was used on both the Eaton Pressure Sensor and the facility digital transmitter pressure recorder.


DIF PRS
INJ PRS
LEVEL
ANN PRS
PSIG
Oct.26.95 10:51 MANUAL
INJ PRS 67.1PSIG DIF PRS H 314.7PSI ANN PRS 1103.4PSIG LEVEL
0 10 20 30 40 50 60 70 80
HOECHST CELANESE CHM. CO.
BAY CITY TEXAS
NEUTRAL INJECTION WELL #3

HOECHST CELANESE CHM. CO.
BAY CITY TEXAS
NEUTRAL INJECTION WELL #3

Oct.26.95 12:07 MANUAL
INJ PRS 67.1PSIG DIF PRS H 314.7PSI ANN PRS 1095.9PSIG LEVEL

0 10 20 30 40 50 60 70 80

0 10 20 30 40 50 60 70 80

APPENDIX C

CALIBRATION CERTIFICATES

CALIBRATED QUALITY EQUIPMENT

HOECHST CELANESE CHEMICAL CO

BAY CITY PLANT

TIME: 12:02:41
DATE: 09/13/95

STATE INSTRUMENTS

AREA	UNIT	NAME	INST ID	SERVICE:	CNTRL	MECH	FREQ	PREV INPS	LST INSP	DUE	COMMENTS
				# 1 WELL							
1	303	UTILITIES	FC-928 -001	WELL INJECTION FLOW	1	WC	3	06/22/94	08/28/95	NO	
1	303	UTILITIES	PR-929 -001	WELL PRESSURE	1	WC	3	06/22/94	08/24/95	NO	
2	303	UTILITIES	PT-3956 -001	NEUTRAL WELL / LOW RANGE	1	WC	3	06/21/94	08/28/95	NO	
2	303	UTILITIES	PT-3956 -002	NEUTRAL WELL / HIGH RANGE	1	WC	3	06/21/94	08/28/95	NO	
1	303	UTILITIES	PR-7363 -001	WELL ANNULUS PRESSURE	2	WC	3	06/22/94	08/28/95	NO	
1	303	UTILITIES	DPR-7373 -001	ANNULUS WELL HEAD DIFF PRESS	2	WC	3	06/22/94	08/28/95	NO	
1	303	UTILITIES	FR-7374 -001	BOILER FEED WATER FLOW TO WELL	2	WC	3	06/22/94	08/28/95	NO	

TOTAL RECORDS FOR # 1 WELL CR-1 IS 7

				# 2 WELL							
2	303	UTILITIES	PT-3521 -001	WELL INJECTION PRESSURE	1	WC	3	06/03/94	08/14/95	NO	
2	303	UTILITIES	PT-3522 -001	ANNULUS TO WELL HEAD DI	1	WC	3	06/03/94	08/14/95	NO	
2	303	UTILITIES	PT-3523 -001	ANNULUS PRESSURE	1	WC	3	06/03/94	08/04/95	NO	
2	303	UTILITIES	LI-3524 -001	WELL BRINE LEVEL V-1256		WC	3	/ /	08/31/95	NO	
2	303	UTILITIES	PR-3965 -001	WELL PRESSURE	1	WC	3	06/20/94	08/18/95	NO	

TOTAL RECORDS FOR # 2 WELL IS 5

TOTAL INSTRUMENTS TO END OF THIS PAGE IS 12

AREA	UNIT	NAME	INST ID	SERVICE:	CNTRL	MECH	FREQ	PREV INSP	LST INSP	DUE	COMMENTS
				# 3 WELL							
2	303	UTILITIES	FT-261 -001	WELL FLOW / LOW RANGE	1	WC	3	06/22/94	08/28/95	NO	
2	303	UTILITIES	FT-261 -002	WELL FLOW / HIGH RANGE	1	WC	3	06/22/94	08/28/95	NO	
2	303	UTILITIES	PR-267 -001	WELL PRESSURE	1	WC	3	04/30/93	08/28/95	NO	
2	303	UTILITIES	PR-3526 -001	WELL INJECTION	1	WC	3	06/06/94	08/18/95	NO	
2	303	UTILITIES	PR-3527 -001	WELL DIFFERENTIAL PRESSURE	1	WC	3	06/06/94	08/18/95	NO	
2	303	UTILITIES	PR-3528 -001	WELL ANNULAS	1	WC	3	06/06/94	08/18/95	NO	
2	303	UTILITIES	LI-3529 -001	WELL BRINE LEVEL V-1257		WC	3	/ /	08/31/95	NO	

TOTAL RECORDS FOR # 3 WELL IS 7

				# 4 WELL							
2	303	UTILITIES	FT-958 -001	WELL FLOW / LOW RANGE	1	WC	3	06/21/94	08/28/95	NO	
2	303	UTILITIES	FT-958 -002	WELL FLOW / HIGH RANGE	1	WC	3	06/21/94	08/18/95	NO	
2	303	UTILITIES	PR-959 -001	WELL PRESSURE	1	WC	3	06/21/94	08/28/95	NO	
2	303	UTILITIES	PR-3531 -001	WELL	1	WC	3	06/09/94	08/18/95	NO	
2	303	UTILITIES	PR-3532 -001	WELL	1	WC	3	06/09/94	08/18/95	NO	
2	303	UTILITIES	PT-3533 -001	WELL ANNULUS PRESSURE	1	WC	3	06/09/94	08/18/95	NO	
2	303	UTILITIES	LI-3534 -001	WELL BRINE LEVEL V-1258		WC	3	/ /	08/31/95	NO	

TOTAL RECORDS FOR # 4 WELL IS 7

				PLANT OUTFALL (PLUME)							
2	303	UTILITIES	PR-7382 -001	PLANT OUTFALL (PLUME)	1	WC	3	06/22/94	08/08/95	NO	

TOTAL INSTRUMENTS TO END OF THIS PAGE IS 27

AREA	UNIT	NAME	INST ID	SERVICE:	CNTRL	MECH	FREQ	PREV INPS	LST INSP	DUE	COMMENTS

TOTAL RECORDS FOR PLANT OUTFALL IS 1

TOTAL INSTRUMENTS TO END OF THIS PAGE IS 27

Consolidated Controls **EATON**

Eaton Corporation
Pressure Sensors Division
15 Durant Avenue
Bethel, Connecticut 06801
(203) 796-6000 • (203) 743-6721

CERTIFICATION OF CALIBRATION

Type UPC 5000 BACB Digital Indicator

Serial No. A1258 Range 400/1000/2000 PSI

P. O. 00014009 Date 12/06/94

NIST 249770-92; 250722-92; 246108-90

THIS IS TO CERTIFY THAT THE INSTRUMENT IDENTIFIED ABOVE HAS BEEN CALIBRATED AGAINST STANDARDS MAINTAINED BY CONSOLIDATED CONTROLS CORPORATION. THE ACCURACY OF THESE STANDARDS IS DIRECTLY TRACEABLE TO THE NATIONAL STANDARDS AT THE NATIONAL BUREAU OF STANDARDS.

THE INSTRUMENT PERFORMS SATISFACTORILY AND ITS ACCURACY IS WITHIN ± 0.05% F.S. AS ORIGINALLY SPECIFIED. CALIBRATION WAS PERFORMED AT A TEMPERATURE OF 70 °F.

Certified By [signature]
CONSOLIDATED CONTROLS

FORM 1.0

MIT ~~QUALITY~~ INSTRUMENTS CALIBRATION FORM
HOECHST CELANESE
BAY CITY PLANT

QUALITY INSTRUMENTS

LOOP NO: — UNIT: —

INSTRUMENT DESCRIPTION: 0-100% Strip Recorder SR#38308

INSTRUMENT RANGE: ZERO 0 PSIG 0 mA SPAN: 1200 PSIG 20 mA

MANUFACTURER: Linear Inst. Co MODEL: 155/E1

CALIBRATION SOP. Manufacturers CALIBRATION FREQUENCY: When Used

PRIMARY STANDARD USED: Transmation Mod. #1040 I&E # 00095

SECONDARY STANDARD USED: Fluke I&E # 35

COMMENTS:

% OF SPAN	0%	25%	50%	75%	100%	UNITS
INPUT	0	8	12	16	20	mA
OUTPUT DESIRED	0	25	50	75	100	%
OUTPUT AS FOUND	0	25	50	75	100	%
OUTPUT AS LEFT	0	25	50	75	100	%
ERROR AS FOUND	0	0	0	0	0	%

✓ IN TOLERANCE ___ OUT OF TOLERANCE

FILL OUT INSTRUMENT NOTIFICATION LOG SHEET ACCORDING TO OPERATION'S GUIDELINES IN THE UNITS QUALITY MANUAL.

CRAFTPERSON: K Mullens DATE: 1-16-95

I & E SUPERVISOR: B Cantrell DATE: 1-16-95

I & E PM PLANNER/ COORDINATOR: _____ DATE: _____

PREPARED BY: ALVIN W. KOCUREK
APPROVED BY: Don L Matthews
DATE: 7-21-92

***** ELECTRONIC GAUGE CALIBRATION DATA *****

GAUGE S/N: 78613
DIAPHRAGM NUMBER: 7133014
RANGE: 10000
DATE CALIBRATED: 2/10/94
GAUGE TYPE: EPG-320

*** TEMPERATURE SUMMARY ***

MAXIMUM POSITIVE ERROR:	0.592 Deg F
MAXIMUM NEGATIVE ERROR:	-0.352 Deg F
MAXIMUM ERROR SPECIFICATION:	3.000 Deg F
NUMBER OF POINTS EXCEEDING ERROR SPEC.:	0
SENSITIVITY:	0.083 Deg F/Hz
SENSITIVITY:	11.992 Hz/Deg F

*** PRESSURE SUMMARY ***

MAXIMUM POSITIVE ERROR:	1.186 PSIA
OCCURS AT:	249.752 Deg F
AND AT:	2015.886 PSIA
MAXIMUM NEGATIVE ERROR:	-1.416 PSIA
OCCURS AT:	200.592 Deg F
AND AT:	4013.284 PSIA
MAXIMUM ERROR SPECIFICATION:	9.000 PSIA
NUMBER OF POINTS EXCEEDING ERROR SPEC:	0
PERCENTAGE OF POINTS EXCEEDING SPECS:	0.000 %
SENSITIVITY:	5.673 PSIA/Hz
SENSITIVITY:	0.176 Hz/PSIA

Gauge serial number: 85954
Range: 1014.76 PsiA
Date calibrated: 09/02/95
Date verified: 09/03/95
Model: EPG-520
Coefficient type: GRC FREQUENCY

TEMPERATURE SUMMARY

Maximum positive error: 0.724 Deg. F
Maximum negative error: -0.588 Deg. F
Sensitivity: 0.087 Deg. F/Hz
Sensitivity: 11.475 Hz/Deg. F

PRESSURE SUMMARY

Maximum positive error: 0.640 PsiA
Occurs at: 52.277 Deg. F
And at: 15.400 PsiA
Maximum negative error: -0.429 PsiA
Occurs at: 52.277 Deg. F
And at: 49.331 PsiA
Maximum hysteresis: 0.722 PsiA
Occurs at: 52.277 Deg. F
And at: 14.760 PsiA
Sensitivity: 1.479 PsiA/Hz
Sensitivity: 0.676 Hz/PsiA

Gauge serial number: 85954
Range: 1014.76 PsiA
Date calibrated: 09/02/95
Date verified: 09/03/95
Model: EPG-520

GAUGE ACCURACY CALCULATIONS

Curve fit: 0.640 PsiA
1/2 Hysteresis: 0.361 PsiA
Short term repeatability at 0 Deg. F: 0.000 PsiA
Long term repeatability at 0 Deg. F: 0.000 PsiA

Overall accuracy: 1.001 PsiA

COOKE
WELL TESTING SPECIALISTS

MILTON M. COOKE COMPANY

WELL TESTING SPECIALISTS

2310 McALLISTER • HOUSTON, TEXAS 77092
713/683-0333
TX. WATS: 1-800-392-3861
FAX: 683-0128

FIELD CALIBRATION CHECK: [PRE-TEST]

(GRC EPG-520 - SURFACE READOUT GAUGE)

DATE: 10/24/1995

D.W.T. S/N: 3469

GRC GAUGE S/N: 85954

D.W.P. (PSIG)	GAUGE PRESSURE (PSIA)	DIFFERENCE (+/-PSI)
0.0	21.63	+21.63
500.0	523.73	+23.73
1000.0	1016.99	+16.99
1500.0	1514.47	+ 14.47

2000.00	2016.22	+16.22
0.00	15.67	+ 15.67

***** GSL-305 WELL TEST DATA *****

COMPANY:	HILTON M. COOKE COMPANY
CLIENT:	HOECHST CELANESE CHEMICAL CO.
GAUGE NUMBER:	85954
WELL NAME:	WDW-32
WELL NUMBER:	03
TEST NUMBER:	6
LOCATION:	BAY CITY LOCTEIT
TEST OPERATOR:	DUNG PEARL
COMMENTS:	PRE TEST CALIBRATION CHECK EPG-5204-500 PSI

POSITION	GAUGE SERIAL NUMBER	PRESSURE RANGE	DATE CALIBRATED
1	85954	2514.76 PsiA	08/23/95
2	NO GAUGE		
3	NO GAUGE		
4	NO GAUGE		

Date: 10/24/95

REAL TIME	DELTA TIME HRS	TEMPERATURE Deg F	PRESSURE PSIA	GAUGE POS	COMMENTS
09:52:08	0.004	73.77		1	
09:52:22	0.008	73.73		1	
09:52:37	0.012	73.70		1	
09:52:51	0.016	73.67		1	
09:53:06	0.020	73.65		1	
09:53:20	0.024	73.62		1	
09:54:02	0.036	73.53		1	
09:54:16	0.040		21.36	1	
09:54:31	0.044	73.50		1	
09:54:45	0.048		21.34	1	
09:55:00	0.052	73.47		1	
09:55:14	0.056		21.31	1	
09:55:28	0.060	73.44		1	
09:55:43	0.064		21.63	1	
09:55:57	0.068	73.41		1	
09:56:12	0.072		81.84	1	
09:56:26	0.076	73.40		1	
09:56:40	0.080		523.37	1	
09:56:55	0.084	73.38		1	
09:57:09	0.088		523.73	1	
09:57:24	0.092	73.35		1	
09:57:38	0.096		441.80	1	
09:57:52	0.100	73.33		1	
09:58:07	0.104		910.87	1	
09:58:21	0.108	73.34		1	
09:58:36	0.112		1009.04	1	
09:58:50	0.116	73.32		1	
09:59:04	0.120		1092.70	1	
09:59:19	0.124	73.30		1	
09:59:33	0.128		980.35	1	
09:59:55	0.134	73.29		1	
10:00:02	0.136		984.96	1	
10:00:09	0.138	73.29		1	
10:00:17	0.140		1001.44	1	
10:00:24	0.142	73.28		1	
10:00:31	0.144		999.96	1	
10:00:38	0.146	73.28		1	
10:00:45	0.148		1016.99	1	
10:00:53	0.150	73.28		1	
10:01:00	0.152		1008.02	1	
10:01:07	0.154	73.28		1	
10:01:14	0.156		986.54	1	
10:01:21	0.158	73.29		1	
10:01:29	0.160		1503.39	1	
10:01:36	0.162	73.29		1	
10:01:43	0.164		1484.18	1	
10:01:50	0.166	73.29		1	
10:01:57	0.168		1555.26	1	
10:02:05	0.170	73.29		1	
10:02:12	0.172		1526.85	1	

Date: 10/24/95

REAL TIME	DELTA TIME HRS	TEMPERATURE Deg F	PRESSURE PSIA	GAUGE POS	COMMENTS
10:02:19	0.174	73.29		1	
10:02:26	0.176		1514.47	1	
10:02:33	0.178	73.29		1	
10:02:41	0.180		1466.15	1	
10:02:48	0.182	73.28		1	
10:02:55	0.184		1978.24	1	
10:03:02	0.186	73.30		1	
10:03:09	0.188		1985.51	1	
10:03:17	0.190	73.29		1	
10:03:24	0.192		1983.46	1	
10:03:31	0.194	73.29		1	
10:03:38	0.196		1972.82	1	
10:03:45	0.198	73.29		1	
10:03:53	0.200		2168.33	1	
10:04:00	0.202	73.29		1	
10:04:07	0.204		2153.88	1	
10:04:14	0.206	73.29		1	
10:04:21	0.208		2142.62	1	
10:04:29	0.210	73.29		1	
10:04:36	0.212		2131.11	1	
10:04:43	0.214	73.28		1	
10:04:50	0.216		2121.23	1	
10:04:57	0.218	73.28		1	
10:05:05	0.220		2111.84	1	
10:05:12	0.222	73.28		1	
10:05:19	0.224		1817.83	1	
10:05:26	0.226	73.27		1	
10:05:33	0.228		2016.22	1	
10:05:41	0.230	73.27		1	
10:05:48	0.232		2011.17	1	
10:05:55	0.234	73.28		1	
10:06:02	0.236		730.11	1	
10:06:07	0.238	73.21		1	
10:06:17	0.240		30.39	1	
10:06:24	0.242	73.20		1	
10:06:31	0.244		21.29	1	
10:06:38	0.246	73.20		1	
10:06:45	0.248		21.32	1	
10:06:53	0.250	73.21		1	
10:07:00	0.252		18.09	1	
10:07:07	0.254	73.22		1	
10:07:14	0.256		15.60	1	
10:07:21	0.258	73.22		1	
10:07:29	0.260		15.67	1	

COOKE
WELL TESTING SPECIALISTS

MILTON M. COOKE COMPANY

WELL TESTING SPECIALISTS

2310 McALLISTER • HOUSTON, TEXAS 77092
713/683-0333 TX. WATS: 1-800-392-3861
FAX: 683-0128

FIELD CALIBRATION CHECK: [POST-TEST]

(GRC EPG-520 - SURFACE READOUT GAUGE)

DATE: 10/26/1995

D.W.T. S/N: 3469

GRC GAUGE S/N: 85954

D.W.P. (PSIG)	GAUGE PRESSURE (PSIA)	DIFFERENCE (+/-PSI)
0.0	14.15	+14.15
500.0	515.62	+15.62
1000.0	1015.70	+15.70
1500.0	1515.78	+ 15.78

2000.00	2011.78	+11.78
0.00	14.70	+ 14.70

***** GSC-503 WELL TEST DATA *****

COMPANY: MILTON M. COOKE COMPANY
CLIENT: HOECHST CELANESE CHEMICAL CO.
GAUGE NUMBER: 85954
WELL NAME: WDW-32
WELL NUMBER: 03
TEST NUMBER: 8
LOCATION: BAY CITY FACILITY
TEST OPERATOR: DOUG BEALL
COMMENTS: POST TEST CALIBRATION TEST
EFG-520/2500 PSI

POSITION	GAUGE SERIAL NUMBER	PRESSURE RANGE	DATE CALIBRATED
1	85954	2514.76 PsiA	09/23/95
2	NO GAUGE		
3	NO GAUGE		
4	NO GAUGE		

Date: 10/26/95

REAL TIME	DELTA TIME HRS	TEMPERATURE Deg F	PRESSURE PSIA	GAUGE POS	COMMENTS
08:02:54	0.010	76.87		1	
08:03:02	0.012		14.33	1	
08:03:09	0.014	76.83		1	
08:03:16	0.016		14.30	1	
08:03:23	0.018	76.82		1	
08:03:31	0.020		14.28	1	
08:03:38	0.022	76.81		1	
08:03:45	0.024		14.27	1	
08:03:52	0.026	76.81		1	
08:03:59	0.028		14.26	1	
08:04:07	0.030	76.81		1	
08:04:14	0.032		14.25	1	
08:04:21	0.034	76.81		1	
08:04:28	0.036		14.24	1	
08:04:35	0.038	76.81		1	
08:04:43	0.040		14.24	1	
08:04:50	0.042	76.81		1	
08:04:57	0.044		14.23	1	
08:05:04	0.046	76.81		1	
08:05:11	0.048		14.23	1	
08:05:19	0.050	76.72		1	
08:05:26	0.052		14.19	1	
08:05:33	0.054	76.69		1	
08:05:40	0.056		14.18	1	
08:05:47	0.058	76.68		1	
08:05:55	0.060		14.18	1	
08:06:02	0.062	76.66		1	
08:06:09	0.064		14.17	1	
08:06:16	0.066	76.65		1	
08:06:23	0.068		14.17	1	
08:06:31	0.070	76.64		1	
08:06:38	0.072		14.16	1	
08:06:45	0.074	76.62		1	
08:06:52	0.076		14.15	1	
08:06:59	0.078	76.61		1	
08:07:07	0.080		27.72	1	
08:07:14	0.082	76.60		1	
08:07:21	0.084		49.44	1	
08:07:28	0.086	76.60		1	
08:07:35	0.088		46.81	1	
08:07:43	0.090	76.61		1	
08:07:50	0.092		533.05	1	
08:07:57	0.094	76.61		1	
08:08:04	0.096		529.32	1	
08:08:11	0.098	76.60		1	
08:08:19	0.100		447.93	1	
08:08:26	0.102	76.58		1	
08:08:33	0.104		455.49	1	
08:08:40	0.106	76.58		1	
08:08:47	0.108		518.43	1	

Date: 10/26/95

REAL TIME	DELTA TIME HRS	TEMPERATURE Deg F	PRESSURE PSIA	GAUGE POS	COMMENTS
08:08:55	0.110	76.57		1	
08:09:02	0.112		515.62	1	
08:09:09	0.114	76.56		1	
08:09:16	0.116		503.81	1	
08:09:23	0.118	76.56		1	
08:09:31	0.120		1018.82	1	
08:09:38	0.122	76.57		1	
08:09:45	0.124		1022.62	1	
08:09:52	0.126	76.55		1	
08:09:59	0.128		1028.04	1	
08:10:07	0.130	76.54		1	
08:10:14	0.132		1033.97	1	
08:10:21	0.134	76.53		1	
08:10:28	0.136		792.62	1	
08:10:35	0.138	76.52		1	
08:10:43	0.140		930.19	1	
08:10:50	0.142	76.52		1	
08:10:57	0.144		1001.18	1	
08:11:04	0.146	76.51		1	
08:11:11	0.148		1005.83	1	
08:11:19	0.150	76.51		1	
08:11:26	0.152		1028.10	1	
08:11:33	0.154	76.50		1	
08:11:40	0.156		1024.42	1	
08:11:47	0.158	76.50		1	
08:11:55	0.160		989.75	1	
08:12:02	0.162	76.49		1	
08:12:09	0.164		1015.70	1	
08:12:16	0.166	76.48		1	
08:12:23	0.168		1011.06	1	
08:12:31	0.170	76.48		1	
08:12:38	0.172		911.86	1	
08:12:45	0.174	76.48		1	
08:12:52	0.176		1517.42	1	
08:12:59	0.178	76.48		1	
08:13:07	0.180		1516.14	1	
08:13:14	0.182	76.47		1	
08:13:21	0.184		1515.97	1	
08:13:28	0.186	76.47		1	
08:13:35	0.188		1511.62	1	
08:13:43	0.190	76.46		1	
08:13:50	0.192		1509.85	1	
08:13:57	0.194	76.45		1	
08:14:04	0.196		1506.40	1	
08:14:11	0.198	76.44		1	
08:14:19	0.200		1515.19	1	
08:14:26	0.202	76.43		1	
08:14:33	0.204		1515.78	1	
08:14:40	0.206	76.42		1	
08:14:47	0.208		1511.48	1	

Date: 10/26/95

REAL TIME	DELTA TIME HRS	TEMPERATURE Deg F	PRESSURE PSIA	GAUGE POS	COMMENTS
08:14:55	0.210	76.41		1	
08:15:02	0.212		1966.26	1	
08:15:09	0.214	76.42		1	
08:15:16	0.216		1997.91	1	
08:15:23	0.218	76.42		1	
08:15:31	0.220		1997.29	1	
08:15:38	0.222	76.41		1	
08:15:45	0.224		2001.54	1	
08:15:52	0.226	76.41		1	
08:15:59	0.228		1998.53	1	
08:16:07	0.230	76.40		1	
08:16:14	0.232		2008.37	1	
08:16:21	0.234	76.40		1	
08:16:28	0.236		2007.04	1	
08:16:35	0.238	76.40		1	
08:16:43	0.240		1995.54	1	
08:16:50	0.242	76.40		1	
08:16:57	0.244		2019.84	1	
08:17:04	0.246	76.40		1	
08:17:11	0.248		2023.91	1	
08:17:19	0.250	76.39		1	
08:17:26	0.252		1992.47	1	
08:17:33	0.254	76.39		1	
08:17:40	0.256		1993.97	1	
08:17:47	0.258	76.39		1	
08:17:55	0.260		2035.44	1	
08:18:02	0.262	76.39		1	
08:18:09	0.264		2023.35	1	
08:18:16	0.266	76.38		1	
08:18:23	0.268		2012.11	1	
08:18:31	0.270	76.38		1	
08:18:38	0.272		2000.59	1	
08:18:45	0.274	76.38		1	
08:18:52	0.276		2012.22	1	
08:18:59	0.278	76.38		1	
08:19:07	0.280		2000.69	1	
08:19:14	0.282	76.37		1	
08:19:21	0.284		2023.02	1	
08:19:28	0.286	76.37		1	
08:19:35	0.288		2011.78	1	
08:19:43	0.290	76.37		1	
08:19:50	0.292		2000.66	1	
08:19:57	0.294	76.36		1	
08:20:04	0.296		1936.23	1	
08:20:11	0.298	76.31		1	
08:20:19	0.300		38.18	1	
08:20:26	0.302	76.28		1	
08:20:33	0.304		37.66	1	
08:20:40	0.306	76.28		1	
08:20:47	0.308		24.39	1	

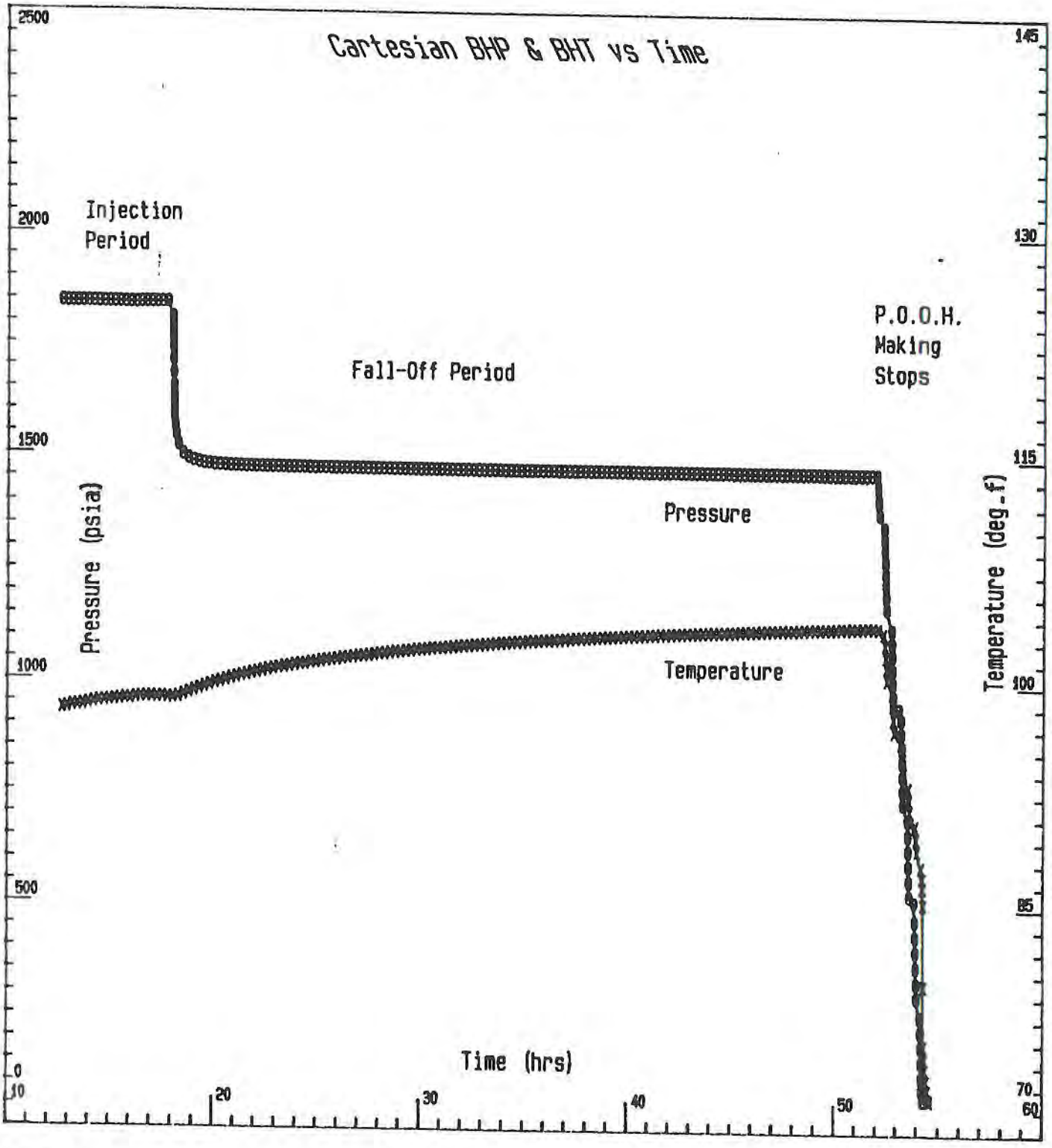
Date: 10/26/95

REAL TIME	DELTA TIME HRS	TEMPERATURE Deg F	PRESSURE PSIA	GAUGE POS	COMMENTS
08:20:55	0.310	76.28		1	
08:21:02	0.312		21.33	1	
08:21:09	0.314	76.28		1	
08:21:16	0.316		16.87	1	
08:21:23	0.318	76.28		1	
08:21:31	0.320		13.73	1	
08:21:38	0.322	76.28		1	
08:21:45	0.324		12.43	1	
08:21:52	0.326	76.27		1	
08:21:59	0.328		12.11	1	
08:22:07	0.330	76.27		1	
08:22:14	0.332		12.86	1	
08:22:21	0.334	76.27		1	
08:22:28	0.336		13.51	1	
08:22:35	0.338	76.27		1	
08:22:43	0.340		13.84	1	
08:22:50	0.342	76.26		1	
08:22:57	0.344		14.54	1	
08:23:04	0.346	76.25		1	
08:23:11	0.348		14.69	1	
08:23:19	0.350	76.25		1	
08:23:26	0.352		14.70	1	
08:23:33	0.354	76.24		1	
08:23:40	0.356		14.69	1	
08:23:47	0.358	76.24		1	
08:23:55	0.360		14.70	1	

ECO Solutions, Inc.
Hoechst Celanese Chemical Group, Inc.
MIT/Falloff Test Well No. 3

APPENDIX D

FALL-OFF PLOTS



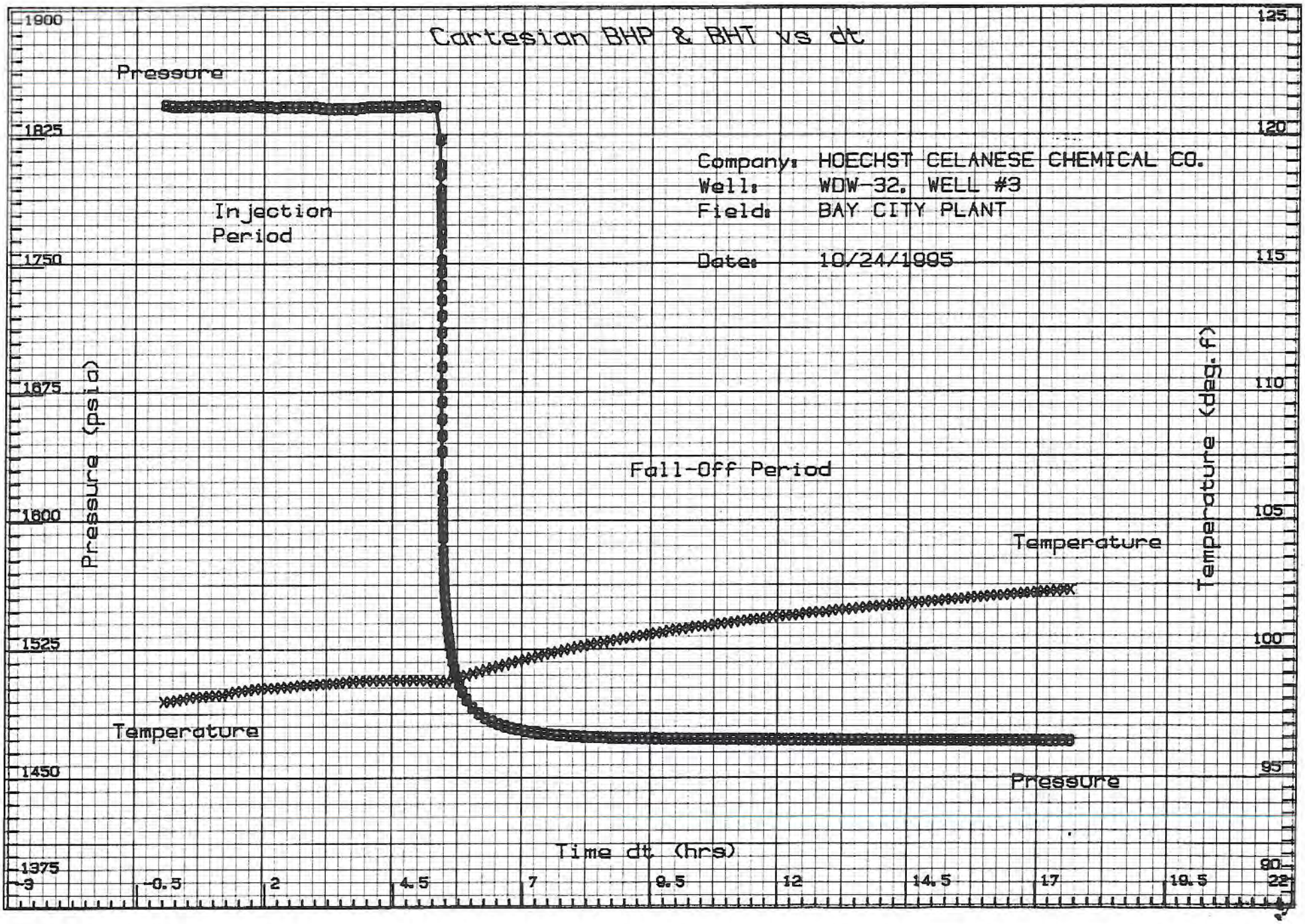
Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-32 WELL #3
Field: BAY CITY PLANT

Date: 10/24/1995

Begin Time: 12:41:31 10/24/95
End Time: 06:34:33 10/26/95

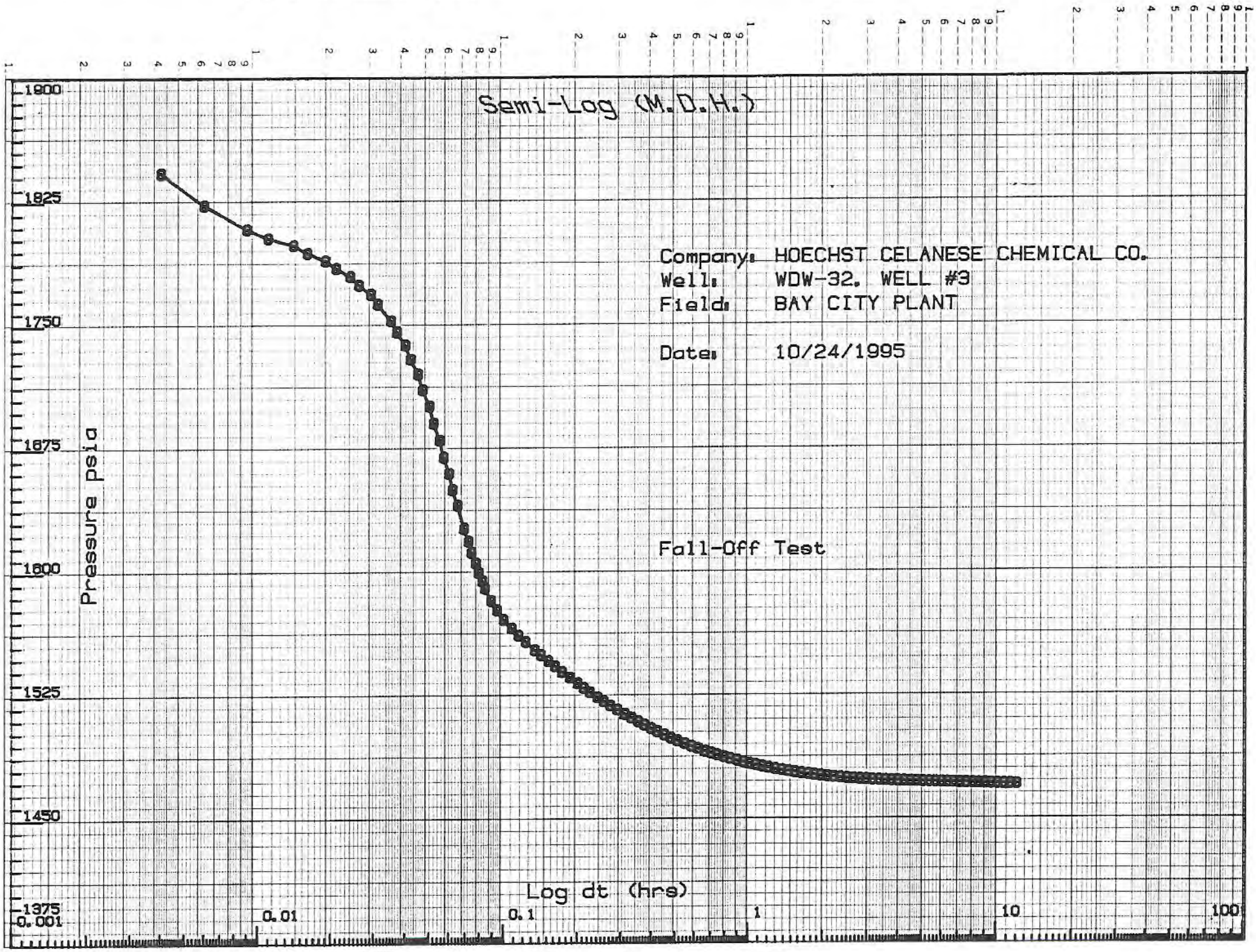
Final Injection B.H.P. = 1842 psi
Final Fall-Off B.H.P. = 1468 psi
Gauge Depth = 3192 ft.

K+E 10 X 10 TO THE INCH • 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.



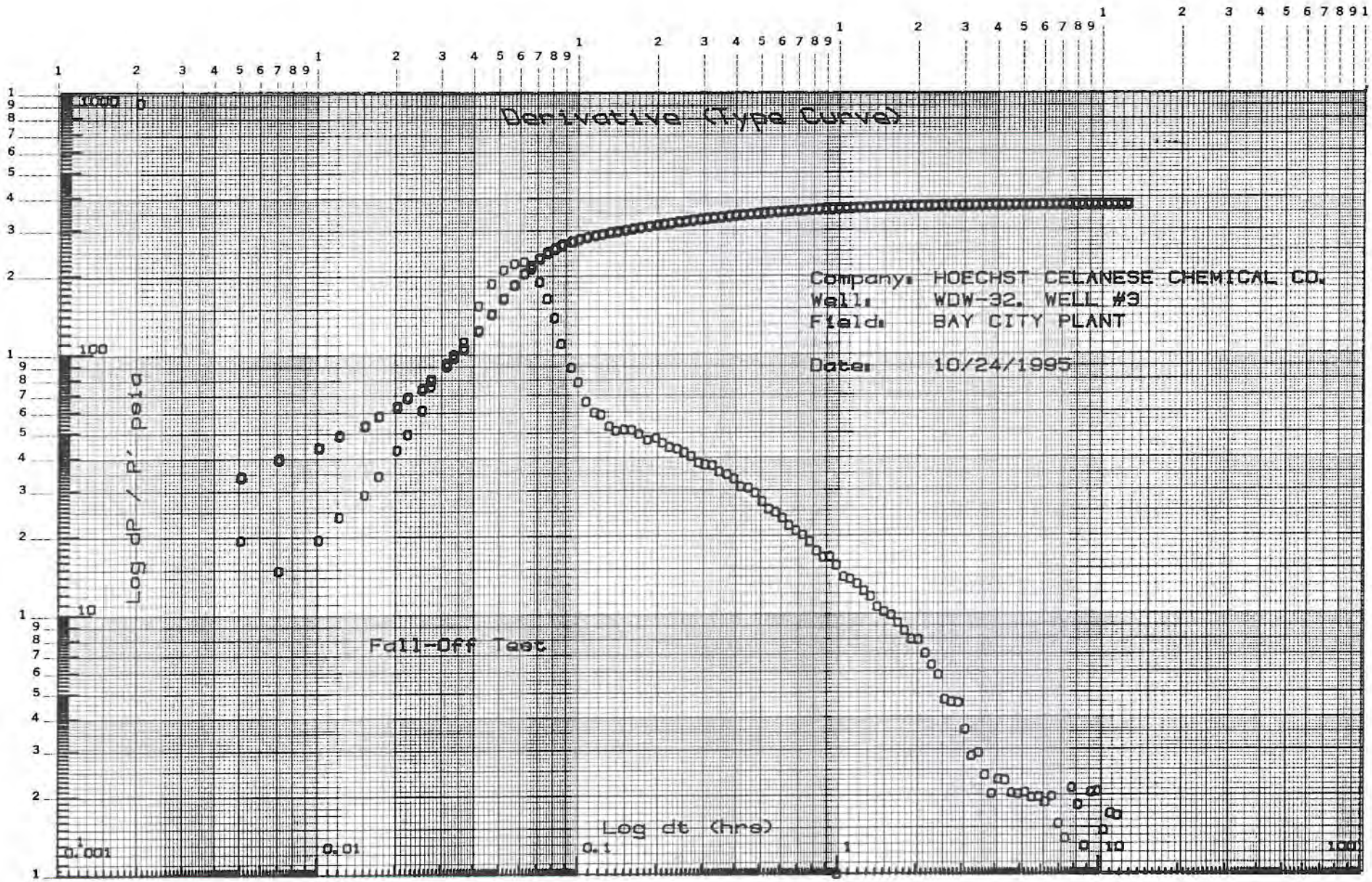
K+E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 6210



K+E LOGARITHMIC 3 x 5 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

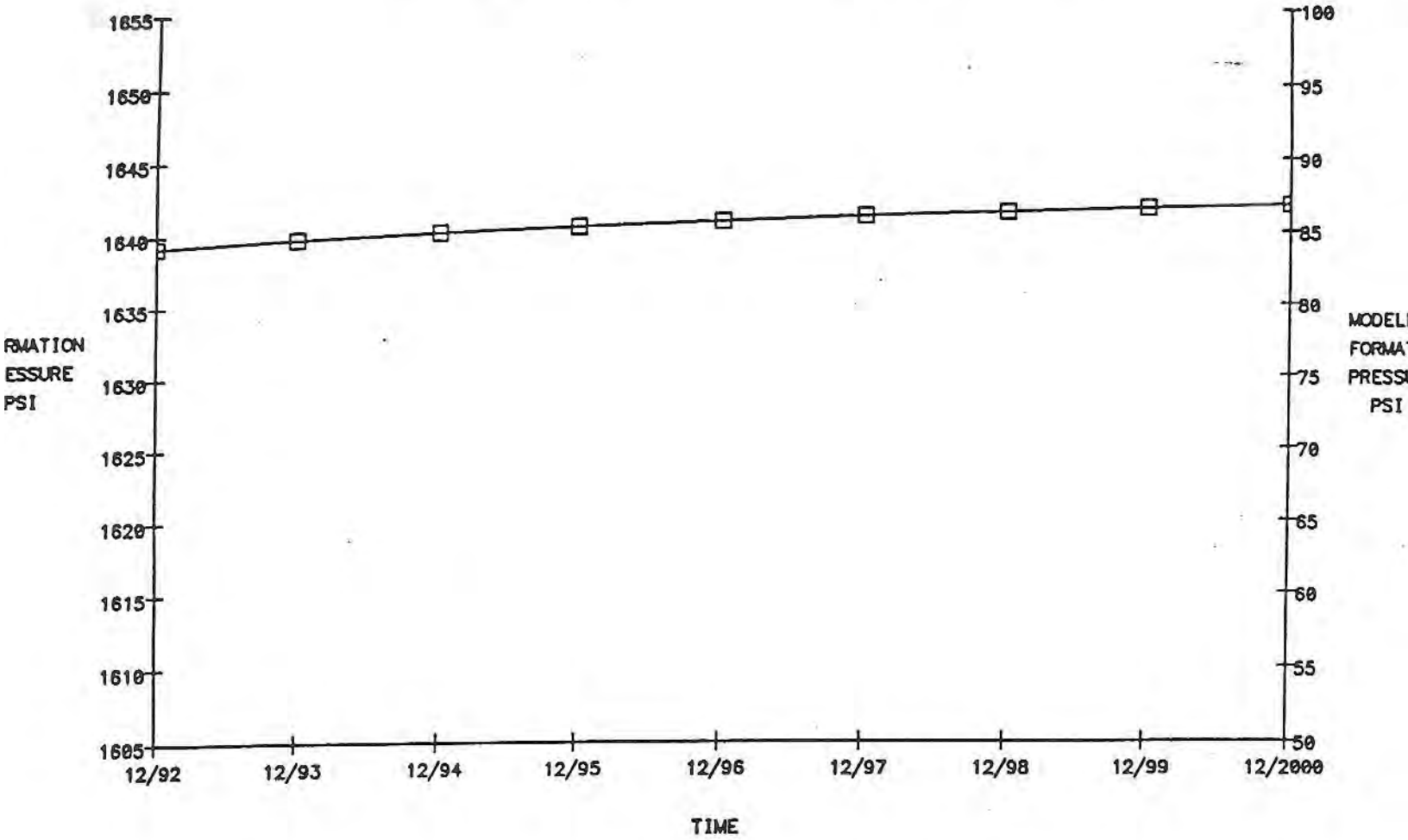
46 7520



APPENDIX E

GRAPH OF MODELED PRESSURES

UPPER MIOCENE INJECTION SAND - WDW-32



MODELED OPERATIONAL FORMATION PRESSURES IN WDW-32 (1992 - 2000)

APPENDIX F

FALL-OFF DATA AND FLOW RATE DATA

Field: BAY CITY PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
[Tuesday: October 24, 1995]						
		Gauge @ Test Depth of 3192 ft.				
		Surface Read-Out Gauge S/N 85954/2500 psi				
		Memory Gauge Back-Up S/N 79993/5000 psi				
		Monitoring Bottom-Hole Injection Pressure.				
1	0	12:41:31	0.0000	1843.66	97.98	0.00
		Shut-Down Injection and start Fall-Off Test.				
		Monitoring Bottom-Hole Fall-Off Pressure.				
688	0	18: 1:55	5.3400	1842.22	98.75	600.15
[Wednesday: October 25, 1995]						
		Continuing to monitor Bottom-Hole Fall-Off Press.				
2299	1	6: 0:11	17.3110	1470.09	102.20	69.50
[Thursday: October 26, 1995]						
		End of Fall-Off Test.				
		Start out of hole making gradient stops.				
3700	2	4: 1:55	39.3400	1468.15	104.00	0.00
		Depart 3,000 ft.				
3721	2	4:22: 5	39.6760	1384.43	103.62	0.00
		Depart 2,500 ft.				
3744	2	4:44: 9	40.0440	1167.31	100.19	0.00
		Depart 2,000 ft.				
3773	2	5:12: 0	40.5080	950.13	96.75	0.00
		Depart 1,500 ft.				
3793	2	5:31:12	40.8280	732.94	93.69	0.00
		Depart 1,000 ft.				
3816	2	5:53:17	41.1960	515.91	90.72	0.00
		Depart 500 ft.				
3832	2	6: 8:38	41.4520	299.23	88.33	0.00
		Arrived @ Surface.				
3840	2	6:16:19	41.5800	84.70	85.34	0.00

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
		Gauge @ Test Depth of 3192 ft.				
		Surface Read-Out Gauge S/N 85954/2500 psi				
		Memory Gauge Back-Up S/N 79993/5000 psi				
		Monitoring Bottom-Hole Injection Pressure.				
1	0	12:41:31	0.0000	1843.66	97.98	0.00
3	0	12:44:31	0.0500	1843.62	97.96	0.00
12	0	12:46:41	0.0860	1843.45	97.99	0.00
17	0	12:48:47	0.1210	1842.83	98.00	0.00
22	0	12:51:11	0.1610	1843.17	98.00	0.00
27	0	12:53:35	0.2010	1842.81	98.02	0.00
32	0	12:55:59	0.2410	1842.66	98.02	0.00
37	0	12:58:23	0.2810	1842.99	98.05	0.00
42	0	13: 0:47	0.3210	1842.74	98.07	0.00
47	0	13: 3:11	0.3610	1842.70	98.08	0.00
52	0	13: 5:35	0.4010	1842.72	98.09	0.00
57	0	13: 7:59	0.4410	1843.05	98.10	0.00
62	0	13:10:23	0.4810	1842.65	98.12	0.00
67	0	13:12:47	0.5210	1842.78	98.15	0.00
72	0	13:15:11	0.5610	1842.80	98.18	0.00
77	0	13:17:35	0.6010	1842.72	98.20	0.00
82	0	13:19:59	0.6410	1842.97	98.18	0.00
87	0	13:22:23	0.6810	1842.97	98.17	0.00
92	0	13:24:47	0.7210	1842.97	98.17	0.00
97	0	13:27:11	0.7610	1842.85	98.17	0.00
102	0	13:29:35	0.8010	1842.81	98.19	0.00
107	0	13:31:59	0.8410	1842.87	98.20	0.00
112	0	13:34:23	0.8810	1842.87	98.22	0.00
117	0	13:36:47	0.9210	1843.04	98.22	0.00
122	0	13:39:11	0.9610	1842.77	98.21	0.00
127	0	13:41:35	1.0010	1843.11	98.22	0.00
132	0	13:43:59	1.0410	1843.21	98.24	0.00
137	0	13:46:23	1.0810	1843.00	98.24	0.00
142	0	13:48:47	1.1210	1843.15	98.22	0.00
147	0	13:51:11	1.1610	1843.19	98.23	0.00
152	0	13:53:35	1.2010	1843.23	98.26	0.00
157	0	13:55:59	1.2410	1843.04	98.29	0.00
162	0	13:58:23	1.2810	1843.08	98.31	0.00
167	0	14: 0:47	1.3210	1842.74	98.33	0.00
172	0	14: 3:11	1.3610	1842.97	98.35	0.00
177	0	14: 5:35	1.4010	1842.71	98.36	0.00
182	0	14: 7:59	1.4410	1842.80	98.38	0.00
187	0	14:10:23	1.4810	1842.69	98.40	0.00
192	0	14:12:47	1.5210	1842.81	98.40	0.00
197	0	14:15:11	1.5610	1842.76	98.40	0.00
202	0	14:17:35	1.6010	1842.90	98.40	0.00
207	0	14:19:59	1.6410	1843.14	98.40	0.00
212	0	14:22:23	1.6810	1843.25	98.42	0.00
217	0	14:24:47	1.7210	1842.98	98.45	0.00

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
232	0	14:31:59	1.8410	1842.34	98.47	0.00
237	0	14:34:23	1.8810	1842.33	98.48	0.00
242	0	14:36:47	1.9210	1842.23	98.48	0.00
247	0	14:39:11	1.9610	1842.29	98.50	0.00
252	0	14:41:35	2.0010	1842.32	98.50	0.00
257	0	14:43:59	2.0410	1842.35	98.50	0.00
262	0	14:46:23	2.0810	1842.08	98.50	0.00
267	0	14:48:47	2.1210	1841.76	98.49	0.00
272	0	14:51:11	2.1610	1841.77	98.49	0.00
277	0	14:53:35	2.2010	1841.95	98.50	0.00
282	0	14:55:59	2.2410	1842.15	98.51	0.00
287	0	14:58:23	2.2810	1842.38	98.53	0.00
292	0	15: 0:47	2.3210	1842.37	98.54	0.00
297	0	15: 3:11	2.3610	1842.03	98.54	0.00
302	0	15: 5:35	2.4010	1842.22	98.53	0.00
307	0	15: 7:59	2.4410	1842.22	98.53	0.00
312	0	15:10:23	2.4810	1842.28	98.54	0.00
317	0	15:12:47	2.5210	1842.31	98.56	0.00
322	0	15:15:11	2.5610	1842.19	98.57	0.00
327	0	15:17:35	2.6010	1841.93	98.58	0.00
332	0	15:19:59	2.6410	1842.22	98.60	0.00
337	0	15:22:23	2.6810	1842.29	98.61	0.00
342	0	15:24:47	2.7210	1842.41	98.61	0.00
347	0	15:27:11	2.7610	1841.99	98.61	0.00
352	0	15:29:35	2.8010	1842.00	98.61	0.00
357	0	15:31:59	2.8410	1842.18	98.62	0.00
362	0	15:34:23	2.8810	1842.28	98.62	0.00
367	0	15:36:47	2.9210	1842.31	98.63	0.00
372	0	15:39:11	2.9610	1842.28	98.63	0.00
377	0	15:41:35	3.0010	1841.56	98.64	0.00
382	0	15:43:59	3.0410	1841.72	98.65	0.00
387	0	15:46:23	3.0810	1841.40	98.66	0.00
392	0	15:48:47	3.1210	1841.25	98.67	0.00
397	0	15:51:11	3.1610	1841.15	98.67	0.00
402	0	15:53:35	3.2010	1841.12	98.68	0.00
407	0	15:55:59	3.2410	1841.07	98.67	0.00
412	0	15:58:23	3.2810	1841.22	98.66	0.00
417	0	16: 0:47	3.3210	1841.17	98.67	0.00
422	0	16: 3:11	3.3610	1841.26	98.69	0.00
427	0	16: 5:35	3.4010	1841.28	98.70	0.00
432	0	16: 7:59	3.4410	1841.20	98.70	0.00
437	0	16:10:23	3.4810	1841.21	98.71	0.00
442	0	16:12:47	3.5210	1841.11	98.72	0.00
447	0	16:15:11	3.5610	1841.22	98.73	0.00
452	0	16:17:35	3.6010	1841.26	98.74	0.00
457	0	16:19:59	3.6410	1841.17	98.75	0.00
462	0	16:22:23	3.6810	1841.30	98.75	0.00
467	0	16:24:47	3.7210	1841.13	98.75	0.00

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
482	0	16:31:59	3.8410	1841.74	98.76	0.00
487	0	16:34:23	3.8810	1841.85	98.76	0.00
492	0	16:36:47	3.9210	1842.12	98.76	0.00
497	0	16:39:11	3.9610	1842.20	98.76	0.00
502	0	16:41:35	4.0010	1842.29	98.77	0.00
507	0	16:43:59	4.0410	1842.43	98.77	0.00
512	0	16:46:23	4.0810	1842.41	98.78	0.00
517	0	16:48:47	4.1210	1842.14	98.78	0.00
522	0	16:51:11	4.1610	1842.32	98.78	0.00
527	0	16:53:35	4.2010	1842.36	98.78	0.00
532	0	16:55:59	4.2410	1842.31	98.78	0.00
537	0	16:58:23	4.2810	1842.32	98.78	0.00
542	0	17: 0:47	4.3210	1842.32	98.79	0.00
547	0	17: 3:11	4.3610	1842.22	98.79	0.00
552	0	17: 5:35	4.4010	1842.02	98.79	0.00
557	0	17: 7:59	4.4410	1841.97	98.79	0.00
562	0	17:10:23	4.4810	1842.15	98.79	0.00
567	0	17:12:47	4.5210	1842.38	98.79	0.00
572	0	17:15:11	4.5610	1842.36	98.79	0.00
577	0	17:17:35	4.6010	1842.29	98.78	0.00
582	0	17:19:59	4.6410	1842.25	98.77	0.00
587	0	17:22:23	4.6810	1842.71	98.78	0.00
592	0	17:24:47	4.7210	1842.55	98.78	0.00
597	0	17:27:11	4.7610	1842.75	98.78	0.00
602	0	17:29:35	4.8010	1842.64	98.78	0.00
607	0	17:31:59	4.8410	1842.51	98.79	0.00
612	0	17:34:23	4.8810	1842.64	98.79	0.00
617	0	17:36:47	4.9210	1842.68	98.78	0.00
622	0	17:39:11	4.9610	1842.86	98.78	0.00
627	0	17:41:35	5.0010	1842.81	98.78	0.00
632	0	17:43:59	5.0410	1842.75	98.79	0.00
637	0	17:46:23	5.0810	1842.44	98.78	0.00
642	0	17:48:47	5.1210	1842.35	98.77	0.00
647	0	17:51:11	5.1610	1842.70	98.76	0.00
650	0	17:52:37	5.1850	1842.70	98.76	0.00
651	0	17:53: 6	5.1930	1842.77	98.76	0.00
652	0	17:53:35	5.2010	1842.70	98.76	0.00
653	0	17:54: 3	5.2090	1842.60	98.75	0.00
654	0	17:54:32	5.2170	1842.58	98.75	0.00
655	0	17:55: 1	5.2250	1842.54	98.75	0.00
656	0	17:55:30	5.2330	1842.54	98.75	0.00
657	0	17:55:59	5.2410	1842.55	98.75	0.00
658	0	17:56:27	5.2490	1842.56	98.75	0.00
659	0	17:56:56	5.2570	1842.64	98.75	0.00
660	0	17:57:29	5.2660	1842.57	98.75	0.00
661	0	17:57:39	5.2690	1842.60	98.75	0.00
662	0	17:57:47	5.2710	1842.54	98.75	0.00
663	0	17:57:57	5.2740	1842.62	98.75	0.00

REC #	FLAG	TIME	(HRS)	(PSIA)	(Deg.F)	(PSIG)
666	0	17:58:30	5.2830	1842.67	98.75	0.00
667	0	17:58:41	5.2860	1842.68	98.75	0.00
668	0	17:58:48	5.2880	1842.70	98.75	0.00
669	0	17:58:59	5.2910	1842.72	98.76	0.00
670	0	17:59: 6	5.2930	1842.70	98.75	0.00
671	0	17:59:17	5.2960	1842.69	98.75	0.00
672	0	17:59:24	5.2980	1842.67	98.75	0.00
673	0	17:59:35	5.3010	1842.73	98.75	0.00
674	0	17:59:42	5.3030	1842.69	98.75	0.00
675	0	17:59:53	5.3060	1842.51	98.75	0.00
676	0	18: 0: 7	5.3100	1842.29	98.75	0.00
677	0	18: 0:14	5.3120	1842.17	98.75	0.00
678	0	18: 0:25	5.3150	1842.15	98.75	0.00
679	0	18: 0:32	5.3170	1842.12	98.75	0.00
680	0	18: 0:43	5.3200	1842.16	98.75	0.00
681	0	18: 0:50	5.3220	1842.24	98.75	0.00
682	0	18: 1: 1	5.3250	1842.17	98.75	0.00
683	0	18: 1: 8	5.3270	1842.12	98.75	0.00
684	0	18: 1:19	5.3300	1842.16	98.75	0.00
685	0	18: 1:26	5.3320	1842.21	98.75	0.00
686	0	18: 1:37	5.3350	1842.20	98.75	0.00
687	0	18: 1:44	5.3370	1842.27	98.75	0.00
		Shut-Down Injection and start Fall-Off Test.				
		Monitoring Bottom-Hole Fall-Off Pressure.				
688	0	18: 1:55	5.3400	1842.22	98.75	600.15
689	0	18: 2: 9	5.3440	1842.18	98.74	0.00
690	0	18: 2:17	5.3460	1823.20	98.74	0.00
691	0	18: 2:27	5.3490	1808.60	98.75	0.00
692	0	18: 2:35	5.3510	1803.01	98.74	0.00
693	0	18: 2:45	5.3540	1798.81	98.74	0.00
694	0	18: 2:53	5.3560	1793.91	98.74	0.00
695	0	18: 3: 3	5.3590	1789.43	98.74	0.00
696	0	18: 3:11	5.3610	1784.73	98.74	0.00
697	0	18: 3:21	5.3640	1779.77	98.74	0.00
698	0	18: 3:29	5.3660	1774.53	98.74	0.00
699	0	18: 3:39	5.3690	1768.99	98.74	0.00
700	0	18: 3:47	5.3710	1762.96	98.74	0.00
701	0	18: 4: 1	5.3750	1752.70	98.74	0.00
702	0	18: 4: 8	5.3770	1745.96	98.73	0.00
703	0	18: 4:19	5.3800	1738.02	98.73	0.00
704	0	18: 4:26	5.3820	1729.52	98.73	0.00
705	0	18: 4:37	5.3850	1720.38	98.73	0.00
706	0	18: 4:44	5.3870	1710.80	98.73	0.00
707	0	18: 4:55	5.3900	1700.76	98.73	0.00
708	0	18: 5: 2	5.3920	1690.45	98.73	0.00
709	0	18: 5:13	5.3950	1680.10	98.73	0.00
710	0	18: 5:20	5.3970	1669.78	98.73	0.00
711	0	18: 5:31	5.4000	1659.70	98.72	0.00

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
714	0	18: 6: 3	5.4090	1626.37	98.74	0.00
715	0	18: 6:14	5.4120	1618.70	98.72	0.00
716	0	18: 6:21	5.4140	1611.71	98.72	0.00
717	0	18: 6:32	5.4170	1605.32	98.72	0.00
718	0	18: 6:39	5.4190	1599.57	98.72	0.00
719	0	18: 6:50	5.4220	1594.55	98.72	0.00
720	0	18: 6:57	5.4240	1590.09	98.71	0.00
721	0	18: 7: 8	5.4270	1586.07	98.71	0.00
722	0	18: 7:15	5.4290	1582.48	98.71	0.00
723	0	18: 7:26	5.4320	1579.35	98.71	0.00
724	0	18: 7:33	5.4340	1576.61	98.71	0.00
725	0	18: 7:44	5.4370	1574.17	98.71	0.00
726	0	18: 7:55	5.4400	1570.78	98.71	0.00
727	0	18: 8: 6	5.4430	1569.02	98.71	0.00
728	0	18: 8:13	5.4450	1567.23	98.72	0.00
729	0	18: 8:24	5.4480	1565.56	98.72	0.00
730	0	18: 8:31	5.4500	1564.04	98.72	0.00
731	0	18: 8:42	5.4530	1562.62	98.72	0.00
732	0	18: 8:49	5.4550	1561.22	98.72	0.00
733	0	18: 9: 0	5.4580	1559.87	98.72	0.00
734	0	18: 9: 7	5.4600	1558.61	98.73	0.00
735	0	18: 9:18	5.4630	1557.38	98.73	0.00
736	0	18: 9:25	5.4650	1556.23	98.73	0.00
737	0	18: 9:36	5.4680	1555.13	98.73	0.00
738	0	18: 9:43	5.4700	1554.04	98.73	0.00
739	0	18: 9:57	5.4740	1552.25	98.73	0.00
740	0	18:10: 8	5.4770	1551.23	98.73	0.00
741	0	18:10:15	5.4790	1550.24	98.73	0.00
742	0	18:10:26	5.4820	1549.31	98.74	0.00
743	0	18:10:33	5.4840	1548.40	98.74	0.00
744	0	18:10:44	5.4870	1547.46	98.74	0.00
745	0	18:10:51	5.4890	1546.55	98.74	0.00
746	0	18:11: 2	5.4920	1545.67	98.74	0.00
747	0	18:11: 9	5.4940	1544.81	98.74	0.00
748	0	18:11:20	5.4970	1544.00	98.74	0.00
749	0	18:11:27	5.4990	1543.21	98.75	0.00
750	0	18:11:38	5.5020	1542.40	98.75	0.00
751	0	18:11:53	5.5060	1541.11	98.75	0.00
752	0	18:12: 0	5.5080	1540.36	98.75	0.00
753	0	18:12:11	5.5110	1539.61	98.75	0.00
754	0	18:12:18	5.5130	1538.91	98.75	0.00
755	0	18:12:29	5.5160	1538.23	98.75	0.00
756	0	18:12:36	5.5180	1537.52	98.75	0.00
757	0	18:12:47	5.5210	1536.82	98.75	0.00
758	0	18:12:54	5.5230	1536.13	98.76	0.00
759	0	18:13: 5	5.5260	1535.48	98.76	0.00
760	0	18:13:12	5.5280	1534.86	98.76	0.00
761	0	18:13:23	5.5310	1534.24	98.76	0.00

REC #	EMT	TIME	(HRS)	(PSIA)	(Deg.F)	(PSIG)
764	0	18:13:55	5.5400	1532.01	98.76	0.00
765	0	18:14: 2	5.5420	1531.40	98.77	0.00
766	0	18:14:13	5.5450	1530.83	98.77	0.00
767	0	18:14:20	5.5470	1530.28	98.77	0.00
768	0	18:14:31	5.5500	1529.73	98.78	0.00
769	0	18:14:38	5.5520	1529.18	98.78	0.00
770	0	18:14:49	5.5550	1528.61	98.78	0.00
771	0	18:14:56	5.5570	1528.08	98.79	0.00
772	0	18:15: 7	5.5600	1527.56	98.79	0.00
773	0	18:15:14	5.5620	1527.04	98.79	0.00
774	0	18:15:25	5.5650	1526.58	98.79	0.00
775	0	18:15:32	5.5670	1526.10	98.79	0.00
776	0	18:15:47	5.5710	1525.33	98.80	0.00
777	0	18:15:54	5.5730	1524.86	98.80	0.00
778	0	18:16: 5	5.5760	1524.37	98.80	0.00
779	0	18:16:12	5.5780	1523.91	98.80	0.00
780	0	18:16:23	5.5810	1523.47	98.80	0.00
781	0	18:16:30	5.5830	1523.06	98.81	0.00
782	0	18:16:41	5.5860	1522.63	98.80	0.00
783	0	18:16:48	5.5880	1522.19	98.80	0.00
784	0	18:16:59	5.5910	1521.75	98.81	0.00
785	0	18:17: 6	5.5930	1521.33	98.81	0.00
786	0	18:17:17	5.5960	1520.94	98.81	0.00
787	0	18:17:24	5.5980	1520.56	98.81	0.00
788	0	18:17:35	5.6010	1520.19	98.81	0.00
789	0	18:17:49	5.6050	1519.54	98.81	0.00
790	0	18:17:56	5.6070	1519.14	98.81	0.00
791	0	18:18: 7	5.6100	1518.73	98.81	0.00
792	0	18:18:14	5.6120	1518.35	98.82	0.00
793	0	18:18:25	5.6150	1517.98	98.82	0.00
794	0	18:18:32	5.6170	1517.65	98.82	0.00
795	0	18:18:43	5.6200	1517.29	98.82	0.00
796	0	18:18:50	5.6220	1516.93	98.82	0.00
797	0	18:19: 1	5.6250	1516.54	98.82	0.00
798	0	18:19: 8	5.6270	1516.19	98.83	0.00
799	0	18:19:19	5.6300	1515.85	98.83	0.00
800	0	18:19:26	5.6320	1515.54	98.83	0.00
801	0	18:19:41	5.6360	1515.08	98.83	0.00
802	0	18:19:51	5.6390	1514.74	98.83	0.00
803	0	18:19:59	5.6410	1514.40	98.83	0.00
804	0	18:20:20	5.6470	1513.69	98.83	0.00
805	0	18:20:35	5.6510	1513.19	98.83	0.00
806	0	18:20:49	5.6550	1512.68	98.84	0.00
807	0	18:21: 3	5.6590	1512.20	98.84	0.00
808	0	18:21:18	5.6630	1511.72	98.84	0.00
809	0	18:21:32	5.6670	1511.29	98.84	0.00
810	0	18:21:47	5.6710	1510.83	98.85	0.00
811	0	18:22: 1	5.6750	1510.38	98.85	0.00

REC #	DAY	READ TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
814	0	18:22:48	5.6880	1508.97	98.85	0.00
815	0	18:23: 2	5.6920	1508.54	98.86	0.00
816	0	18:23:17	5.6960	1508.13	98.86	0.00
817	0	18:23:31	5.7000	1507.77	98.86	0.00
818	0	18:23:45	5.7040	1507.36	98.86	0.00
819	0	18:24: 0	5.7080	1506.97	98.87	0.00
820	0	18:24:18	5.7130	1506.61	98.87	0.00
821	0	18:24:29	5.7160	1506.27	98.87	0.00
822	0	18:24:43	5.7200	1505.93	98.87	0.00
823	0	18:24:57	5.7240	1505.53	98.87	0.00
824	0	18:25:12	5.7280	1505.17	98.88	0.00
825	0	18:25:26	5.7320	1504.84	98.88	0.00
826	0	18:25:44	5.7370	1504.40	98.88	0.00
827	0	18:25:59	5.7410	1504.13	98.88	0.00
828	0	18:26:13	5.7450	1503.77	98.89	0.00
829	0	18:26:27	5.7490	1503.48	98.89	0.00
830	0	18:26:42	5.7530	1503.19	98.89	0.00
831	0	18:26:56	5.7570	1502.89	98.89	0.00
832	0	18:27:11	5.7610	1502.57	98.90	0.00
833	0	18:27:25	5.7650	1502.24	98.90	0.00
834	0	18:27:39	5.7690	1501.97	98.90	0.00
835	0	18:27:54	5.7730	1501.67	98.90	0.00
836	0	18:28: 8	5.7770	1501.38	98.90	0.00
837	0	18:28:23	5.7810	1501.09	98.91	0.00
838	0	18:28:37	5.7850	1500.81	98.91	0.00
839	0	18:28:55	5.7900	1500.49	98.91	0.00
840	0	18:29: 9	5.7940	1500.23	98.92	0.00
841	0	18:29:24	5.7980	1499.96	98.92	0.00
842	0	18:29:38	5.8020	1499.69	98.92	0.00
843	0	18:29:53	5.8060	1499.44	98.92	0.00
844	0	18:30: 7	5.8100	1499.19	98.93	0.00
845	0	18:30:21	5.8140	1498.93	98.93	0.00
846	0	18:30:36	5.8180	1498.67	98.93	0.00
847	0	18:31: 1	5.8250	1498.22	98.93	0.00
848	0	18:31:23	5.8310	1497.94	98.93	0.00
849	0	18:31:44	5.8370	1497.61	98.94	0.00
850	0	18:32: 6	5.8430	1497.26	98.94	0.00
851	0	18:32:27	5.8490	1496.87	98.95	0.00
852	0	18:32:49	5.8550	1496.60	98.95	0.00
853	0	18:33:11	5.8610	1496.28	98.96	0.00
854	0	18:33:32	5.8670	1495.99	98.96	0.00
855	0	18:33:54	5.8730	1495.71	98.96	0.00
856	0	18:34:15	5.8790	1495.40	98.97	0.00
857	0	18:34:37	5.8850	1495.09	98.97	0.00
858	0	18:34:59	5.8910	1494.81	98.97	0.00
859	0	18:35:20	5.8970	1494.53	98.98	0.00
860	0	18:35:42	5.9030	1494.26	98.98	0.00
861	0	18:36: 3	5.9090	1494.03	98.98	0.00

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
864	0	18:37: 8	5.9270	1493.23	99.00	0.00
865	0	18:37:30	5.9330	1492.97	99.00	0.00
866	0	18:37:51	5.9390	1492.74	99.01	0.00
867	0	18:38:17	5.9460	1492.52	99.01	0.00
868	0	18:38:35	5.9510	1492.30	99.01	0.00
869	0	18:38:56	5.9570	1492.06	99.02	0.00
870	0	18:39:18	5.9630	1491.82	99.02	0.00
871	0	18:39:39	5.9690	1491.60	99.03	0.00
872	0	18:40: 5	5.9760	1491.39	99.03	0.00
873	0	18:40:23	5.9810	1491.19	99.04	0.00
874	0	18:40:44	5.9870	1490.99	99.04	0.00
875	0	18:41: 6	5.9930	1490.80	99.04	0.00
876	0	18:41:27	5.9990	1490.53	99.05	0.00
877	0	18:41:53	6.0060	1490.37	99.05	0.00
878	0	18:42:11	6.0110	1490.18	99.05	0.00
879	0	18:42:32	6.0170	1489.98	99.06	0.00
880	0	18:42:54	6.0230	1489.82	99.06	0.00
881	0	18:43:15	6.0290	1489.66	99.06	0.00
882	0	18:43:41	6.0360	1489.44	99.07	0.00
883	0	18:43:59	6.0410	1489.27	99.07	0.00
884	0	18:44:20	6.0470	1489.08	99.08	0.00
885	0	18:44:42	6.0530	1488.90	99.08	0.00
886	0	18:45: 3	6.0590	1488.76	99.09	0.00
887	0	18:45:29	6.0660	1488.61	99.09	0.00
888	0	18:45:47	6.0710	1488.43	99.10	0.00
889	0	18:46: 8	6.0770	1488.26	99.10	0.00
890	0	18:46:30	6.0830	1488.09	99.11	0.00
891	0	18:46:51	6.0890	1487.92	99.11	0.00
892	0	18:47:17	6.0960	1487.78	99.11	0.00
893	0	18:47:35	6.1010	1487.65	99.11	0.00
894	0	18:47:56	6.1070	1487.50	99.11	0.00
895	0	18:48:18	6.1130	1487.35	99.12	0.00
896	0	18:48:39	6.1190	1487.18	99.12	0.00
897	0	18:49: 5	6.1260	1487.03	99.12	0.00
898	0	18:49:23	6.1310	1486.90	99.12	0.00
899	0	18:49:44	6.1370	1486.77	99.13	0.00
900	0	18:50: 6	6.1430	1486.66	99.13	0.00
901	0	18:50:27	6.1490	1486.51	99.13	0.00
902	0	18:50:53	6.1560	1486.35	99.14	0.00
903	0	18:51:11	6.1610	1486.23	99.14	0.00
904	0	18:51:32	6.1670	1486.09	99.14	0.00
905	0	18:51:54	6.1730	1485.95	99.15	0.00
906	0	18:52:15	6.1790	1485.87	99.15	0.00
907	0	18:52:41	6.1860	1485.75	99.15	0.00
908	0	18:52:59	6.1910	1485.59	99.16	0.00
909	0	18:53:20	6.1970	1485.48	99.16	0.00
910	0	18:53:42	6.2030	1485.34	99.16	0.00
911	0	18:54: 3	6.2090	1485.22	99.16	0.00

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
914	0	18:55: 8	6.2270	1484.90	99.17	0.00
915	0	18:55:48	6.2380	1484.68	99.17	0.00
916	0	18:56:17	6.2460	1484.53	99.18	0.00
917	0	18:56:45	6.2540	1484.40	99.19	0.00
918	0	18:57:14	6.2620	1484.28	99.19	0.00
919	0	18:57:47	6.2710	1484.13	99.20	0.00
920	0	18:58:12	6.2780	1483.97	99.20	0.00
921	0	18:58:41	6.2860	1483.84	99.21	0.00
922	0	18:59: 9	6.2940	1483.72	99.21	0.00
923	0	18:59:38	6.3020	1483.62	99.21	0.00
924	0	19: 0:11	6.3110	1483.45	99.22	0.00
925	0	19: 0:36	6.3180	1483.33	99.22	0.00
926	0	19: 1: 5	6.3260	1483.17	99.22	0.00
927	0	19: 1:33	6.3340	1483.10	99.23	0.00
928	0	19: 2: 2	6.3420	1482.98	99.23	0.00
929	0	19: 2:35	6.3510	1482.85	99.24	0.00
930	0	19: 3: 0	6.3580	1482.72	99.24	0.00
931	0	19: 3:29	6.3660	1482.61	99.25	0.00
932	0	19: 3:57	6.3740	1482.51	99.25	0.00
933	0	19: 4:26	6.3820	1482.42	99.26	0.00
934	0	19: 4:59	6.3910	1482.27	99.26	0.00
935	0	19: 5:24	6.3980	1482.17	99.27	0.00
936	0	19: 5:53	6.4060	1482.05	99.27	0.00
937	0	19: 6:21	6.4140	1481.98	99.27	0.00
938	0	19: 6:50	6.4220	1481.87	99.28	0.00
939	0	19: 7:23	6.4310	1481.76	99.28	0.00
940	0	19: 7:48	6.4380	1481.64	99.29	0.00
941	0	19: 8:17	6.4460	1481.55	99.29	0.00
942	0	19: 8:45	6.4540	1481.47	99.29	0.00
943	0	19: 9:18	6.4630	1481.38	99.30	0.00
944	0	19: 9:47	6.4710	1481.25	99.30	0.00
945	0	19:10:12	6.4780	1481.17	99.31	0.00
946	0	19:10:41	6.4860	1481.06	99.31	0.00
947	0	19:11: 9	6.4940	1481.01	99.32	0.00
948	0	19:11:38	6.5020	1480.90	99.32	0.00
949	0	19:12:11	6.5110	1480.80	99.32	0.00
950	0	19:12:36	6.5180	1480.70	99.33	0.00
951	0	19:13: 5	6.5260	1480.62	99.33	0.00
952	0	19:13:33	6.5340	1480.56	99.33	0.00
953	0	19:14: 2	6.5420	1480.46	99.34	0.00
954	0	19:14:35	6.5510	1480.37	99.35	0.00
955	0	19:15: 0	6.5580	1480.27	99.35	0.00
956	0	19:15:29	6.5660	1480.21	99.35	0.00
957	0	19:15:57	6.5740	1480.15	99.36	0.00
958	0	19:16:26	6.5820	1480.06	99.36	0.00
959	0	19:16:59	6.5910	1479.95	99.37	0.00
960	0	19:17:24	6.5980	1479.88	99.37	0.00
961	0	19:17:53	6.6060	1479.81	99.37	0.00

#		TIME	(HRS)	(PSIA)	(Deg.F)	(PSIG)
964	0	19:19:23	6.6310	1479.58	99.39	0.00
965	0	19:19:48	6.6380	1479.49	99.39	0.00
966	0	19:20:17	6.6460	1479.45	99.39	0.00
967	0	19:20:45	6.6540	1479.40	99.40	0.00
968	0	19:21:14	6.6620	1479.29	99.40	0.00
969	0	19:21:47	6.6710	1479.22	99.41	0.00
970	0	19:22:12	6.6780	1479.14	99.41	0.00
971	0	19:22:41	6.6860	1479.10	99.42	0.00
972	0	19:23: 9	6.6940	1479.04	99.42	0.00
973	0	19:23:38	6.7020	1478.95	99.43	0.00
974	0	19:24:11	6.7110	1478.87	99.43	0.00
975	0	19:24:36	6.7180	1478.81	99.43	0.00
976	0	19:25: 5	6.7260	1478.77	99.44	0.00
977	0	19:25:33	6.7340	1478.72	99.44	0.00
978	0	19:26: 2	6.7420	1478.62	99.45	0.00
979	0	19:26:35	6.7510	1478.55	99.45	0.00
980	0	19:27: 0	6.7580	1478.48	99.46	0.00
981	0	19:27:29	6.7660	1478.46	99.46	0.00
982	0	19:27:57	6.7740	1478.40	99.46	0.00
983	0	19:28:30	6.7830	1478.31	99.47	0.00
984	0	19:28:59	6.7910	1478.24	99.47	0.00
985	0	19:29:24	6.7980	1478.19	99.48	0.00
986	0	19:29:53	6.8060	1478.17	99.48	0.00
987	0	19:30:21	6.8140	1478.09	99.49	0.00
988	0	19:30:50	6.8220	1478.03	99.49	0.00
989	0	19:31:23	6.8310	1477.95	99.50	0.00
990	0	19:31:48	6.8380	1477.91	99.50	0.00
991	0	19:32:17	6.8460	1477.88	99.50	0.00
992	0	19:32:45	6.8540	1477.82	99.51	0.00
993	0	19:33:14	6.8620	1477.74	99.51	0.00
994	0	19:33:47	6.8710	1477.68	99.51	0.00
995	0	19:34:12	6.8780	1477.63	99.51	0.00
996	0	19:34:41	6.8860	1477.61	99.52	0.00
997	0	19:35: 9	6.8940	1477.55	99.53	0.00
998	0	19:35:38	6.9020	1477.47	99.53	0.00
999	0	19:36:11	6.9110	1477.42	99.53	0.00
1001	0	19:37: 5	6.9260	1477.36	99.54	0.00
1003	0	19:38: 2	6.9420	1477.23	99.54	0.00
1004	0	19:38:35	6.9510	1477.17	99.55	0.00
1006	0	19:39:29	6.9660	1477.12	99.56	0.00
1008	0	19:40:26	6.9820	1476.99	99.56	0.00
1009	0	19:40:59	6.9910	1476.94	99.57	0.00
1011	0	19:41:53	7.0060	1476.89	99.57	0.00
1013	0	19:42:50	7.0220	1476.76	99.58	0.00
1014	0	19:43:23	7.0310	1476.72	99.59	0.00
1016	0	19:44:17	7.0460	1476.68	99.60	0.00
1018	0	19:45:14	7.0620	1476.55	99.61	0.00
1019	0	19:45:47	7.0710	1476.50	99.61	0.00
1021	0	19:46:41	[illegible]	[illegible]	[illegible]	[illegible]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
1025	0	19:48:36	7.1180	1476.29	99.63	0.00
1027	0	19:49:33	7.1340	1476.20	99.64	0.00
1029	0	19:50:35	7.1510	1476.11	99.65	0.00
1031	0	19:51:29	7.1660	1476.07	99.66	0.00
1033	0	19:52:26	7.1820	1475.96	99.67	0.00
1034	0	19:52:59	7.1910	1475.92	99.67	0.00
1036	0	19:53:53	7.2060	1475.89	99.68	0.00
1038	0	19:54:50	7.2220	1475.79	99.69	0.00
1039	0	19:55:23	7.2310	1475.75	99.69	0.00
1041	0	19:56:17	7.2460	1475.71	99.71	0.00
1043	0	19:57:14	7.2620	1475.61	99.71	0.00
1044	0	19:57:47	7.2710	1475.58	99.72	0.00
1046	0	19:58:41	7.2860	1475.55	99.73	0.00
1048	0	19:59:38	7.3020	1475.45	99.74	0.00
1049	0	20: 0:11	7.3110	1475.42	99.74	0.00
1051	0	20: 1: 5	7.3260	1475.39	99.75	0.00
1053	0	20: 2: 2	7.3420	1475.30	99.76	0.00
1054	0	20: 2:35	7.3510	1475.26	99.76	0.00
1056	0	20: 3:29	7.3660	1475.22	99.77	0.00
1058	0	20: 4:26	7.3820	1475.13	99.78	0.00
1059	0	20: 4:59	7.3910	1475.10	99.78	0.00
1061	0	20: 5:53	7.4060	1475.05	99.79	0.00
1063	0	20: 6:54	7.4230	1474.96	99.79	0.00
1065	0	20: 7:48	7.4380	1474.95	99.79	0.00
1067	0	20: 8:45	7.4540	1474.85	99.80	0.00
1069	0	20: 9:47	7.4710	1474.81	99.80	0.00
1071	0	20:10:41	7.4860	1474.76	99.81	0.00
1073	0	20:11:38	7.5020	1474.69	99.82	0.00
1074	0	20:12:11	7.5110	1474.69	99.82	0.00
1076	0	20:13: 5	7.5260	1474.63	99.83	0.00
1078	0	20:14: 2	7.5420	1474.56	99.84	0.00
1079	0	20:14:35	7.5510	1474.56	99.84	0.00
1081	0	20:15:29	7.5660	1474.51	99.84	0.00
1083	0	20:16:26	7.5820	1474.44	99.85	0.00
1084	0	20:16:59	7.5910	1474.44	99.85	0.00
1086	0	20:17:53	7.6060	1474.38	99.86	0.00
1088	0	20:18:50	7.6220	1474.32	99.86	0.00
1089	0	20:19:23	7.6310	1474.33	99.87	0.00
1091	0	20:20:17	7.6460	1474.27	99.87	0.00
1093	0	20:21:14	7.6620	1474.21	99.88	0.00
1094	0	20:21:47	7.6710	1474.22	99.88	0.00
1096	0	20:22:41	7.6860	1474.17	99.89	0.00
1098	0	20:23:38	7.7020	1474.11	99.90	0.00
1099	0	20:24:11	7.7110	1474.11	99.90	0.00
1101	0	20:25: 5	7.7260	1474.05	99.91	0.00
1103	0	20:26: 6	7.7430	1474.01	99.92	0.00
1105	0	20:27: 0	7.7580	1474.01	99.93	0.00
1107	0	20:27:57	7.7740	1473.93	99.94	0.00

#		TIME	(HRS)	(PSIA)	(Deg.F)	(PSIG)
1113	0	20:30:50	7.8220	1473.81	99.96	0.00
1114	0	20:31:23	7.8310	1473.83	99.96	0.00
1116	0	20:32:17	7.8460	1473.78	99.96	0.00
1118	0	20:33:14	7.8620	1473.73	99.97	0.00
1119	0	20:33:47	7.8710	1473.75	99.98	0.00
1121	0	20:34:41	7.8860	1473.68	99.98	0.00
1123	0	20:35:38	7.9020	1473.64	99.99	0.00
1124	0	20:36:11	7.9110	1473.68	100.00	0.00
1126	0	20:37: 5	7.9260	1473.59	100.00	0.00
1128	0	20:38: 2	7.9420	1473.57	100.01	0.00
1129	0	20:38:35	7.9510	1473.60	100.01	0.00
1131	0	20:39:29	7.9660	1473.54	100.02	0.00
1133	0	20:40:26	7.9820	1473.50	100.03	0.00
1134	0	20:40:59	7.9910	1473.52	100.03	0.00
1136	0	20:41:53	8.0060	1473.45	100.04	0.00
1138	0	20:42:50	8.0220	1473.43	100.05	0.00
1139	0	20:43:23	8.0310	1473.45	100.06	0.00
1141	0	20:44:17	8.0460	1473.38	100.06	0.00
1143	0	20:45:18	8.0630	1473.36	100.07	0.00
1145	0	20:46:12	8.0780	1473.34	100.08	0.00
1147	0	20:47: 9	8.0940	1473.29	100.08	0.00
1149	0	20:48:11	8.1110	1473.31	100.09	0.00
1151	0	20:49: 5	8.1260	1473.24	100.10	0.00
1153	0	20:50: 2	8.1420	1473.23	100.11	0.00
1154	0	20:50:35	8.1510	1473.26	100.11	0.00
1156	0	20:51:29	8.1660	1473.19	100.12	0.00
1158	0	20:52:26	8.1820	1473.17	100.12	0.00
1159	0	20:52:59	8.1910	1473.20	100.12	0.00
1161	0	20:53:53	8.2060	1473.13	100.13	0.00
1163	0	20:54:50	8.2220	1473.12	100.14	0.00
1164	0	20:55:23	8.2310	1473.14	100.14	0.00
1166	0	20:56:17	8.2460	1473.07	100.14	0.00
1168	0	20:57:14	8.2620	1473.07	100.15	0.00
1169	0	20:57:47	8.2710	1473.08	100.15	0.00
1171	0	20:58:41	8.2860	1473.02	100.16	0.00
1173	0	20:59:38	8.3020	1473.01	100.17	0.00
1174	0	21: 0:11	8.3110	1473.03	100.17	72.40
1176	0	21: 1: 5	8.3260	1472.95	100.18	0.00
1178	0	21: 2: 2	8.3420	1472.96	100.18	0.00
1179	0	21: 2:35	8.3510	1472.98	100.18	0.00
1181	0	21: 3:29	8.3660	1472.92	100.19	0.00
1183	0	21: 4:26	8.3820	1472.92	100.20	0.00
1184	0	21: 4:59	8.3910	1472.92	100.20	0.00
1186	0	21: 5:53	8.4060	1472.86	100.21	0.00
1188	0	21: 6:50	8.4220	1472.87	100.21	0.00
1189	0	21: 7:23	8.4310	1472.88	100.21	0.00
1191	0	21: 8:17	8.4460	1472.81	100.22	0.00
1193	0	21: 9:14	8.4620	1472.83	100.22	0.00

REC #	DAY	READ TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
1198	0	21:11:38	8.5020	1472.79	100.24	0.00
1199	0	21:12:11	8.5110	1472.79	100.24	0.00
1201	0	21:13: 5	8.5260	1472.73	100.25	0.00
1203	0	21:14: 2	8.5420	1472.75	100.25	0.00
1204	0	21:14:35	8.5510	1472.74	100.25	0.00
1206	0	21:15:29	8.5660	1472.69	100.26	0.00
1208	0	21:16:26	8.5820	1472.72	100.27	0.00
1209	0	21:16:59	8.5910	1472.71	100.27	0.00
1211	0	21:17:53	8.6060	1472.66	100.28	0.00
1213	0	21:18:50	8.6220	1472.68	100.29	0.00
1214	0	21:19:23	8.6310	1472.67	100.29	0.00
1216	0	21:20:17	8.6460	1472.62	100.30	0.00
1218	0	21:21:14	8.6620	1472.64	100.30	0.00
1219	0	21:21:47	8.6710	1472.63	100.30	0.00
1221	0	21:22:41	8.6860	1472.59	100.31	0.00
1223	0	21:23:38	8.7020	1472.61	100.31	0.00
1224	0	21:24:11	8.7110	1472.60	100.31	0.00
1226	0	21:25: 5	8.7260	1472.55	100.31	0.00
1228	0	21:26: 2	8.7420	1472.58	100.32	0.00
1229	0	21:26:35	8.7510	1472.56	100.32	0.00
1231	0	21:27:29	8.7660	1472.51	100.32	0.00
1233	0	21:28:26	8.7820	1472.55	100.33	0.00
1234	0	21:28:59	8.7910	1472.52	100.33	0.00
1236	0	21:29:53	8.8060	1472.48	100.34	0.00
1238	0	21:30:50	8.8220	1472.52	100.34	0.00
1239	0	21:31:23	8.8310	1472.49	100.35	0.00
1241	0	21:32:17	8.8460	1472.45	100.35	0.00
1243	0	21:33:14	8.8620	1472.48	100.36	0.00
1244	0	21:33:47	8.8710	1472.46	100.36	0.00
1246	0	21:34:41	8.8860	1472.42	100.37	0.00
1248	0	21:35:38	8.9020	1472.46	100.38	0.00
1249	0	21:36:11	8.9110	1472.43	100.38	0.00
1251	0	21:37: 5	8.9260	1472.40	100.39	0.00
1253	0	21:38: 2	8.9420	1472.43	100.39	0.00
1254	0	21:38:35	8.9510	1472.40	100.39	0.00
1256	0	21:39:29	8.9660	1472.37	100.40	0.00
1258	0	21:40:26	8.9820	1472.41	100.40	0.00
1259	0	21:40:59	8.9910	1472.37	100.40	0.00
1261	0	21:41:53	9.0060	1472.33	100.41	0.00
1263	0	21:42:50	9.0220	1472.38	100.42	0.00
1264	0	21:43:23	9.0310	1472.34	100.42	0.00
1266	0	21:44:17	9.0460	1472.30	100.42	0.00
1268	0	21:45:14	9.0620	1472.34	100.42	0.00
1269	0	21:45:47	9.0710	1472.31	100.42	0.00
1271	0	21:46:41	9.0860	1472.28	100.43	0.00
1273	0	21:47:38	9.1020	1472.32	100.44	0.00
1274	0	21:48:11	9.1110	1472.29	100.44	0.00
1276	0	21:49: 5	9.1260	1472.26	100.45	0.00

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
1281	0	21:51:29	9.1660	1472.23	100.47	0.00
1283	0	21:52:26	9.1820	1472.27	100.48	0.00
1284	0	21:52:59	9.1910	1472.24	100.48	0.00
1286	0	21:53:53	9.2060	1472.21	100.48	0.00
1288	0	21:54:50	9.2220	1472.24	100.49	0.00
1289	0	21:55:23	9.2310	1472.20	100.49	0.00
1291	0	21:56:17	9.2460	1472.18	100.49	0.00
1293	0	21:57:14	9.2620	1472.21	100.49	0.00
1294	0	21:57:47	9.2710	1472.18	100.50	0.00
1296	0	21:58:41	9.2860	1472.16	100.50	0.00
1298	0	21:59:38	9.3020	1472.19	100.50	0.00
1299	0	22: 0:11	9.3110	1472.16	100.51	71.60
1301	0	22: 1: 5	9.3260	1472.14	100.51	0.00
1303	0	22: 2: 2	9.3420	1472.17	100.52	0.00
1304	0	22: 2:35	9.3510	1472.14	100.52	0.00
1306	0	22: 3:29	9.3660	1472.11	100.52	0.00
1308	0	22: 4:26	9.3820	1472.14	100.53	0.00
1309	0	22: 4:59	9.3910	1472.11	100.53	0.00
1311	0	22: 5:53	9.4060	1472.09	100.53	0.00
1313	0	22: 6:50	9.4220	1472.12	100.54	0.00
1314	0	22: 7:23	9.4310	1472.09	100.54	0.00
1316	0	22: 8:17	9.4460	1472.07	100.55	0.00
1318	0	22: 9:18	9.4630	1472.10	100.56	0.00
1320	0	22:10:12	9.4780	1472.05	100.56	0.00
1322	0	22:11: 9	9.4940	1472.08	100.57	0.00
1324	0	22:12:11	9.5110	1472.04	100.57	0.00
1326	0	22:13: 5	9.5260	1472.03	100.57	0.00
1328	0	22:14: 2	9.5420	1472.06	100.58	0.00
1329	0	22:14:35	9.5510	1472.03	100.59	0.00
1331	0	22:15:29	9.5660	1472.01	100.60	0.00
1333	0	22:16:26	9.5820	1472.03	100.60	0.00
1334	0	22:16:59	9.5910	1472.00	100.60	0.00
1336	0	22:17:53	9.6060	1471.99	100.60	0.00
1338	0	22:18:50	9.6220	1472.01	100.61	0.00
1339	0	22:19:23	9.6310	1471.98	100.61	0.00
1341	0	22:20:17	9.6460	1471.97	100.62	0.00
1343	0	22:21:14	9.6620	1471.98	100.62	0.00
1344	0	22:21:47	9.6710	1471.96	100.63	0.00
1346	0	22:22:41	9.6860	1471.96	100.63	0.00
1348	0	22:23:38	9.7020	1471.97	100.64	0.00
1349	0	22:24:11	9.7110	1471.94	100.65	0.00
1351	0	22:25: 5	9.7260	1471.94	100.65	0.00
1353	0	22:26: 2	9.7420	1471.95	100.66	0.00
1354	0	22:26:35	9.7510	1471.92	100.66	0.00
1356	0	22:27:29	9.7660	1471.92	100.67	0.00
1358	0	22:28:30	9.7830	1471.93	100.68	0.00
1360	0	22:29:24	9.7980	1471.89	100.68	0.00
1362	0	22:30:21	9.8140	1471.93	100.68	0.00

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
1368	0	22:33:14	9.8620	1471.89	100.71	0.00
1369	0	22:33:47	9.8710	1471.86	100.71	0.00
1371	0	22:34:41	9.8860	1471.86	100.71	0.00
1373	0	22:35:38	9.9020	1471.86	100.71	0.00
1374	0	22:36:11	9.9110	1471.84	100.71	0.00
1376	0	22:37: 5	9.9260	1471.85	100.72	0.00
1378	0	22:38: 2	9.9420	1471.85	100.72	0.00
1379	0	22:38:35	9.9510	1471.83	100.72	0.00
1381	0	22:39:29	9.9660	1471.83	100.73	0.00
1383	0	22:40:26	9.9820	1471.83	100.74	0.00
1384	0	22:40:59	9.9910	1471.81	100.74	0.00
1386	0	22:41:53	10.0060	1471.82	100.74	0.00
1388	0	22:42:50	10.0220	1471.81	100.75	0.00
1389	0	22:43:23	10.0310	1471.79	100.75	0.00
1391	0	22:44:17	10.0460	1471.81	100.75	0.00
1393	0	22:45:14	10.0620	1471.80	100.75	0.00
1394	0	22:45:47	10.0710	1471.77	100.76	0.00
1396	0	22:46:41	10.0860	1471.79	100.76	0.00
1398	0	22:47:42	10.1030	1471.78	100.76	0.00
1400	0	22:48:36	10.1180	1471.75	100.76	0.00
1402	0	22:49:33	10.1340	1471.78	100.76	0.00
1404	0	22:50:35	10.1510	1471.73	100.77	0.00
1406	0	22:51:29	10.1660	1471.76	100.78	0.00
1408	0	22:52:26	10.1820	1471.74	100.78	0.00
1409	0	22:52:59	10.1910	1471.72	100.79	0.00
1411	0	22:53:53	10.2060	1471.75	100.79	0.00
1413	0	22:54:50	10.2220	1471.73	100.80	0.00
1414	0	22:55:23	10.2310	1471.71	100.80	0.00
1416	0	22:56:17	10.2460	1471.73	100.80	0.00
1418	0	22:57:14	10.2620	1471.71	100.81	0.00
1419	0	22:57:47	10.2710	1471.69	100.81	0.00
1421	0	22:58:41	10.2860	1471.72	100.82	0.00
1423	0	22:59:38	10.3020	1471.69	100.83	0.00
1424	0	23: 0:11	10.3110	1471.68	100.83	0.00
1426	0	23: 1: 5	10.3260	1471.70	100.84	0.00
1428	0	23: 2: 2	10.3420	1471.67	100.84	0.00
1429	0	23: 2:35	10.3510	1471.66	100.84	0.00
1431	0	23: 3:29	10.3660	1471.69	100.85	0.00
1433	0	23: 4:26	10.3820	1471.66	100.85	0.00
1434	0	23: 4:59	10.3910	1471.64	100.86	0.00
1436	0	23: 5:53	10.4060	1471.67	100.86	0.00
1438	0	23: 6:54	10.4230	1471.64	100.86	0.00
1440	0	23: 7:48	10.4380	1471.62	100.86	0.00
1442	0	23: 8:45	10.4540	1471.64	100.86	0.00
1444	0	23: 9:47	10.4710	1471.60	100.86	0.00
1446	0	23:10:41	10.4860	1471.65	100.86	0.00
1448	0	23:11:38	10.5020	1471.61	100.86	0.00
1449	0	23:12:11	10.5110	1471.59	100.87	0.00

#		TIME	(HRS)	(PSIA)	(Deg.F)	(PSIG)
1454	0	23:14:35	10.5510	1471.57	100.87	0.00
1456	0	23:15:29	10.5660	1471.61	100.88	0.00
1458	0	23:16:26	10.5820	1471.57	100.88	0.00
1459	0	23:16:59	10.5910	1471.56	100.88	0.00
1461	0	23:17:53	10.6060	1471.60	100.88	0.00
1463	0	23:18:50	10.6220	1471.56	100.88	0.00
1464	0	23:19:23	10.6310	1471.55	100.89	0.00
1466	0	23:20:17	10.6460	1471.59	100.89	0.00
1468	0	23:21:14	10.6620	1471.55	100.90	0.00
1469	0	23:21:47	10.6710	1471.54	100.90	0.00
1471	0	23:22:41	10.6860	1471.58	100.91	0.00
1473	0	23:23:38	10.7020	1471.53	100.92	0.00
1474	0	23:24:11	10.7110	1471.52	100.93	0.00
1476	0	23:25: 5	10.7260	1471.57	100.93	0.00
1478	0	23:26: 6	10.7430	1471.52	100.94	0.00
1480	0	23:27: 0	10.7580	1471.51	100.94	0.00
1482	0	23:27:57	10.7740	1471.52	100.95	0.00
1484	0	23:28:59	10.7910	1471.49	100.96	0.00
1486	0	23:29:53	10.8060	1471.53	100.96	0.00
1488	0	23:30:50	10.8220	1471.48	100.96	0.00
1489	0	23:31:23	10.8310	1471.47	100.96	0.00
1491	0	23:32:17	10.8460	1471.52	100.96	0.00
1493	0	23:33:14	10.8620	1471.47	100.96	0.00
1494	0	23:33:47	10.8710	1471.46	100.96	0.00
1496	0	23:34:41	10.8860	1471.50	100.97	0.00
1498	0	23:35:38	10.9020	1471.45	100.97	0.00
1499	0	23:36:11	10.9110	1471.45	100.97	0.00
1502	0	23:37:33	10.9340	1471.46	100.98	0.00
1504	0	23:38:35	10.9510	1471.44	100.98	0.00
1507	0	23:39:57	10.9740	1471.44	100.98	0.00
1509	0	23:40:59	10.9910	1471.42	100.99	0.00
1512	0	23:42:21	11.0140	1471.43	100.99	0.00
1514	0	23:43:23	11.0310	1471.41	101.00	0.00
1517	0	23:44:45	11.0540	1471.42	101.01	0.00
1519	0	23:45:47	11.0710	1471.40	101.01	0.00
1522	0	23:47: 9	11.0940	1471.40	101.02	0.00
1524	0	23:48:11	11.1110	1471.38	101.02	0.00
1527	0	23:49:33	11.1340	1471.39	101.03	0.00
1529	0	23:50:35	11.1510	1471.36	101.03	0.00
1532	0	23:51:57	11.1740	1471.38	101.03	0.00
1534	0	23:52:59	11.1910	1471.36	101.04	0.00
1537	0	23:54:21	11.2140	1471.37	101.05	0.00
1539	0	23:55:23	11.2310	1471.34	101.05	0.00
1542	0	23:56:45	11.2540	1471.35	101.07	0.00
1544	0	23:57:47	11.2710	1471.33	101.08	0.00
1547	0	23:59: 9	11.2940	1471.34	101.08	0.00
[Wednesday: Oct. 25, 1995]						
1549	1	0: 0:11	11.3110	1471.32	101.08	70.40

#		TIME	(HRS)	(PSIA)	(Deg.F)	(PSIG)
1557	1	0: 3:57	11.3740	1471.31	101.08	0.00
1559	1	0: 4:59	11.3910	1471.30	101.09	0.00
1562	1	0: 6:21	11.4140	1471.29	101.09	0.00
1564	1	0: 7:23	11.4310	1471.28	101.10	0.00
1567	1	0: 8:45	11.4540	1471.29	101.11	0.00
1569	1	0: 9:47	11.4710	1471.27	101.12	0.00
1572	1	0:11: 9	11.4940	1471.27	101.13	0.00
1574	1	0:12:11	11.5110	1471.26	101.13	0.00
1577	1	0:13:33	11.5340	1471.26	101.13	0.00
1579	1	0:14:35	11.5510	1471.25	101.13	0.00
1582	1	0:15:57	11.5740	1471.24	101.13	0.00
1584	1	0:16:59	11.5910	1471.23	101.13	0.00
1587	1	0:18:21	11.6140	1471.23	101.13	0.00
1589	1	0:19:23	11.6310	1471.22	101.13	0.00
1592	1	0:20:45	11.6540	1471.23	101.14	0.00
1594	1	0:21:47	11.6710	1471.22	101.15	0.00
1597	1	0:23: 9	11.6940	1471.20	101.15	0.00
1599	1	0:24:11	11.7110	1471.20	101.16	0.00
1602	1	0:25:33	11.7340	1471.19	101.16	0.00
1604	1	0:26:35	11.7510	1471.19	101.16	0.00
1607	1	0:27:57	11.7740	1471.18	101.17	0.00
1609	1	0:28:59	11.7910	1471.19	101.18	0.00
1612	1	0:30:21	11.8140	1471.17	101.19	0.00
1614	1	0:31:23	11.8310	1471.18	101.20	0.00
1617	1	0:32:45	11.8540	1471.16	101.21	0.00
1619	1	0:33:47	11.8710	1471.17	101.21	0.00
1622	1	0:35: 9	11.8940	1471.15	101.21	0.00
1624	1	0:36:11	11.9110	1471.15	101.22	0.00
1627	1	0:37:33	11.9340	1471.13	101.22	0.00
1629	1	0:38:35	11.9510	1471.14	101.23	0.00
1632	1	0:39:57	11.9740	1471.13	101.24	0.00
1634	1	0:40:59	11.9910	1471.13	101.24	0.00
1637	1	0:42:21	12.0140	1471.11	101.24	0.00
1639	1	0:43:23	12.0310	1471.12	101.24	0.00
1642	1	0:44:45	12.0540	1471.10	101.24	0.00
1644	1	0:45:47	12.0710	1471.11	101.24	0.00
1647	1	0:47: 9	12.0940	1471.09	101.24	0.00
1649	1	0:48:11	12.1110	1471.10	101.25	0.00
1652	1	0:49:33	12.1340	1471.08	101.26	0.00
1654	1	0:50:35	12.1510	1471.09	101.26	0.00
1657	1	0:51:57	12.1740	1471.07	101.26	0.00
1659	1	0:52:59	12.1910	1471.08	101.27	0.00
1662	1	0:54:21	12.2140	1471.06	101.27	0.00
1664	1	0:55:23	12.2310	1471.07	101.27	0.00
1667	1	0:56:45	12.2540	1471.04	101.27	0.00
1669	1	0:57:47	12.2710	1471.06	101.28	0.00
1672	1	0:59: 9	12.2940	1471.03	101.28	0.00
1674	1	1: 0:11	12.3110	1471.06	101.28	0.00
1677	1	1: 1:33	12.3340	1471.02	101.29	0.00

#		TIME	(HRS)	(PSIA)	(Deg.F)	(PSIG)
1682	1	1: 3:57	12.3740	1471.01	101.31	0.00
1684	1	1: 4:59	12.3910	1471.04	101.31	0.00
1687	1	1: 6:21	12.4140	1471.00	101.31	0.00
1689	1	1: 7:23	12.4310	1471.02	101.30	0.00
1692	1	1: 8:45	12.4540	1470.99	101.31	0.00
1694	1	1: 9:47	12.4710	1471.03	101.32	0.00
1697	1	1:11: 9	12.4940	1470.99	101.34	0.00
1699	1	1:12:11	12.5110	1471.02	101.36	0.00
1702	1	1:13:33	12.5340	1470.97	101.36	0.00
1704	1	1:14:35	12.5510	1471.00	101.36	0.00
1707	1	1:15:57	12.5740	1470.97	101.37	0.00
1709	1	1:16:59	12.5910	1471.00	101.38	0.00
1712	1	1:18:21	12.6140	1470.95	101.38	0.00
1714	1	1:19:23	12.6310	1470.98	101.39	0.00
1717	1	1:20:45	12.6540	1470.94	101.38	0.00
1719	1	1:21:47	12.6710	1470.98	101.39	0.00
1722	1	1:23: 9	12.6940	1470.93	101.39	0.00
1724	1	1:24:11	12.7110	1470.96	101.39	0.00
1727	1	1:25:33	12.7340	1470.92	101.39	0.00
1729	1	1:26:35	12.7510	1470.96	101.40	0.00
1732	1	1:27:57	12.7740	1470.91	101.40	0.00
1734	1	1:28:59	12.7910	1470.95	101.40	0.00
1737	1	1:30:21	12.8140	1470.90	101.40	0.00
1739	1	1:31:23	12.8310	1470.94	101.41	0.00
1742	1	1:32:45	12.8540	1470.89	101.42	0.00
1744	1	1:33:47	12.8710	1470.93	101.41	0.00
1747	1	1:35: 9	12.8940	1470.88	101.41	0.00
1749	1	1:36:11	12.9110	1470.92	101.41	0.00
1752	1	1:37:33	12.9340	1470.87	101.41	0.00
1754	1	1:38:35	12.9510	1470.91	101.42	0.00
1757	1	1:39:57	12.9740	1470.86	101.43	0.00
1759	1	1:40:59	12.9910	1470.90	101.43	0.00
1762	1	1:42:21	13.0140	1470.85	101.44	0.00
1764	1	1:43:23	13.0310	1470.89	101.45	0.00
1767	1	1:44:45	13.0540	1470.85	101.46	0.00
1769	1	1:45:47	13.0710	1470.89	101.47	0.00
1772	1	1:47: 9	13.0940	1470.83	101.47	0.00
1774	1	1:48:11	13.1110	1470.88	101.48	0.00
1777	1	1:49:33	13.1340	1470.82	101.48	0.00
1779	1	1:50:35	13.1510	1470.87	101.48	0.00
1782	1	1:51:57	13.1740	1470.81	101.49	0.00
1784	1	1:52:59	13.1910	1470.85	101.49	0.00
1787	1	1:54:21	13.2140	1470.80	101.49	0.00
1789	1	1:55:23	13.2310	1470.84	101.49	0.00
1792	1	1:56:45	13.2540	1470.80	101.49	0.00
1794	1	1:57:47	13.2710	1470.84	101.50	0.00
1797	1	1:59: 9	13.2940	1470.78	101.50	0.00
1799	1	2: 0:11	13.3110	1470.83	101.50	70.10

#		TIME	(HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
1807	1	2: 3:57	13.3740	1470.77	101.50	0.00
1809	1	2: 4:59	13.3910	1470.81	101.50	0.00
1812	1	2: 6:21	13.4140	1470.76	101.51	0.00
1814	1	2: 7:23	13.4310	1470.81	101.52	0.00
1817	1	2: 8:45	13.4540	1470.76	101.53	0.00
1819	1	2: 9:47	13.4710	1470.80	101.54	0.00
1822	1	2:11: 9	13.4940	1470.74	101.55	0.00
1824	1	2:12:11	13.5110	1470.79	101.56	0.00
1827	1	2:13:33	13.5340	1470.73	101.55	0.00
1829	1	2:14:35	13.5510	1470.78	101.56	0.00
1832	1	2:15:57	13.5740	1470.73	101.56	0.00
1834	1	2:16:59	13.5910	1470.78	101.57	0.00
1837	1	2:18:21	13.6140	1470.71	101.58	0.00
1839	1	2:19:23	13.6310	1470.76	101.58	0.00
1842	1	2:20:45	13.6540	1470.70	101.58	0.00
1844	1	2:21:47	13.6710	1470.75	101.58	0.00
1847	1	2:23: 9	13.6940	1470.70	101.58	0.00
1849	1	2:24:11	13.7110	1470.75	101.59	0.00
1852	1	2:25:33	13.7340	1470.68	101.59	0.00
1854	1	2:26:35	13.7510	1470.73	101.59	0.00
1857	1	2:27:57	13.7740	1470.68	101.60	0.00
1859	1	2:28:59	13.7910	1470.72	101.60	0.00
1862	1	2:30:21	13.8140	1470.67	101.60	0.00
1864	1	2:31:23	13.8310	1470.72	101.61	0.00
1867	1	2:32:45	13.8540	1470.66	101.62	0.00
1869	1	2:33:47	13.8710	1470.71	101.64	0.00
1872	1	2:35: 9	13.8940	1470.67	101.65	0.00
1874	1	2:36:11	13.9110	1470.71	101.65	0.00
1877	1	2:37:33	13.9340	1470.65	101.65	0.00
1879	1	2:38:35	13.9510	1470.69	101.64	0.00
1882	1	2:39:57	13.9740	1470.64	101.63	0.00
1884	1	2:40:59	13.9910	1470.69	101.63	0.00
1887	1	2:42:21	14.0140	1470.63	101.63	0.00
1889	1	2:43:23	14.0310	1470.68	101.63	0.00
1892	1	2:44:45	14.0540	1470.62	101.64	0.00
1894	1	2:45:47	14.0710	1470.67	101.64	0.00
1897	1	2:47: 9	14.0940	1470.62	101.65	0.00
1899	1	2:48:11	14.1110	1470.66	101.65	0.00
1902	1	2:49:33	14.1340	1470.61	101.65	0.00
1904	1	2:50:35	14.1510	1470.66	101.66	0.00
1907	1	2:51:57	14.1740	1470.60	101.66	0.00
1909	1	2:52:59	14.1910	1470.65	101.67	0.00
1912	1	2:54:21	14.2140	1470.59	101.68	0.00
1914	1	2:55:23	14.2310	1470.64	101.68	0.00
1917	1	2:56:45	14.2540	1470.58	101.69	0.00
1919	1	2:57:47	14.2710	1470.63	101.69	0.00
1922	1	2:59: 9	14.2940	1470.58	101.70	0.00
1924	1	3: 0:11	14.3110	1470.62	101.70	0.00
1927	1	3: 1:33	[illegible]	[illegible]	[illegible]	[illegible]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
1932	1	3: 3:57	14.3740	1470.56	101.71	0.00
1934	1	3: 4:59	14.3910	1470.60	101.71	0.00
1937	1	3: 6:21	14.4140	1470.55	101.71	0.00
1939	1	3: 7:23	14.4310	1470.60	101.72	0.00
1942	1	3: 8:45	14.4540	1470.55	101.74	0.00
1944	1	3: 9:47	14.4710	1470.60	101.74	0.00
1947	1	3:11: 9	14.4940	1470.53	101.75	0.00
1949	1	3:12:11	14.5110	1470.57	101.74	0.00
1952	1	3:13:33	14.5340	1470.53	101.74	0.00
1954	1	3:14:35	14.5510	1470.57	101.74	0.00
1957	1	3:15:57	14.5740	1470.51	101.74	0.00
1959	1	3:16:59	14.5910	1470.57	101.74	0.00
1962	1	3:18:21	14.6140	1470.51	101.76	0.00
1964	1	3:19:23	14.6310	1470.56	101.76	0.00
1967	1	3:20:45	14.6540	1470.50	101.77	0.00
1969	1	3:21:47	14.6710	1470.55	101.77	0.00
1972	1	3:23: 9	14.6940	1470.50	101.78	0.00
1974	1	3:24:11	14.7110	1470.54	101.78	0.00
1977	1	3:25:33	14.7340	1470.49	101.78	0.00
1979	1	3:26:35	14.7510	1470.54	101.79	0.00
1982	1	3:27:57	14.7740	1470.47	101.79	0.00
1984	1	3:28:59	14.7910	1470.53	101.79	0.00
1987	1	3:30:21	14.8140	1470.47	101.79	0.00
1989	1	3:31:23	14.8310	1470.52	101.79	0.00
1992	1	3:32:45	14.8540	1470.46	101.79	0.00
1994	1	3:33:47	14.8710	1470.51	101.79	0.00
1997	1	3:35: 9	14.8940	1470.45	101.80	0.00
1999	1	3:36:11	14.9110	1470.51	101.81	0.00
2004	1	3:38:35	14.9510	1470.50	101.83	0.00
2009	1	3:40:59	14.9910	1470.49	101.83	0.00
2014	1	3:43:23	15.0310	1470.48	101.83	0.00
2019	1	3:45:47	15.0710	1470.47	101.82	0.00
2024	1	3:48:11	15.1110	1470.47	101.83	0.00
2029	1	3:50:35	15.1510	1470.46	101.84	0.00
2034	1	3:52:59	15.1910	1470.46	101.85	0.00
2039	1	3:55:23	15.2310	1470.45	101.87	0.00
2044	1	3:57:47	15.2710	1470.44	101.89	0.00
2049	1	4: 0:11	15.3110	1470.43	101.89	69.80
2054	1	4: 2:35	15.3510	1470.42	101.88	0.00
2059	1	4: 4:59	15.3910	1470.42	101.88	0.00
2064	1	4: 7:23	15.4310	1470.41	101.89	0.00
2069	1	4: 9:47	15.4710	1470.40	101.90	0.00
2074	1	4:12:11	15.5110	1470.39	101.90	0.00
2079	1	4:14:35	15.5510	1470.39	101.91	0.00
2084	1	4:16:59	15.5910	1470.38	101.91	0.00
2089	1	4:19:23	15.6310	1470.38	101.92	0.00
2094	1	4:21:47	15.6710	1470.37	101.93	0.00
2099	1	4:24:11	15.7110	1470.36	101.95	0.00

2114	1	4:31:23	15.8310	1470.34	101.97	0.00
2119	1	4:33:47	15.8710	1470.33	101.97	0.00
2124	1	4:36:11	15.9110	1470.32	101.98	0.00
2129	1	4:38:35	15.9510	1470.32	101.99	0.00
2134	1	4:40:59	15.9910	1470.31	101.99	0.00
2139	1	4:43:23	16.0310	1470.30	101.99	0.00
2144	1	4:45:47	16.0710	1470.31	102.00	0.00
2149	1	4:48:11	16.1110	1470.29	102.02	0.00
2154	1	4:50:35	16.1510	1470.29	102.03	0.00
2159	1	4:52:59	16.1910	1470.27	102.04	0.00
2164	1	4:55:23	16.2310	1470.27	102.02	0.00
2169	1	4:57:47	16.2710	1470.26	102.03	0.00
2174	1	5: 0:11	16.3110	1470.26	102.03	0.00
2179	1	5: 2:35	16.3510	1470.25	102.04	0.00
2184	1	5: 4:59	16.3910	1470.25	102.04	0.00
2189	1	5: 7:23	16.4310	1470.24	102.06	0.00
2194	1	5: 9:47	16.4710	1470.23	102.08	0.00
2199	1	5:12:11	16.5110	1470.22	102.07	0.00
2204	1	5:14:35	16.5510	1470.22	102.08	0.00
2209	1	5:16:59	16.5910	1470.21	102.08	0.00
2214	1	5:19:23	16.6310	1470.20	102.09	0.00
2219	1	5:21:47	16.6710	1470.19	102.10	0.00
2224	1	5:24:11	16.7110	1470.19	102.11	0.00
2229	1	5:26:35	16.7510	1470.18	102.11	0.00
2234	1	5:28:59	16.7910	1470.17	102.13	0.00
2239	1	5:31:23	16.8310	1470.16	102.13	0.00
2244	1	5:33:47	16.8710	1470.16	102.13	0.00
2249	1	5:36:11	16.9110	1470.15	102.13	0.00
2254	1	5:38:35	16.9510	1470.15	102.14	0.00
2259	1	5:40:59	16.9910	1470.14	102.15	0.00
2264	1	5:43:23	17.0310	1470.13	102.15	0.00
2269	1	5:45:47	17.0710	1470.13	102.15	0.00
2274	1	5:48:11	17.1110	1470.12	102.18	0.00
2279	1	5:50:35	17.1510	1470.11	102.19	0.00
2284	1	5:52:59	17.1910	1470.10	102.19	0.00
2289	1	5:55:23	17.2310	1470.10	102.19	0.00
2294	1	5:57:47	17.2710	1470.09	102.20	0.00
		Continuing to monitor Bottom-Hole Fall-Off Press.				
2299	1	6: 0:11	17.3110	1470.09	102.20	69.50
2304	1	6: 2:35	17.3510	1470.08	102.21	0.00
2309	1	6: 4:59	17.3910	1470.07	102.20	0.00
2314	1	6: 7:23	17.4310	1470.06	102.21	0.00
2319	1	6: 9:47	17.4710	1470.06	102.22	0.00
2324	1	6:12:11	17.5110	1470.05	102.23	0.00
2329	1	6:14:35	17.5510	1470.05	102.24	0.00
2334	1	6:16:59	17.5910	1470.04	102.25	0.00
2339	1	6:19:23	17.6310	1470.02	102.24	0.00
2344	1	6:21:47	17.6710	1470.03	102.25	0.00
2349	1	6:24:11	17.7110	1470.02	102.25	0.00
2353	1	6:26:45	17.7540	1470.02	102.25	0.00

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	(PSIG)
2356	1	6:29:38	17.8020	1470.03	102.26	0.00
2359	1	6:32:35	17.8510	1470.01	102.28	0.00
2362	1	6:35:24	17.8980	1469.98	102.29	0.00
2365	1	6:38:17	17.9460	1469.97	102.28	0.00
2368	1	6:41: 9	17.9940	1469.97	102.28	0.00
2371	1	6:44: 2	18.0420	1470.00	102.29	0.00
2374	1	6:46:59	18.0910	1469.97	102.29	0.00
2377	1	6:49:48	18.1380	1469.95	102.31	0.00
2380	1	6:52:41	18.1860	1469.93	102.31	0.00
2383	1	6:55:33	18.2340	1469.94	102.32	0.00
2386	1	6:58:26	18.2820	1469.97	102.32	0.00
2389	1	7: 1:23	18.3310	1469.94	102.32	0.00
2392	1	7: 4:12	18.3780	1469.92	102.32	0.00
2395	1	7: 7: 5	18.4260	1469.91	102.33	0.00
2398	1	7: 9:57	18.4740	1469.90	102.35	0.00
2401	1	7:12:50	18.5220	1469.93	102.34	0.00
2404	1	7:15:47	18.5710	1469.92	102.35	0.00
2407	1	7:18:36	18.6180	1469.89	102.36	0.00
2410	1	7:21:29	18.6660	1469.87	102.36	0.00
2413	1	7:24:21	18.7140	1469.86	102.36	0.00
2416	1	7:27:14	18.7620	1469.90	102.38	0.00
2419	1	7:30:11	18.8110	1469.89	102.40	0.00
2422	1	7:33: 0	18.8580	1469.85	102.40	0.00
2425	1	7:35:53	18.9060	1469.84	102.41	0.00
2428	1	7:38:45	18.9540	1469.83	102.41	0.00
2431	1	7:41:38	19.0020	1469.85	102.42	0.00
2434	1	7:44:35	19.0510	1469.86	102.42	0.00
2437	1	7:47:24	19.0980	1469.83	102.42	0.00
2440	1	7:50:17	19.1460	1469.81	102.43	0.00
2443	1	7:53: 9	19.1940	1469.80	102.43	0.00
2446	1	7:56: 2	19.2420	1469.82	102.44	0.00
2449	1	7:58:59	19.2910	1469.84	102.46	0.00
2452	1	8: 1:48	19.3380	1469.80	102.48	0.00
2455	1	8: 4:41	19.3860	1469.78	102.46	0.00
2458	1	8: 7:33	19.4340	1469.77	102.47	0.00
2461	1	8:10:26	19.4820	1469.78	102.46	0.00
2464	1	8:13:23	19.5310	1469.80	102.47	0.00
2467	1	8:16:12	19.5780	1469.77	102.48	0.00
2470	1	8:19: 5	19.6260	1469.75	102.49	0.00
2473	1	8:21:57	19.6740	1469.73	102.49	0.00
2476	1	8:24:50	19.7220	1469.74	102.50	0.00
2479	1	8:27:47	19.7710	1469.77	102.51	0.00
2482	1	8:30:36	19.8180	1469.75	102.51	0.00
2485	1	8:33:29	19.8660	1469.72	102.52	0.00
2488	1	8:36:21	19.9140	1469.71	102.53	0.00
2491	1	8:39:18	19.9630	1469.71	102.54	0.00
2494	1	8:42:11	20.0110	1469.74	102.56	0.00
[illegible]	1	8:45: 0	20.0580	1469.73	102.56	0.00

#		TIME	(HRS)	(PSIA)	(Deg.F)	WHP (PSIG)
2509	1	8:56:35	20.2510	1469.71	102.56	0.00
2513	1	9: 0:21	20.3140	1469.66	102.57	0.00
2517	1	9: 4:12	20.3780	1469.69	102.59	0.00
2521	1	9: 8: 2	20.4420	1469.64	102.59	0.00
2525	1	9:11:53	20.5060	1469.65	102.60	0.00
2529	1	9:15:47	20.5710	1469.66	102.61	0.00
2533	1	9:19:33	20.6340	1469.63	102.61	0.00
2537	1	9:23:24	20.6980	1469.66	102.63	0.00
2541	1	9:27:14	20.7620	1469.61	102.62	0.00
2545	1	9:31: 5	20.8260	1469.62	102.62	0.00
2549	1	9:34:59	20.8910	1469.63	102.63	0.00
2553	1	9:38:45	20.9540	1469.59	102.65	0.00
2557	1	9:42:36	21.0180	1469.62	102.65	0.00
2561	1	9:46:26	21.0820	1469.58	102.67	0.00
2565	1	9:50:17	21.1460	1469.58	102.68	0.00
2569	1	9:54:11	21.2110	1469.59	102.68	0.00
2573	1	9:57:57	21.2740	1469.55	102.70	0.00
2577	1	10: 1:48	21.3380	1469.58	102.69	0.00
2581	1	10: 5:38	21.4020	1469.54	102.69	0.00
2585	1	10: 9:29	21.4660	1469.54	102.70	0.00
2589	1	10:13:23	21.5310	1469.56	102.72	0.00
2593	1	10:17: 9	21.5940	1469.52	102.72	0.00
2597	1	10:21: 0	21.6580	1469.55	102.74	0.00
2601	1	10:24:50	21.7220	1469.50	102.74	0.00
2605	1	10:28:41	21.7860	1469.51	102.75	0.00
2609	1	10:32:35	21.8510	1469.53	102.75	0.00
2613	1	10:36:21	21.9140	1469.48	102.76	0.00
2617	1	10:40:12	21.9780	1469.50	102.77	0.00
2621	1	10:44: 2	22.0420	1469.47	102.78	0.00
2625	1	10:47:53	22.1060	1469.46	102.78	0.00
2629	1	10:51:47	22.1710	1469.50	102.78	0.00
2633	1	10:55:33	22.2340	1469.45	102.78	0.00
2637	1	10:59:24	22.2980	1469.46	102.79	0.00
2641	1	11: 3:14	22.3620	1469.44	102.80	0.00
2645	1	11: 7: 5	22.4260	1469.43	102.81	0.00
2649	1	11:10:59	22.4910	1469.46	102.82	0.00
2653	1	11:14:45	22.5540	1469.41	102.82	0.00
2657	1	11:18:36	22.6180	1469.42	102.83	0.00
2661	1	11:22:26	22.6820	1469.41	102.84	0.00
2665	1	11:26:17	22.7460	1469.39	102.84	0.00
2669	1	11:30:11	22.8110	1469.43	102.85	0.00
2673	1	11:33:57	22.8740	1469.38	102.85	0.00
2677	1	11:37:48	22.9380	1469.39	102.86	0.00
2681	1	11:41:38	23.0020	1469.38	102.86	0.00
2685	1	11:45:29	23.0660	1469.36	102.86	0.00
2689	1	11:49:23	23.1310	1469.40	102.88	0.00
2693	1	11:53: 9	23.1940	1469.34	102.88	0.00
2697	1	11:57: 0	23.2580	1469.35	102.90	0.00
2701	1	12: 0:50	23.3220	1469.36		

#		TIME	(HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
2709	1	12: 8:35	23.4510	1469.36	102.90	0.00
2713	1	12:12:21	23.5140	1469.31	102.91	0.00
2717	1	12:16:12	23.5780	1469.32	102.91	0.00
2721	1	12:20: 2	23.6420	1469.32	102.92	0.00
2725	1	12:23:53	23.7060	1469.29	102.92	0.00
2729	1	12:27:47	23.7710	1469.33	102.93	0.00
2733	1	12:31:33	23.8340	1469.28	102.94	0.00
2737	1	12:35:24	23.8980	1469.28	102.94	0.00
2741	1	12:39:14	23.9620	1469.29	102.96	0.00
2745	1	12:43: 5	24.0260	1469.26	102.95	0.00
2749	1	12:46:59	24.0910	1469.30	102.96	0.00
2753	1	12:50:45	24.1540	1469.24	102.97	0.00
2757	1	12:54:36	24.2180	1469.26	102.98	0.00
2761	1	12:58:26	24.2820	1469.25	102.99	0.00
2765	1	13: 2:17	24.3460	1469.22	102.99	0.00
2769	1	13: 6:11	24.4110	1469.27	102.99	0.00
2773	1	13: 9:57	24.4740	1469.20	103.00	0.00
2777	1	13:13:48	24.5380	1469.23	103.01	0.00
2781	1	13:17:38	24.6020	1469.21	103.01	0.00
2785	1	13:21:29	24.6660	1469.20	103.02	0.00
2789	1	13:25:23	24.7310	1469.22	103.03	0.00
2793	1	13:29: 9	24.7940	1469.18	103.03	0.00
2797	1	13:33: 0	24.8580	1469.21	103.03	0.00
2801	1	13:36:50	24.9220	1469.16	103.04	0.00
2805	1	13:40:41	24.9860	1469.18	103.04	0.00
2809	1	13:44:35	25.0510	1469.17	103.05	0.00
2813	1	13:48:21	25.1140	1469.15	103.06	0.00
2817	1	13:52:12	25.1780	1469.19	103.06	0.00
2821	1	13:56: 2	25.2420	1469.13	103.07	0.00
2825	1	13:59:53	25.3060	1469.17	103.06	0.00
2829	1	14: 3:47	25.3710	1469.12	103.07	0.00
2833	1	14: 7:33	25.4340	1469.13	103.08	0.00
2837	1	14:11:24	25.4980	1469.13	103.09	0.00
2841	1	14:15:14	25.5620	1469.11	103.10	0.00
2845	1	14:19: 5	25.6260	1469.15	103.11	0.00
2849	1	14:22:59	25.6910	1469.09	103.12	0.00
2853	1	14:26:45	25.7540	1469.13	103.13	0.00
2857	1	14:30:36	25.8180	1469.08	103.13	0.00
2861	1	14:34:26	25.8820	1469.09	103.12	0.00
2865	1	14:38:17	25.9460	1469.09	103.12	0.00
2869	1	14:42:11	26.0110	1469.07	103.13	0.00
2873	1	14:45:57	26.0740	1469.11	103.14	0.00
2877	1	14:49:48	26.1380	1469.05	103.15	0.00
2881	1	14:53:38	26.2020	1469.07	103.14	0.00
2885	1	14:57:29	26.2660	1469.06	103.17	0.00
2889	1	15: 1:23	26.3310	1469.04	103.17	0.00
2893	1	15: 5: 9	26.3940	1469.08	103.17	0.00
2897	1	15: 9: 0	26.4580	1469.02	103.17	0.00

#		TIME	(HRS)	(PSIA)	(Deg.F)	WHP (PSIG)
2909	1	15:20:35	26.6510	1469.02	103.19	0.00
2913	1	15:24:21	26.7140	1469.05	103.19	0.00
2917	1	15:28:12	26.7780	1468.99	103.19	0.00
2921	1	15:32: 2	26.8420	1469.02	103.21	0.00
2925	1	15:35:53	26.9060	1469.00	103.21	0.00
2929	1	15:39:47	26.9710	1468.98	103.22	0.00
2933	1	15:43:33	27.0340	1469.03	103.21	0.00
2937	1	15:47:24	27.0980	1468.97	103.23	0.00
2941	1	15:51:14	27.1620	1468.98	103.24	0.00
2945	1	15:55: 5	27.2260	1468.99	103.25	0.00
2949	1	15:58:59	27.2910	1468.96	103.25	0.00
2953	1	16: 2:45	27.3540	1469.00	103.25	0.00
2957	1	16: 6:36	27.4180	1468.94	103.26	0.00
2961	1	16:10:26	27.4820	1468.95	103.25	0.00
2965	1	16:14:17	27.5460	1468.98	103.25	0.00
2969	1	16:18:11	27.6110	1468.93	103.26	0.00
2973	1	16:21:57	27.6740	1468.95	103.27	0.00
2977	1	16:25:48	27.7380	1468.94	103.28	0.00
2979	1	16:29:45	27.8040	1468.91	103.29	0.00
2983	1	16:33:36	27.8680	1468.95	103.29	0.00
2987	1	16:37:26	27.9320	1468.91	103.30	0.00
2991	1	16:41:17	27.9960	1468.91	103.30	0.00
2995	1	16:45: 7	28.0600	1468.94	103.30	0.00
2999	1	16:48:57	28.1240	1468.89	103.31	0.00
3003	1	16:52:48	28.1880	1468.91	103.32	0.00
3007	1	16:56:38	28.2520	1468.90	103.32	0.00
3011	1	17: 0:29	28.3160	1468.87	103.32	0.00
3015	1	17: 4:19	28.3800	1468.90	103.32	0.00
3019	1	17: 8: 9	28.4440	1468.86	103.34	0.00
3023	1	17:12: 0	28.5080	1468.87	103.34	0.00
3027	1	17:15:50	28.5720	1468.90	103.34	0.00
3031	1	17:19:41	28.6360	1468.84	103.35	0.00
3035	1	17:23:31	28.7000	1468.87	103.36	0.00
3039	1	17:27:21	28.7640	1468.85	103.36	0.00
3043	1	17:31:12	28.8280	1468.83	103.36	0.00
3047	1	17:35: 2	28.8920	1468.88	103.38	0.00
3051	1	17:38:53	28.9560	1468.81	103.36	0.00
3055	1	17:42:43	29.0200	1468.83	103.37	0.00
3059	1	17:46:33	29.0840	1468.84	103.38	0.00
3063	1	17:50:24	29.1480	1468.80	103.37	0.00
3067	1	17:54:14	29.2120	1468.83	103.38	0.00
3071	1	17:58: 5	29.2760	1468.80	103.40	0.00
3075	1	18: 1:55	29.3400	1468.80	103.40	0.00
3079	1	18: 5:45	29.4040	1468.83	103.40	0.00
3083	1	18: 9:36	29.4680	1468.78	103.40	0.00
3087	1	18:13:26	29.5320	1468.80	103.41	0.00
3091	1	18:17:17	29.5960	1468.78	103.41	0.00
3095	1	18:21: 7	29.6600	1468.77	103.42	0.00
3099	1	18:24:57	[illegible]	[illegible]	[illegible]	[illegible]

#		TIME	(HRS)	(PSIA)	(Deg.F)	(PSIG)
3107	1	18:32:38	29.8520	1468.77	103.43	0.00
3111	1	18:36:29	29.9160	1468.77	103.44	0.00
3115	1	18:40:19	29.9800	1468.74	103.44	0.00
3119	1	18:44: 9	30.0440	1468.77	103.45	0.00
3123	1	18:48: 0	30.1080	1468.73	103.44	0.00
3127	1	18:51:50	30.1720	1468.73	103.45	0.00
3131	1	18:55:41	30.2360	1468.76	103.45	0.00
3135	1	18:59:31	30.3000	1468.72	103.47	0.00
3139	1	19: 3:21	30.3640	1468.75	103.47	0.00
3143	1	19: 7:12	30.4280	1468.71	103.47	0.00
3147	1	19:11: 2	30.4920	1468.71	103.47	0.00
3151	1	19:14:53	30.5560	1468.74	103.47	0.00
3155	1	19:18:43	30.6200	1468.69	103.48	0.00
3159	1	19:22:33	30.6840	1468.71	103.49	0.00
3163	1	19:26:24	30.7480	1468.69	103.49	0.00
3167	1	19:30:14	30.8120	1468.69	103.50	0.00
3171	1	19:34: 5	30.8760	1468.72	103.50	0.00
3175	1	19:37:55	30.9400	1468.67	103.50	0.00
3179	1	19:41:45	31.0040	1468.69	103.50	0.00
3183	1	19:45:36	31.0680	1468.68	103.51	0.00
3187	1	19:49:26	31.1320	1468.66	103.51	0.00
3191	1	19:53:17	31.1960	1468.70	103.53	0.00
3195	1	19:57: 7	31.2600	1468.64	103.53	0.00
3199	1	20: 0:57	31.3240	1468.66	103.54	0.00
3203	1	20: 4:48	31.3880	1468.67	103.55	0.00
3207	1	20: 8:38	31.4520	1468.63	103.55	0.00
3211	1	20:12:29	31.5160	1468.67	103.54	0.00
3215	1	20:16:19	31.5800	1468.62	103.54	0.00
3219	1	20:20: 9	31.6440	1468.63	103.55	0.00
3223	1	20:24: 0	31.7080	1468.65	103.55	0.00
3227	1	20:27:50	31.7720	1468.61	103.56	0.00
3231	1	20:31:41	31.8360	1468.64	103.56	0.00
3235	1	20:35:31	31.9000	1468.60	103.56	0.00
3239	1	20:39:21	31.9640	1468.61	103.57	0.00
3243	1	20:43:12	32.0280	1468.63	103.57	0.00
3247	1	20:47: 2	32.0920	1468.58	103.58	0.00
3251	1	20:50:53	32.1560	1468.62	103.59	0.00
3255	1	20:54:43	32.2200	1468.58	103.59	0.00
3259	1	20:58:33	32.2840	1468.58	103.60	0.00
3263	1	21: 2:24	32.3480	1468.61	103.60	0.00
3267	1	21: 6:14	32.4120	1468.56	103.60	0.00
3271	1	21:10: 5	32.4760	1468.59	103.60	0.00
3275	1	21:13:55	32.5400	1468.56	103.60	0.00
3279	1	21:17:45	32.6040	1468.56	103.61	0.00
3283	1	21:21:36	32.6680	1468.59	103.63	0.00
3287	1	21:25:26	32.7320	1468.54	103.63	0.00
3291	1	21:29:17	32.7960	1468.57	103.63	0.00
3295	1	21:33: 7	32.8600	1468.54	103.64	0.00

#		TIME	(HRS)	(PSIA)	(Deg.F)	WHP (PSIG)
3307	1	21:44:38	33.0520	1468.51	103.64	0.00
3311	1	21:48:29	33.1160	1468.54	103.64	0.00
3315	1	21:52:19	33.1800	1468.52	103.65	0.00
3319	1	21:56: 9	33.2440	1468.51	103.66	0.00
3323	1	22: 0: 0	33.3080	1468.55	103.66	67.80
3327	1	22: 3:50	33.3720	1468.49	103.67	0.00
3331	1	22: 7:41	33.4360	1468.52	103.68	0.00
3335	1	22:11:31	33.5000	1468.50	103.67	0.00
3339	1	22:15:21	33.5640	1468.48	103.68	0.00
3343	1	22:19:12	33.6280	1468.52	103.67	0.00
3347	1	22:23: 2	33.6920	1468.47	103.68	0.00
3351	1	22:26:53	33.7560	1468.49	103.68	0.00
3355	1	22:30:43	33.8200	1468.48	103.69	0.00
3359	1	22:34:33	33.8840	1468.46	103.69	0.00
3363	1	22:38:24	33.9480	1468.51	103.70	0.00
3367	1	22:42:14	34.0120	1468.45	103.71	0.00
3371	1	22:46: 5	34.0760	1468.46	103.71	0.00
3375	1	22:49:55	34.1400	1468.47	103.71	0.00
3379	1	22:53:45	34.2040	1468.44	103.72	0.00
3383	1	22:57:36	34.2680	1468.48	103.72	0.00
3387	1	23: 1:26	34.3320	1468.43	103.73	0.00
3391	1	23: 5:17	34.3960	1468.44	103.74	0.00
3395	1	23: 9: 7	34.4600	1468.46	103.74	0.00
3399	1	23:12:57	34.5240	1468.42	103.74	0.00
3403	1	23:16:48	34.5880	1468.45	103.73	0.00
3407	1	23:20:38	34.6520	1468.41	103.74	0.00
3411	1	23:24:29	34.7160	1468.42	103.75	0.00
3415	1	23:28:19	34.7800	1468.44	103.75	0.00
3419	1	23:32: 9	34.8440	1468.39	103.75	0.00
3423	1	23:36: 0	34.9080	1468.42	103.76	0.00
3427	1	23:39:50	34.9720	1468.39	103.76	0.00
3431	1	23:43:41	35.0360	1468.38	103.76	0.00
3435	1	23:47:31	35.1000	1468.42	103.76	0.00
3439	1	23:51:21	35.1640	1468.37	103.76	0.00
3443	1	23:55:12	35.2280	1468.39	103.77	0.00
3447	1	23:59: 2	35.2920	1468.37	103.77	0.00
[Thursday: Oct. 26, 1995]						
3451	2	0: 2:53	35.3560	1468.36	103.78	0.00
3455	2	0: 6:43	35.4200	1468.40	103.78	0.00
3459	2	0:10:33	35.4840	1468.35	103.79	0.00
3463	2	0:14:24	35.5480	1468.37	103.79	0.00
3467	2	0:18:14	35.6120	1468.35	103.79	0.00
3471	2	0:22: 5	35.6760	1468.34	103.80	0.00
3475	2	0:25:55	35.7400	1468.38	103.80	0.00
3479	2	0:29:45	35.8040	1468.32	103.80	0.00
3483	2	0:33:36	35.8680	1468.35	103.80	0.00
3487	2	0:37:26	35.9320	1468.33	103.81	0.00
3491	2	0:41:17	35.9960	1468.32	103.82	0.00
3495	2	0:45: 7	[illegible]	[illegible]	[illegible]	[illegible]

#		TIME	(HRS)	(PSIA)	(Deg.F)	WHP (PSIG)
3503	2	0:52:48	36.1880	1468.32	103.83	0.00
3507	2	0:56:38	36.2520	1468.31	103.83	0.00
3511	2	1: 0:29	36.3160	1468.30	103.84	0.00
3515	2	1: 4:19	36.3800	1468.33	103.84	0.00
3519	2	1: 8: 9	36.4440	1468.28	103.85	0.00
3523	2	1:12: 0	36.5080	1468.30	103.84	0.00
3527	2	1:15:50	36.5720	1468.29	103.85	0.00
3531	2	1:19:41	36.6360	1468.28	103.85	0.00
3535	2	1:23:31	36.7000	1468.31	103.86	0.00
3539	2	1:27:21	36.7640	1468.26	103.86	0.00
3543	2	1:31:12	36.8280	1468.28	103.87	0.00
3547	2	1:35: 6	36.8930	1468.26	103.87	0.00
3551	2	1:38:53	36.9560	1468.26	103.88	0.00
3555	2	1:42:43	37.0200	1468.30	103.88	0.00
3559	2	1:46:33	37.0840	1468.24	103.88	0.00
3563	2	1:50:24	37.1480	1468.27	103.87	0.00
3567	2	1:54:18	37.2130	1468.25	103.88	0.00
3571	2	1:58: 5	37.2760	1468.24	103.89	0.00
3575	2	2: 1:55	37.3400	1468.28	103.89	0.00
3579	2	2: 5:45	37.4040	1468.22	103.90	0.00
3583	2	2: 9:36	37.4680	1468.24	103.90	0.00
3587	2	2:13:30	37.5330	1468.23	103.90	0.00
3591	2	2:17:17	37.5960	1468.22	103.92	0.00
3595	2	2:21: 7	37.6600	1468.25	103.91	0.00
3599	2	2:24:57	37.7240	1468.20	103.92	0.00
3603	2	2:28:48	37.7880	1468.22	103.92	0.00
3607	2	2:32:42	37.8530	1468.20	103.91	0.00
3611	2	2:36:29	37.9160	1468.19	103.92	0.00
3615	2	2:40:19	37.9800	1468.23	103.92	0.00
3619	2	2:44: 9	38.0440	1468.18	103.92	0.00
3623	2	2:48: 0	38.1080	1468.20	103.94	0.00
3627	2	2:51:54	38.1730	1468.19	103.94	0.00
3631	2	2:55:41	38.2360	1468.18	103.95	0.00
3635	2	2:59:31	38.3000	1468.22	103.94	0.00
3639	2	3: 3:21	38.3640	1468.16	103.94	0.00
3643	2	3: 7:12	38.4280	1468.18	103.96	0.00
3647	2	3:11: 6	38.4930	1468.17	103.95	0.00
3650	2	3:13:55	38.5400	1468.20	103.96	0.00
3651	2	3:14:53	38.5560	1468.16	103.96	0.00
3652	2	3:15:50	38.5720	1468.17	103.96	0.00
3653	2	3:16:48	38.5880	1468.17	103.96	0.00
3654	2	3:17:45	38.6040	1468.15	103.96	0.00
3655	2	3:18:43	38.6200	1468.19	103.96	0.00
3656	2	3:19:41	38.6360	1468.15	103.96	0.00
3657	2	3:20:38	38.6520	1468.16	103.96	0.00
3658	2	3:21:36	38.6680	1468.17	103.96	0.00
3659	2	3:22:33	38.6840	1468.14	103.96	0.00
3660	2	3:23:31	38.7000	1468.19	103.96	0.00
3661	2	3:24:29	38.7160	1468.15	103.96	0.00

Date: October 27, 1995 PLR-0348-95

To: H. R. Horton From: P. L. Richard

Dept/Location: Maintenance Engr/BCP Dept/Location: Site Services Tech/BCP

Subject: **Analyses of #3 Well Feed Samples for Mechanical Integrity Testing**

cc: R. S. O'Neal W. E. Dentler B. G. Campbell
P. H. Richardson G. J. McCarthy D. R. Howard
R. E. Van Wie --> L. P. Molina
Wes Smith - ECO Solutions, Inc.

Samples of the #3 Well Feed were collected by the Site Services Operators every 8 hours. These samples were submitted to the laboratory for analysis of specific gravity and viscosity at 120ºF as requested. The results are tabulated below.

Sample Date	Sample Time	Specific Gravity	Viscosity (cps)
10/20/95	10 AM	1.0011	0.540
10/20/95	6 PM	1.0010	0.534
10/21/95	2 AM	No sample received	
10/21/95	10 AM	1.0012	0.555
10/21/95	6 PM	1.0012	0.542
10/22/95	2 AM	1.0013	0.550
10/22/95	10 AM	1.0013	0.541
10/22/95	6 PM	1.0013	0.530
10/23/95	2 AM	1.0014	0.556
10/23/95	10 AM	1.0014	0.557
10/23/95	6 PM	No sample received	
10/24/95	2 AM	1.0015	0.545
10/24/95	10 AM	1.0015	0.548
10/24/95	6 PM	1.0015	0.544

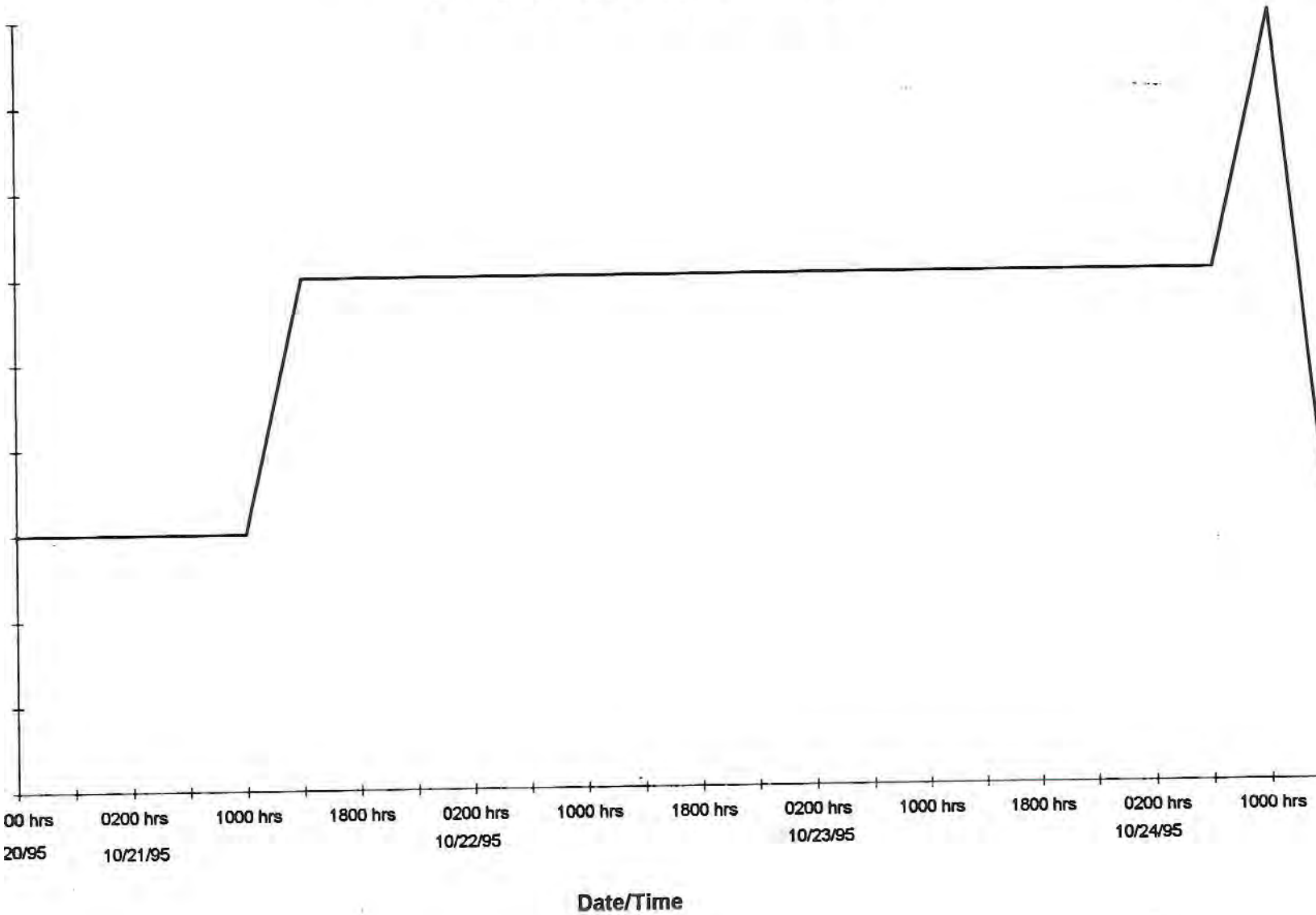
I would like to acknowledge Luis Molina for his timely analysis of these samples.

Paul L Richard

P. L. Richard

DATE	TIME	FLOW (GPM)
10/20/95	1800 hrs	150
	2200 hrs	150
10/21/95	0200 hrs	150
	0600 hrs	150
	1000 hrs	150
	1400 hrs	153
	1800 hrs	153
	2200 hrs	153
10/22/95	0200 hrs	153
	0400 hrs	153
	1000 hrs	153
	1400 hrs	153
	1800 hrs	153
	2200 hrs	153
10/23/95	0200 hrs	153
	0600 hrs	153
	1000 hrs	153
	1400 hrs	153
	1800 hrs	153
	2200 hrs	153
10/24/95	0200 hrs	153
	0600 hrs	153
	1000 hrs	156
	1400 hrs	150
	2200 hrs	0

HOECHST CELANESE CHEMICAL GROUP, INC.
Flow Rate - WDW-32 (Well No. 3)



ECO Solutions

#3 WELL MIT

DATE/TIME	VISCOSITY	SPEC. GRAVITY
10/20 10 AM	.540 CPS	1.0011
10/20 6 PM	.534 CPS	1.0010
10/21 10 AM	.555 CPS	1.0012
10/21 6 PM	.542 CPS	1.0012
10/22 2 AM	.550 CPS	1.0013
10/22 10 AM	.541 CPS	1.0013
10/22 6 PM	.530 CPS	1.0013
10/23 2 AM	.556 CPS	1.0014
10/23 10 AM	.557 CPS	1.0014
10/24 2 AM	.545 CPS	1.0015
10/24 10 AM	.548 CPS	1.0015
10/24 6 PM	.544 CPS	1.0015

10/26/95 LPM

APPENDIX G

CALCULATION FLOW CHART AND CALCULATION OF PARAMETERS

CALCULATION FLOW CHART

1. Calculate slope value from Semi-Log Plot.

2 a. Utilize reservoir viscosity for *Initial Calculations.*

b. If required, redo calculations with waste viscosity.

3. Calculate Permeability.

4. Calculate Time to exit waste front.

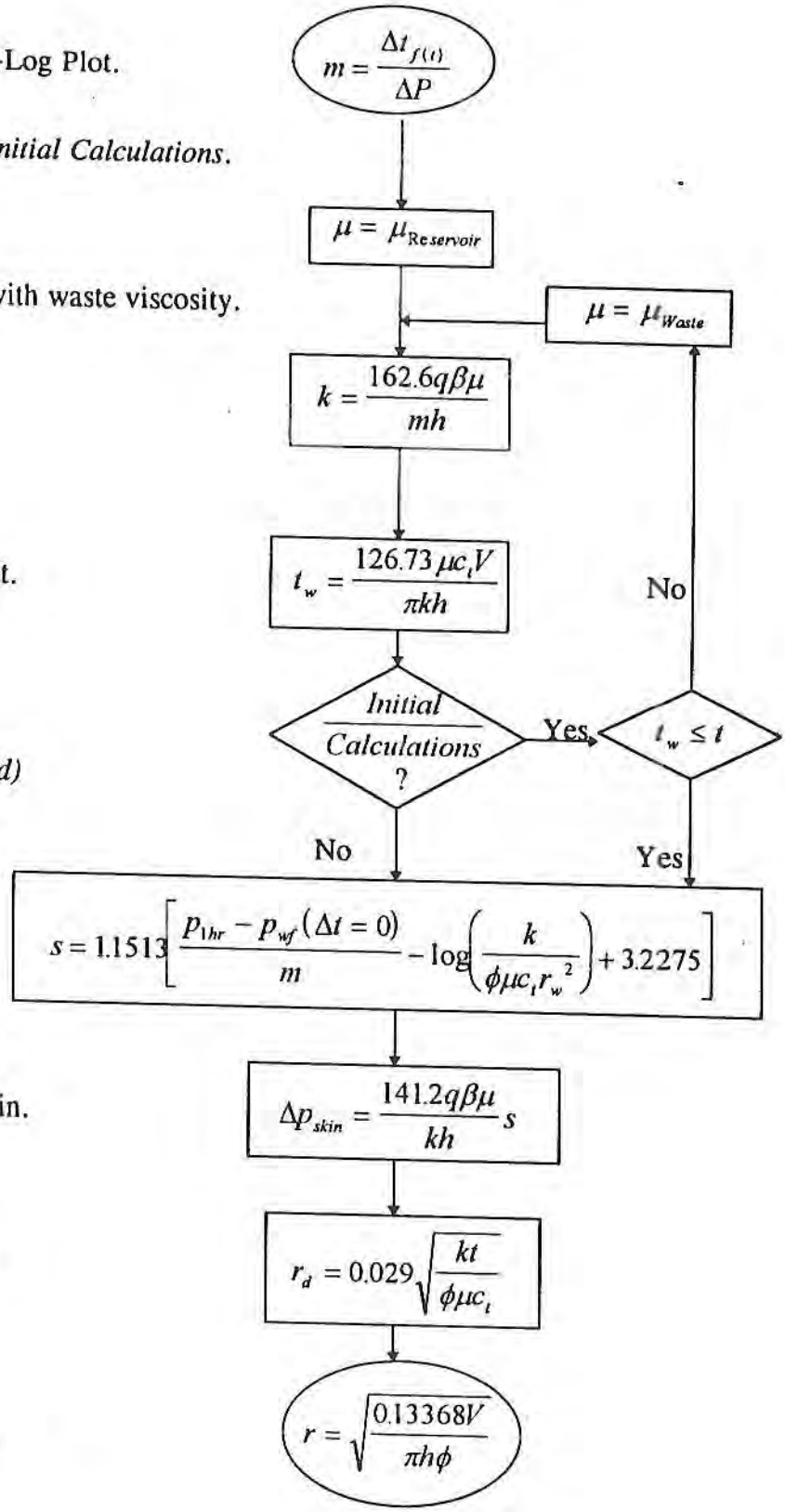
5. Conditional statements.
   (t, beginning of radial flow period)

6. Calculate skin factor.

7. Calculate Pressure drop due to skin.

8. Calculate radius of investigation.

9. Calculate distance to waste front.



CALCULATIONS

Data was obtained druing the injectivity/falloff survey on October 24 through 26, 1995.

1. Calculate Permeability

$$k = \frac{162.6\ q\beta\mu}{mh}$$ where

k = permeability, milldarcies
q = water flow rate, barrels per day
β = formation volume factor, RB/STB
μ = Fluid viscosity, centipoise
m = Semi-Log slope, psi per cycle
h = Net sand thickness, feet

$$k = \frac{(162.2)(5143)(1.0)(0.71)}{(4.876)(165)}$$

$$= \frac{593722}{804.5}$$

$$= 738 \text{ md}$$

2. Time to exit waste front.

$$T_w = \frac{126.73\ \mu C_t V}{\pi Kh}$$ where,

t_w = Time to exit waste front, hours
μ = Fluid viscosity, centipoise
C_t = Total compressibility, 1/psi
N = Total injection fluid volume, cubic feet
π = pi, 3.1416
k = permeability, millidarcies
h = Net sand thickness, feet

$$t_w = \frac{(126.73)(0.71)(6.0108 \times 10^{-6})(1.849 \times 10^{9})}{(3.1416)(738)(165)}$$

$$t_w = \frac{(962{,}073)}{(382{,}358)}$$

$$= 2.51 \text{ hours}$$ Horner time = 39.4 hours

3. Calculate pressure drop due to skin.

$$\Delta Pskin = \frac{141.2\ q\beta\mu}{kh} \times s$$ where

$\Delta Pskin$ = pressure drop due to skin, psi
q = water flow rate, barrels per day
β = Formation volume factor, RB/STB
μ = Fluid viscosity, centipoise
k = Permeability, millidarcies
h = Net sand thickness, feet
s = Skin factor, total

$$\Delta Pskin = \frac{(141.2)(5143)(1.0)(0.71)(80)}{(738)(165)}$$

$$\Delta Pskin = \frac{41{,}247{,}683}{121{,}770}$$

$$= 338 \text{ psi}$$

4. Calculate radius of investigation (drainage radius).

$$r_d = 0.029\sqrt{\frac{kt}{\varphi\mu C_t}}$$ where

R_d = drainage radius, feet
k = permeability, millidarcies
t = time to radial flow period, hours
φ = Formation porosity, percent (%)
μ = Fluid viscosity, centipoise
C_t = Total compressibility, 1/psi
s = Skin factor, total

$$r_d = 0.029\sqrt{\frac{(738)(6.8)}{(0.33)(0.71)(6.0108810^{-6})}}$$

$$r_d = 0.029\sqrt{\frac{5018}{0.000001408}}$$

$$= (0.029)(59{,}699)$$

$$= 1731 \text{ feet}$$

5. Calculate distance to waste front.

$$r = \sqrt{\frac{0.13368\ V}{\pi h \varphi}}$$

where

r = Distance to waste front, feet
V = Total injection fluid volume, cubic feet
π = pi, 3.1416
h = Net sand thickness, feet
φ = Formation porosity, percent (%)

$$r = \sqrt{\frac{(0.13368)(1.773 \times 10^{8})}{(3.1416)(165)(0.33)}}$$

$$r = \sqrt{\frac{23{,}696{,}705}{171}}$$

r = 372 feet

6. Calculate skin factor.

$$s = 1.1513\left[\frac{P1hr - Pwf(\Delta t = 0)}{m} - \log\left[\frac{k}{\varphi \mu C_t\ r_w^2}\right] + \right]$$

where,

s = Skin factor, total
P_{1hr} = Extrapolated pressure @ 1 hour, psia
P_{wf} = Extrapolated pressure
k = permeability, millidarcies
φ = Formation porosity, percent
μ = Fluid viscosity, centipoise
C_t = Total compressibility, 1/psi
r_w = Wellbore radius, feet
m = Semi-Log slope, psi/cycle

$$s = 1.1513\left[\frac{(1475.9 - 1843.2)}{4.876} - \log\left[\frac{(738)}{(0.33)(0.71)(6.0 \times 10\ )(0.583^2)}\right] + 3.2275\right]$$

$$s = 1.1517\left[75.3 - \log\left[\frac{738}{4.77 \times 10^{-7}}\right] + 3.2275\right]$$

$s = 1.1517\ [75.3 - \log 1.547 \times 10^{9} + 3.2275]$
$s = 1.1517\ [75.3 - 9.19 + 3.2275]$
$s = 79.8$

APPENDIX H

STATIC GRADIENT SURVEY

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-32, WELL #3
Field: BAY CITY PLANT

County: MATAGORDA
State: TEXAS

Engineer: DOUG BEALL
Gauge Type: GRC EPG-520
Serial No.: 85954
Gauge Range: 0 - 2500 PSI
Gauge Depth: 3192 ft

Date: 10/26/1995

Well Type: INJECTION
Test Type: GRADIENT SURVEY
Well Status: SHUT-IN

Tubing: 5-1/2" TO 3,316'
Tubing: TO
Casing: 9-5/8" TO 3,245'
Perfs.: 3,202' - 3,553' (SCREEN)
Elevation: 11'

Packer Depth 3192 ft
PBTD 3553 ft
Oil Level
H2O Level 0 ft
Zero: THF

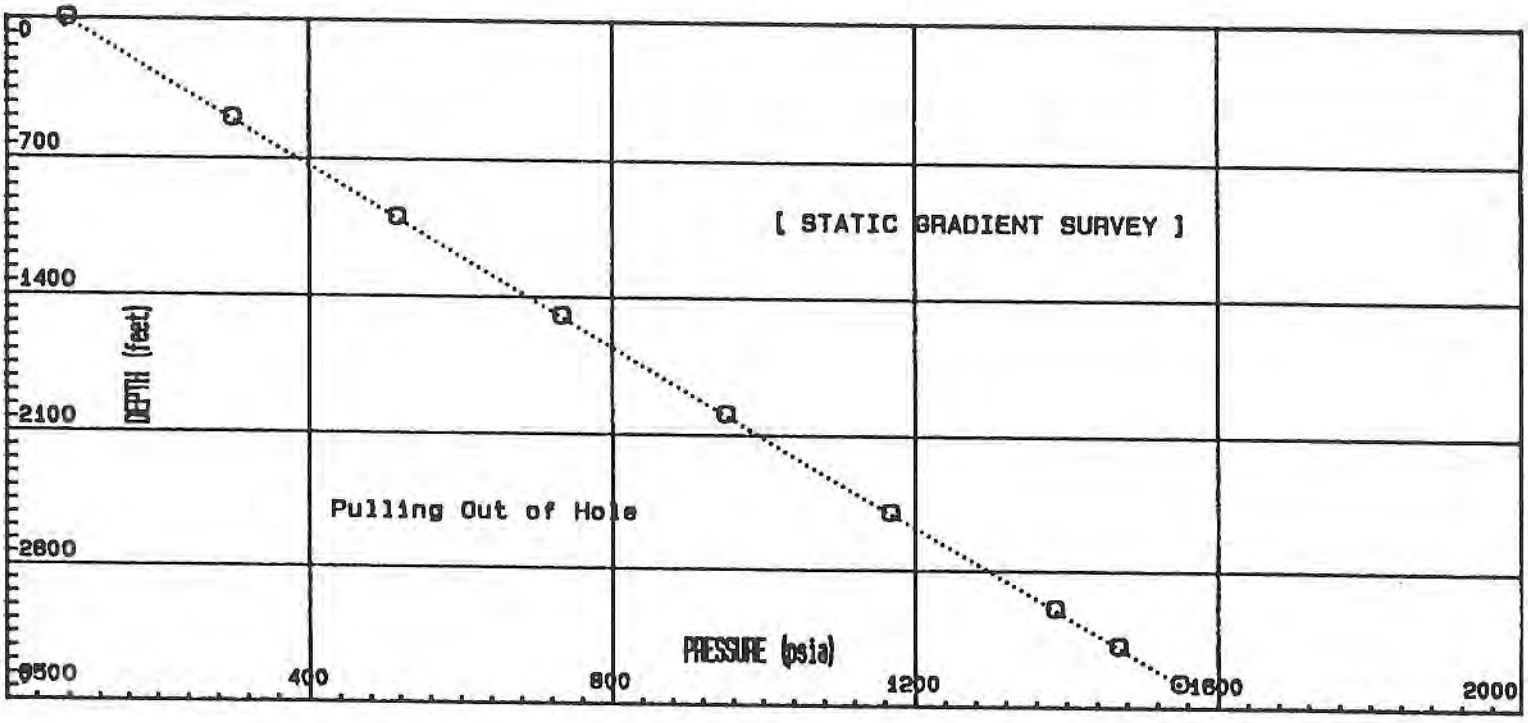
Shut-in BHP	1468	@	3192 ft	Shut-in BHT	104 F	@	3192 ft
Flowing BHP	1842	@	3192 ft	Flowing BHT	99 F	@	3192 ft
Shut-in WHP	78			Shut-in WHT	72 F		
Flowing WHP	600			Flowing WHT	0 F		

[GRADIENT DATA]

#	MD	TVD	PRESSURE	PSI/ft
1	0	0	78.16	
2	500	500	299.23	0.442
3	1000	1000	515.91	0.433
4	1500	1500	732.94	0.434
5	2000	2000	950.13	0.434
6	2500	2500	1167.31	0.434
7	3000	3000	1384.43	0.434
8	3192	3192	1468.15	0.436
9	3378	3378	1549.25	0.436

MILTON M. COOKE CO.
2310 McAllister St.
Houston, Tx. 77092
Ph. 713-683-0333

Pressure extrapolated to mid-point perforations.



Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-32 WELL #3
Field: BAY CITY PLANT

[Thursday: Oct. 26, 1995]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
3663	2	3:26:24	38.7480	1468.16	103.96	0.00
3664	2	3:27:21	38.7640	1468.14	103.97	0.00
3665	2	3:28:19	38.7800	1468.19	103.97	0.00
3666	2	3:29:17	38.7960	1468.14	103.97	0.00
3667	2	3:30:18	38.8130	1468.15	103.97	0.00
3668	2	3:31:12	38.8280	1468.16	103.97	0.00
3669	2	3:32: 9	38.8440	1468.14	103.97	0.00
3670	2	3:33: 7	38.8600	1468.19	103.97	0.00
3671	2	3:34: 5	38.8760	1468.14	103.97	0.00
3672	2	3:35: 2	38.8920	1468.15	103.97	0.00
3673	2	3:36: 0	38.9080	1468.15	103.97	0.00
3674	2	3:36:57	38.9240	1468.13	103.97	0.00
3675	2	3:37:55	38.9400	1468.18	103.97	0.00
3676	2	3:38:53	38.9560	1468.13	103.97	0.00
3677	2	3:39:50	38.9720	1468.14	103.97	0.00
3678	2	3:40:48	38.9880	1468.15	103.97	0.00
3679	2	3:41:45	39.0040	1468.13	103.98	0.00
3680	2	3:42:43	39.0200	1468.18	103.98	0.00
3681	2	3:43:41	39.0360	1468.13	103.99	0.00
3682	2	3:44:38	39.0520	1468.14	103.98	0.00
3683	2	3:45:36	39.0680	1468.14	103.98	0.00
3684	2	3:46:33	39.0840	1468.12	103.98	0.00
3685	2	3:47:31	39.1000	1468.17	103.98	0.00
3686	2	3:48:29	39.1160	1468.12	103.97	0.00
3687	2	3:49:26	39.1320	1468.14	103.98	0.00
3688	2	3:50:24	39.1480	1468.15	103.98	0.00
3689	2	3:51:21	39.1640	1468.13	103.98	0.00
3690	2	3:52:19	39.1800	1468.14	103.99	0.00
3691	2	3:53:17	39.1960	1468.12	103.98	0.00
3692	2	3:54:14	39.2120	1468.13	103.99	0.00
3693	2	3:55:12	39.2280	1468.13	103.99	0.00
3694	2	3:56: 9	39.2440	1468.10	103.99	0.00
3695	2	3:57: 7	39.2600	1468.15	103.99	0.00
3696	2	3:58: 5	39.2760	1468.10	103.99	0.00
3697	2	3:59: 2	39.2920	1468.11	103.99	0.00
3698	2	4: 0: 0	39.3080	1468.12	103.99	67.40
3699	2	4: 0:57	39.3240	1468.10	104.00	0.00
		End of Fall-Off Test.				
		Start out of hole making gradient stops.				
3700	2	4: 1:55	39.3400	1468.15	104.00	0.00
3701	2	4: 2:53	39.3560	1467.59	104.00	0.00
3702	2	4: 3:50	39.3720	1461.66	104.00	0.00
3703	2	4: 4:48	39.3880	1452.03	103.93	0.00
3704	2	4: 5:45	39.4040	1441.92	103.93	0.00
3705	2	4: 6:43	39.4200	1430.73	104.00	0.00
3706	2	4: 7:41	39.4360	1414.11	103.89	0.00
3707	2	4: 8:38	39.4520	1396.26	103.67	0.00
3708	2	4: 9:36	39.4680	1386.71	103.52	0.00
3709	2	4:10:33	39.4840	1384.36	103.59	0.00
3710	2	4:11:31	39.5000	1384.43	103.59	0.00

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-32 WELL #3
Field: BAY CITY PLANT

[Thursday: Oct. 26, 1995]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
3711	2	4:12:29	39.5160	1384.40	103.59	0.00
3712	2	4:13:26	39.5320	1384.43	103.60	0.00
3713	2	4:14:24	39.5480	1384.44	103.60	0.00
3714	2	4:15:21	39.5640	1384.42	103.61	0.00
3715	2	4:16:19	39.5800	1384.47	103.61	0.00
3716	2	4:17:17	39.5960	1384.43	103.61	0.00
3717	2	4:18:14	39.6120	1384.45	103.62	0.00
3718	2	4:19:12	39.6280	1384.45	103.62	0.00
3719	2	4:20: 9	39.6440	1384.43	103.62	0.00
3720	2	4:21: 7	39.6600	1384.47	103.62	0.00
		Depart 3,000 ft.				
3721	2	4:22: 5	39.6760	1384.43	103.62	0.00
3722	2	4:23: 2	39.6920	1380.64	103.62	0.00
3723	2	4:24: 0	39.7080	1357.16	103.47	0.00
3724	2	4:24:57	39.7240	1332.10	103.07	0.00
3725	2	4:25:55	39.7400	1306.92	102.82	0.00
3726	2	4:26:53	39.7560	1281.22	102.52	0.00
3727	2	4:27:50	39.7720	1255.06	102.05	0.00
3728	2	4:28:48	39.7880	1229.19	101.53	0.00
3729	2	4:29:45	39.8040	1202.64	101.26	0.00
3730	2	4:30:43	39.8200	1176.17	100.80	0.00
3731	2	4:31:41	39.8360	1166.96	100.44	0.00
3732	2	4:32:38	39.8520	1167.14	100.29	0.00
3733	2	4:33:36	39.8680	1167.21	100.24	0.00
3734	2	4:34:33	39.8840	1167.23	100.23	0.00
3735	2	4:35:31	39.9000	1167.30	100.21	0.00
3736	2	4:36:29	39.9160	1167.27	100.21	0.00
3737	2	4:37:26	39.9320	1167.30	100.20	0.00
3738	2	4:38:24	39.9480	1167.30	100.20	0.00
3739	2	4:39:21	39.9640	1167.29	100.19	0.00
3740	2	4:40:19	39.9800	1167.34	100.19	0.00
3741	2	4:41:17	39.9960	1167.30	100.19	0.00
3742	2	4:42:14	40.0120	1167.33	100.19	0.00
3743	2	4:43:12	40.0280	1167.33	100.19	0.00
		Depart 2,500 ft.				
3744	2	4:44: 9	40.0440	1167.31	100.19	0.00
3745	2	4:45: 7	40.0600	1157.47	100.19	0.00
3746	2	4:46: 5	40.0760	1128.46	99.99	0.00
3747	2	4:47: 2	40.0920	1098.89	99.55	0.00
3748	2	4:48: 0	40.1080	1069.46	99.14	0.00
3749	2	4:48:57	40.1240	1038.94	98.71	0.00
3750	2	4:49:55	40.1400	1008.69	98.23	0.00
3751	2	4:50:53	40.1560	978.23	97.77	0.00
3752	2	4:51:50	40.1720	954.05	97.29	0.00
3753	2	4:52:48	40.1880	949.80	96.93	0.00
3754	2	4:53:45	40.2040	949.93	96.84	0.00
3755	2	4:54:43	40.2200	950.03	96.81	0.00
3756	2	4:55:41	40.2360	950.03	96.80	0.00
3757	2	4:56:38	40.2520	950.07	96.79	0.00
3758	2	4:57:36	40.2680	950.08	96.79	0.00

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-32 WELL #3
Field: BAY CITY PLANT

[Thursday: Oct. 26, 1995]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
3759	2	4:58:33	40.2840	950.07	96.79	0.00
3760	2	4:59:31	40.3000	950.12	96.78	0.00
3761	2	5: 0:29	40.3160	950.08	96.78	0.00
3762	2	5: 1:26	40.3320	950.11	96.77	0.00
3763	2	5: 2:24	40.3480	950.11	96.77	0.00
3764	2	5: 3:21	40.3640	950.09	96.76	0.00
3765	2	5: 4:19	40.3800	950.14	96.76	0.00
3766	2	5: 5:17	40.3960	950.10	96.76	0.00
3767	2	5: 6:14	40.4120	950.13	96.75	0.00
3768	2	5: 7:12	40.4280	950.12	96.75	0.00
3769	2	5: 8: 9	40.4440	950.10	96.75	0.00
3770	2	5: 9: 7	40.4600	950.15	96.75	0.00
3771	2	5:10: 5	40.4760	950.10	96.75	0.00
3772	2	5:11: 2	40.4920	950.13	96.75	0.00
		Depart 2,000 ft.				
3773	2	5:12: 0	40.5080	950.13	96.75	0.00
3774	2	5:12:57	40.5240	950.00	96.75	0.00
3775	2	5:13:55	40.5400	925.67	96.72	0.00
3776	2	5:14:53	40.5560	893.89	96.29	0.00
3777	2	5:15:50	40.5720	861.60	95.85	0.00
3778	2	5:16:48	40.5880	829.60	95.38	0.00
3779	2	5:17:45	40.6040	796.81	95.08	0.00
3780	2	5:18:43	40.6200	763.98	94.70	0.00
3781	2	5:19:41	40.6360	734.14	94.15	0.00
3782	2	5:20:38	40.6520	732.74	93.76	0.00
3783	2	5:21:36	40.6680	732.82	93.72	0.00
3784	2	5:22:33	40.6840	732.84	93.70	0.00
3785	2	5:23:31	40.7000	732.90	93.70	0.00
3786	2	5:24:29	40.7160	732.88	93.70	0.00
3787	2	5:25:26	40.7320	732.91	93.70	0.00
3788	2	5:26:24	40.7480	732.91	93.70	0.00
3789	2	5:27:21	40.7640	732.91	93.70	0.00
3790	2	5:28:19	40.7800	732.95	93.69	0.00
3791	2	5:29:17	40.7960	732.92	93.69	0.00
3792	2	5:30:14	40.8120	732.94	93.69	0.00
		Depart 1,500 ft.				
3793	2	5:31:12	40.8280	732.94	93.69	0.00
3794	2	5:32: 9	40.8440	730.99	93.69	0.00
3795	2	5:33: 7	40.8600	699.25	93.59	0.00
3796	2	5:34: 5	40.8760	665.24	93.14	0.00
3797	2	5:35: 2	40.8920	630.98	92.77	0.00
3798	2	5:36: 0	40.9080	597.26	92.32	0.00
3799	2	5:36:57	40.9240	563.02	91.86	0.00
3800	2	5:37:55	40.9400	528.89	91.58	0.00
3801	2	5:38:53	40.9560	515.62	91.00	0.00
3802	2	5:39:50	40.9720	515.76	90.84	0.00
3803	2	5:40:48	40.9880	515.79	90.80	0.00
3804	2	5:41:45	41.0040	515.81	90.79	0.00
3805	2	5:42:43	41.0200	515.88	90.78	0.00
3806	2	5:43:41	41.0360	515.85	90.76	0.00

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-32 WELL #3
Field: BAY CITY PLANT

[Thursday: Oct. 26, 1995]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
3807	2	5:44:38	41.0520	515.89	90.76	0.00
3808	2	5:45:36	41.0680	515.89	90.75	0.00
3809	2	5:46:33	41.0840	515.89	90.74	0.00
3810	2	5:47:31	41.1000	515.93	90.74	0.00
3811	2	5:48:29	41.1160	515.90	90.74	0.00
3812	2	5:49:26	41.1320	515.93	90.73	0.00
3813	2	5:50:24	41.1480	515.92	90.73	0.00
3814	2	5:51:21	41.1640	515.90	90.73	0.00
3815	2	5:52:19	41.1800	515.94	90.72	0.00
		Depart 1,000 ft.				
3816	2	5:53:17	41.1960	515.91	90.72	0.00
3817	2	5:54:14	41.2120	504.72	90.72	0.00
3818	2	5:55:12	41.2280	471.99	90.58	0.00
3819	2	5:56: 9	41.2440	436.94	90.27	0.00
3820	2	5:57: 7	41.2600	402.25	89.75	0.00
3821	2	5:58: 5	41.2760	367.57	89.67	0.00
3822	2	5:59: 2	41.2920	332.45	88.93	0.00
3823	2	6: 0: 0	41.3080	300.83	88.98	0.00
3824	2	6: 0:57	41.3240	299.07	88.58	0.00
3825	2	6: 1:55	41.3400	299.13	88.46	0.00
3826	2	6: 2:53	41.3560	299.12	88.42	0.00
3827	2	6: 3:50	41.3720	299.17	88.40	0.00
3828	2	6: 4:48	41.3880	299.18	88.38	0.00
3829	2	6: 5:45	41.4040	299.18	88.37	0.00
3830	2	6: 6:43	41.4200	299.23	88.35	0.00
3831	2	6: 7:41	41.4360	299.20	88.33	0.00
		Depart 500 ft.				
3832	2	6: 8:38	41.4520	299.23	88.33	0.00
3833	2	6: 9:36	41.4680	290.98	88.32	0.00
3834	2	6:10:33	41.4840	258.30	87.83	0.00
3835	2	6:11:31	41.5000	225.66	87.92	0.00
3836	2	6:12:29	41.5160	192.43	87.85	0.00
3837	2	6:13:26	41.5320	158.15	87.12	0.00
3838	2	6:14:24	41.5480	124.23	86.48	0.00
3839	2	6:15:21	41.5640	96.95	86.22	0.00
		Arrived @ Surface.				
3840	2	6:16:19	41.5800	84.70	85.34	0.00
3841	2	6:17:17	41.5960	77.18	79.81	0.00
3842	2	6:18:14	41.6120	76.02	75.89	0.00
3843	2	6:19:12	41.6280	76.80	75.38	0.00
3844	2	6:20: 9	41.6440	77.28	75.00	0.00
3845	2	6:21: 7	41.6600	77.61	74.63	0.00
3846	2	6:22: 5	41.6760	77.75	74.31	0.00
3847	2	6:23: 2	41.6920	77.88	74.03	0.00
3848	2	6:24: 0	41.7080	77.95	73.78	0.00
3849	2	6:24:57	41.7240	78.00	73.57	0.00
3850	2	6:25:55	41.7400	78.08	73.39	0.00
3851	2	6:26:53	41.7560	78.07	73.22	0.00
3852	2	6:27:50	41.7720	78.11	73.06	0.00
3853	2	6:28:48	41.7880	78.12	72.92	0.00

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-32 WELL #3
Field: BAY CITY PLANT

[Thursday: Oct. 26, 1995]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)	WHP (PSIG)
3854	2	6:29:45	41.8040	78.12	72.79	0.00
3855	2	6:30:43	41.8200	78.18	72.67	0.00
3856	2	6:31:41	41.8360	78.15	72.56	0.00
3857	2	6:32:38	41.8520	78.17	72.45	0.00
3858	2	6:33:36	41.8680	78.18	72.35	0.00
		Bleed off lubricator.				
3859	2	6:34:33	41.8840	78.16	72.26	0.00

APPENDIX I

CORRESPONDENCE

ECO SOLUTIONS, INC.

▶ 10333 Richmond Avenue Suite 250 - Houston, Texas 77042 - (713) 780-1955 FAX (713) 789-5533 ◀

January 5, 1995

Sent via Federal Express

Mr. I.O. Coleman
Hoechst Celanese Chemical Group, Inc.
Bay City Plant
PO Box 509
Bay City, Texas 77404-0509

RE: Proposed Mechanical Integrity Testing
WDW-32 (Well #3)

Dear Mr. Coleman:

ECO Solutions, Inc. (ECO) has prepared procedures to demonstrate mechanical integrity for WDW-32 (well #3) as requested in the Texas Natural Resource Conservation Commission (TNRCC) letter dated 12/27/94. The attached plan calls for a three (3) part test which includes an annulus pressure test (APT), radioactive tracer survey (RAT) and pressure falloff test.

The type of fluid to be used during the falloff testing should also be considered. Typically nonhazardous waste is used during the falloff testing to avoid the cost of hauling brine to the well. However, there is some question as to whether or not waste can be injected at this time since the well was previously brined in and mechanical integrity is almost three months (3) overdue. I suggest that confirmation with the TNRCC be obtained prior to injecting nonhazardous waste for the falloff testing.

If you have any questions regarding this matter, please contact either Wes Smith or myself at our Houston office.

Sincerely,

ECO SOLUTIONS, INC.

Thomas A Jones

Thomas A. Jones
Sr. Vice President

cc: Ray Horton, (HCCG)
W.E. Dentler (HCCG)
Wes Smith, ECO

John Hall, *Chairman*
Pam Reed, *Commissioner*
Peggy Garner, *Commissioner*
Dan Pearson, *Executive Director*

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

February 22, 1995

Mr. I. O. Coleman, Jr.
Hoechst Celanese, Chemical Group
Bay City Plant
P.O. Box 509
Highway 3057
Bay City, Texas 77404-0509

Re: Approval of Mechanical Integrity Testing for WDW-32

Dear Mr. Coleman:

This is to acknowledge our receipt of the report dated January 31, 1995, on the mechanical integrity (MI) test of the above referenced well which was conducted on January 18-20, 1995. TNRCC staff was present during the MI test and it has been determined that MI of the well was confirmed on the above referenced dates in accordance with 30 TAC §331.4. Please keep a copy of this letter with the well records so that it may be reviewed by well inspectors.

If you have any questions, or if we may be of further assistance, please call me at (512) 239-6196, Mail Code MC-131.

Sincerely,

Jim L. Boswell

Jim L. Boswell, Permit Coordinator
Underground Injection Control Team
UIC, Uranium and Radioactive Waste Section
Industrial and Hazardous Waste Division

cc: Brian Graves, EPA Region VI, Dallas
TNRCC Region 12, Houston
[redacted]d, Suite 250, Houston, 77042

Hoechst Celanese

Chemical Group
Hoechst Celanese Corporation
Bay City Plant
PO Box 509
Highway 3057
Bay City, TX 77404-0509

September 19, 1995
IOC-067-95

CERTIFIED MAIL

Mr. Ben K. Knape - Head
UIC Team
UIC, Uranium and Radioactive Waste Section
Industrial and Hazardous Waste Division
Texas Natural Resource Conservation Commission
P. O. Box 13087
Austin, Texas 78711-3087

Subject: WDW-32 (PLANT WELL NUMBER 3)
PROPOSED MECHANICAL INTEGRITY TEST PROCEDURES
HOECHST CELANESE CHEMICAL GROUP, INC.
BAY CITY PLANT, BAY CITY, TEXAS

Dear Mr. Knape:

Enclosed herewith as Addendum I are the proposed Mechanical Integrity Test (MIT) Procedures to demonstrate mechanical integrity of WDW-32 (Plant Well No. 3) which are provided for your review and approval. Our plan is to conduct the testing during the week of October 23, 1995.

At present, we have significantly more capacity than is required for current plant operations and since there is a high probability that WDW-32 may not be placed back into service prior to plug and abandonment activities (tentatively schedule in 1996), we also request approval that this 1995 demonstration of mechanical integrity satisfy regulatory requirements as they apply to the plug and abandonment of this well.

We appreciate in advance your consideration, review and approval of the above requests.

Please don't hesitate to contact me at 409/241-4197 or Mr. H. R. Horton at 409/241-4076 if you have questions concerning this matter.

Very truly yours,

I. O. Coleman, Jr./cjs

I. O. Coleman, Jr.
Staff Environmental Chemist

IOC/cjs
attachment

Hoechst

cc: Mr. Charles J. Green, Geologist
Underground Injection Control Team
Texas Natural Resource Conservation Commission
P. O. Box 13087
Austin, Texas 78711-13087

Mr. Mike Mishra
Underground Injection Control Team
TNRCC
P. O. Box 13087
Austin, Texas 78711-13087

Mr. Larry Walker
Underground Injection Control Team
TNRCC
P. O. Box 13087
Austin, Texas 78711-13087

Mr. Phil Dellinger
UIC State Programs Section (6W-SU)
U. S. Environmental Protection Agency
1445 Ross Ave., Suite 1200
Dallas, TX 75202-2733

cc: w/o attachment

C. J. Griffith
W. E. Dentler
B. R. Hightower
R. S. O'Neal

w/attachment

A. Conley-Pitchell - Bridgewater
G. J. McCarthy
P. H. Richardson
R. J. Johnston
H. R. Horton
Environmental File Nos.: 202.3 and 203.13

Mr. Tom Jones
ECO Solutions
10333 Richmond Avenue
Suite 250
Houston, TX 77042

Mr. Bob Hall
ECO Solutions
10333 Richmond Avenue
Suite 250
Houston, TX 77042

ADDENDUM I

PROPOSED PROCEDURE TO DEMONSTRATE MECHANICAL INTEGRITY FOR WDW-32 (WELL #3)

HOECHST CELANESE CHEMICAL GROUP, INC.
BAY CITY FACILITY

PROPOSED PROCEDURE TO DEMONSTRATE MECHANICAL INTEGRITY FOR WDW-32 (WELL #3)

The following step-by-step proposed procedures were developed in accordance with the Underground Injection Control (UIC) and the Hazardous Waste Disposal Injection Restrictions (HWDIR) Programs as issued by the United States Environmental Protection Agency (US EPA) and promulgated by the Texas Natural Resource Conservation Commission (TNRCC).

Except where noted, all steps of this procedure will be performed by ECO's personnel.

1) **Request and secure approval from the TNRCC to use nonhazardous effluent for pressure fall-off testing. (ECO/HCCG)**

2) **Prepare well for MIT. (HCCG)**

* Check wellhead valves to insure that special fittings can be easily installed during the MIT. ECO requests that 2" NPT connections be available on the tubing outlets.

* Since wireline services will be run while injecting into the well, a full opening valve (minimum 2" inside diameter) will be required on top the wellhead above the inlet effluent flowline.

* HCCG's personnel will maintain proper annulus pressure while conducting the RAT survey. HCCG will provide historical petition data on Well #3 for ECO's personnel for use in the report preparation.

3) **Perform bottom hole pressure fall-off and static bottom hole pressure (BHP) survey. (ECO/HCCG)**

* HCCG is to inject non-hazardous effluent into Well #3 at a stable rate for a minimum of four days prior to performing the falloff test. HCCG will furnish non-hazardous fluid and pump. All other injection wells should be operated at a constant rate, or shut-in for a period extending from one (1) day prior to the start of the fall-off testing to the end of the 48-hour shut-in period.

* Move in and rig up wireline unit to run bottom hole pressure falloff test with surface readout Panex bottom hole pressure gauges.

* Go in the hole with bottom hole pressure gauges to packer depth, or to the depth previously performed BHP surveys have been conducted.

* Maintain constant injection rates prior to shutting well in. Secure a representative sample of the effluent pumped into Well #3.

* Shut-in well. Leave well shut-in for ±48 hours, or until tubing pressure stabilizes, to obtain pressure decay data. Data obtained at the end of this test will provide static BHP.

4) Perform annulus/tubing differential pressure test (APT). (HCCG/ECO)

* Rig up digital pressure transducer units and install onto the annulus and tubing outlet.

* HCCG's personnel will adjust annulus pressure to 1000 psi pressure above the tubing pressure.

* Monitor annulus/tubing pressures for a minimum period of 30 minutes. Maximum allowable differential pressure change during the APT is 5% of the maximum differential test pressures.

* Rig down transducer pressure units.

5) Run radioactive tracer survey. (ECO)

* Establish ±50 gpm injection rates utilizing HCCG's injection pump and non-hazardous effluent.

* Rig up gamma ray (G/R) detector, casing collar locator (CCL) and radioactive tracer (R/A) ejector tool. Ejector contains ±10 millicuries of Iodine "131" radioactive solution.

* Continue pumping effluent into the well at a rate of ±50 gpm.

* Run G/R base log from PBTD (tag bottom) to ±300' above the packer (@ 3,192'), or up to ±2,900'. Make short repeat G/R run to prove tool repeatability.

* Run one (1) five-minute statistical log at a depth of 3,295'.

* Release first R/A slug inside tubing ±300' above the packer while pumping effluent down the tubing at an injection rate of ±50 gpm. Make multiple recorded passes following the R/A slug (1) down the tubing, (2) into the borehole and (3) into the disposal zone until the R/A slug virtually disappears and cannot be distinguished from the normal background G/R radioactivity. Repeat multiple pass survey.

* Release second R/A slug from tool at ±20' above top perforation, or at ±3,295' and hold stationary. Place recorder on time-drive sequence. Logging time will be predetermined based on actual injection rate as agreed upon by the TNRCC inspector.

* Repeat stationary sequence test above.

* Run final base G/R from PBTD to +/-300' above the packer (same interval as original base G/R log) to verify that all R/A materials have been flushed into the disposal zone and that no fluid is migrating up behind the casing string.

* Pull out of the hole and rig down wireline..

6) MIT field work is completed on Well #3. (ECO)

* Rig down all rental equipment and move off the location.

* Advise TNRCC of test results and that well is, or is not, acceptable for injection service. If MIT fails submit a workover procedure to the TNRCC. Note: This latter work is not included in the scope of this project.

* If Well #3 has successfully passed all MIT tests, then return the well to injection service or temporarily abandon following TNRCC guidelines.

7) Submit MIT report. (ECO/HCCG)

* Prepare a draft copy of the MIT report detailing the demonstration of MIT on WDW-32 (Well #3).

* Submit draft report to HCCG for comments and approval.

* Modify the MIT report as per HCCG's comments and submit copies of final MIT report to HCCG. HCCG personnel will transmit final MIT report to the TNRCC.

* Receive TNRCC's acceptance letter pertaining to the MIT report.

8) Mechanical Integrity Testing Complete.

10/13/95 CC: IOC
CC: Ray Horton

Barry R. McBee, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*
Dan Pearson, *Executive Director*

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

October 9, 1995

Mr. I. O. Coleman, Jr.
Hoechst Celanese Corporation
Bay City Plant
P.O. Box 509
Highway 3057
Bay City, TX 77404-0509

RE: Approval of 1995 Mechanical Integrity Testing Procedures for TNRCC Permit No. WDW-32

Dear Mr. Coleman:

This is to approve the proposed mechanical integrity testing (MIT) procedures detailed in your letter of September 19, 1995 for the above referenced well. Please note that all tests in the MIT will be required to be performed in accordance with the "T.N.R.C.C. Basic Guidelines for Mechanical Integrity Testing," revised July 20, 1994.

Pursuant to 30 TAC §331.65(b)(4), within 30 days of test completion, please submit a report to the executive director containing both test data and interpretation of the results.

Please note that a complete mechanical integrity test is required prior to starting the plugging and abandonment (P&A) of a well, in accordance with 30 TAC §331.46 (a) and (b), and the plugging provision in the permit. Therefore, the TNRCC cannot grant your request to use this 1995 MIT demonstration to satisfy the P&A requirement of this well. Please schedule another MIT prior to conducting the P&A in 1996 and submit the procedures for our review and approval.

Questions regarding this matter should be directed to me at 512/239-6635, Mail Code MC 131.

Sincerely,

Hong Guo

Hong Guo, P.E.
Underground Injection Control Team
UIC, Uranium, and Radioactive Waste Section
Industrial and Hazardous waste Division

HG/hg/jmm

cc: Brian Graves, EPA Region VI

Interoffice Memo

Hoechst Celanese

Date: October 18, 1995

HRH-266-95

To: As Listed

From: H. R. Horton

Dept/Location: Bay City Plant

Dept/Location: Maintenance Engineering

Subject: Effluent Well Mechanical Integrity Testing Schedule

N. C. Stafford
W. E. Dentler
R. S. O'Neal
P. H. Richardson
B. L. Fritz
B. G. Campbell
K. W. Wilkerson
W. G. Cornman
C. J. Griffith
B. R. Hightower
I. O. Coleman
Wes Smith - ECO Solutions, Inc.
R. L. Alaniz - ECO Solutions, Inc.

Injection fall-off testing of the waste injection well WDW-32 (No. 3) well will be performed October 20 through October 26, 1996, as approved by the Texas Natural Resource Conservation Commision. Attached is a tentative schedule for this test.

H. R. Horton

lrk
attachment

File: 11.13.0.0

WDW-32 EFFLUENT WELL MECHANICAL INTEGRITY TESTING SCHEDULE

October 20	6:00 p.m.	Flow rate to #3 Well should be held constant (unchanging) at 150 gpm until shut in on Wednesday, October 25
		Record flow rate every 4 hours.
		Take samples (one every 8 hours) of effluent to #3 Well during this period and check viscosity and specify gravity (at 120°F).
		Shut in Wells #1A and #4.
October 21		Maintain constant (unchanging) flow to #3 Well taking samples every 8 hours.
October 22		Same
October 23	7:30 a.m.	Maintain constant flow to #3 Well taking samples every 8 hours.
October 24	7:30 a.m.	Maintain constant flow to #3 Well taking samples every 8 hours.
		Move in and rig up logging unit on #3 Well. Run surface readout bottom hole pressure gauge into well.
		Monitor bottom hole pressure fall off with surface readout bottom hole pressure gauges.
October 25	7:30 a.m.	Shut in #3 Well.
		Monitor bottom hole pressure fall off with surface readout bottom hole pressure gauges.
October 26	7:30 a.m.	If bottom hole pressure has stabilized, pull out of the hole with bottom hole pressure tools making gradient stops at 500' intervals. Keep #3 Well shut in.
	12:00 p.m.	Conduct annulas pressure test on #3 Well. Put #1A Well back in service.
	2:00 p.m.	Start radio active tracer survey of #3 Well.
	6:00 - 7:00 p.m.	Complete MIT of #3 Well and put well back in service.

CELANESE
BAY CITY

RECEIVED
SOURCE WATER
PROTECTION BRANCH

(5)

Robert J. Huston, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*
Jeffrey A. Saitas, *Executive Director*

6WQ-S

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

May 19, 2000

Mr. Garry W. Phillips, Environmental Team Leader
Hoechst Celanese Chemicals Group, Ltd.
Bay City Plant
Highway 3057
P.O. Box 509
Bay City, TX 77404-0509

Re: Revocation of UIC Waste Disposal Well Permit WDW-110

Dear Mr. Phillips:

Enclosed is the certificate of revocation for the above-referenced underground injection well permit issued pursuant to the Texas Water Code, Chapter 27 and the Texas Health and Safety Code, Chapter 361. Should you have any questions please contact Mr. Chuck Greene of the Underground Injection Control Inspection & Compliance Team at 512/239-6634, or correspondence may be sent to Mail Code 131 (MC131).

Sincerely,

Alice Rogers

Alice Hamilton Rogers, P.E., Manager
Underground Injection Control & Radioactive Waste Section
Waste Permits Division

AR/CG/jb

cc: Mr. Chuck Greene, TNRCC
✓ Mr. Ray Leissner, EPA Region 6, 6WQ-S

Enclosure

I:\URW\CGREENE\2000\LETTER110.wpd

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

REVOCATION OF

UNDERGROUND INJECTION CONTROL PERMIT NO. WDW-110
ISSUED ON JULY 11, 1997
TO HOECHST CELANESE CHEMICAL GROUP, LTD.

The holder of Permit No. WDW-110 has consented to the revocation of the permit. The permit was issued for the disposal of hazardous and non-hazardous wastes generated by the permittee's Bay City facility. The disposal well is located 18,050 feet from the east line and 2,200 feet from the north line of the James Moore League, Abstract 62, Latitude 28°51'48" North, Longitude 96°01'15" West, Matagorda County, Texas.

WDW-110 has been plugged and abandoned in accordance with Hoechst Celanese Chemical Group, Ltd.'s Closure Report and in accordance with 30 TAC §331.46, as confirmed by an inspection of the site by the staff of the Texas Natural Resource Conservation Commission.

APPROVED, ISSUED AND EFFECTIVE in accordance with 30 Texas Administrative Code, Section 305.67, Revocation and Suspension upon Request or Consent.

ISSUED DATE: MAY 1 9 2000

For the Commission

Texas Natural Resource Conservation Commission

INTEROFFICE MEMORANDUM

To: Robert J. Huston, Chairman
R.B. "Ralph" Marquez, Commissioner
John M. Baker, Commissioner

Date: May 19, 2000

Thru: Jeffrey A. Saitas, P.E.
Executive Director

From: Alice Hamilton Rogers, P.E., Manager
Underground Injection Control & Radioactive Waste Section
Waste Permits Division

AR 5/18/00

Subject: Revocation of Underground Injection Control (UIC) Permit
Hoechst Celanese Chemicals Group, Ltd.
Permit Number WDW-110

Pursuant to 30 Texas Administrative Code (TAC) §305.67(b), you are hereby notified of the revocation of Class I UIC Permit Number WDW-110, issued to Hoechst Celanese Chemicals Group, Ltd., in Bay City, Texas. The permittee requested revocation of the permit in accordance with 30 TAC §305.67(a).

cc: Leigh Ing, Deputy Director, Office of Permitting, Remediation & Registration
Dale Burnett, Director, Waste Permits Division