Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Tuesday: Jan. 23, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
469	0	21:53: 6	2.5230	1526.41	102.55
470	0	21:53:21	2.5270	1526.27	102.55
471	0	21:53:35	2.5310	1526.15	102.55
472	0	21:53:49	2.5350	1526.02	102.56
473	0	21:54: 4	2.5390	1525.89	102.56
474	0	21:54:18	2.5430	1525.77	102.56
475	0	21:54:33	2.5470	1525.65	102.56
476	0	21:54:54	2.5530	1525.47	102.55
477	0	21:55: 9	2.5570	1525.36	102.56
478	0	21:55:23	2.5610	1525.25	102.56
479	0	21:55:37	2.5650	1525.15	102.56
480	0	21:55:52	2.5690	1525.03	102.56
481	0	21:56: 6	2.5730	1524.92	102.57
482	0	21:56:21	2.5770	1524.82	102.57
483	0	21:56:35	2.5810	1524.72	102.57
484	0	21:56:49	2.5850	1524.61	102.57
485	0	21:57: 4	2.5890	1524.51	102.57
486	0	21:57:18	2.5930	1524.41	102.57
487	0	21:57:33	2.5970	1524.30	102.57
488	0	21:57:54	2.6030	1524.15	102.58
489	0	21:58: 9	2.6070	1524.08	102.58
490	0	21:58:23	2.6110	1523.98	102.58
491	0	21:58:37	2.6150	1523.89	102.58
492	0	21:58:52	2.6190	1523.79	102.58
493	0	21:59: 6	2.6230	1523.69	102.58
494	0	21:59:21	2.6270	1523.60	102.58
495	0	21:59:35	2.6310	1523.51	102.58
496	0	21:59:49	2.6350	1523.42	102.58
497	0	22: 0: 4	2.6390	1523.32	102.58
498	0	22: 0:18	2.6430	1523.25	102.58
499	0	22: 0:33	2.6470	1523.16	102.58
500	0	22: 0:58	2.6540	1522.99	102.58
501	0	22: 1:23	2.6610	1522.84	102.58
502	0	22: 1:45	2.6670	1522.71	102.58
503	0	22: 2: 6	2.6730	1522.59	102.58
504	0	22: 2:28	2.6790	1522.47	102.59
505	0	22: 2:49	2.6850	1522.36	102.59
506	0	22: 3:11	2.6910	1522.24	102.59
507	0	22: 3:33	2.6970	1522.12	102.59
508	0	22: 3:54	2.7030	1522.01	102.59
509	0	22: 4:16	2.7090	1521.89	102.59
510	0	22: 4:37	2.7150	1521.78	102.59
511	0	22: 4:59	2.7210	1521.67	102.59
512	0	22: 5:21	2.7270	1521.56	102.59
513	0	22: 5:42	2.7330	1521.41	102.60
514	0	22: 6: 4	2.7390	1521.35	102.60
515	0	22: 6:25	2.7450	1521.25	102.60
516	0	22: 6:47	2.7510	1521.15	102.60
517	0	22: 7: 9	2.7570	1521.05	102.60
518	0	22: 7:30	2.7630	1520.95	102.60

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Tuesday: Jan. 23, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
519	0	22: 7:52	2.7690	1520.85	102.60
520	0	22: 8:13	2.7750	1520.76	102.61
521	0	22: 8:35	2.7810	1520.66	102.61
522	0	22: 8:57	2.7870	1520.58	102.61
523	0	22: 9:18	2.7930	1520.48	102.61
524	0	22: 9:40	2.7990	1520.39	102.61
525	0	22:10: 1	2.8050	1520.31	102.61
526	0	22:10:27	2.8120	1520.21	102.61
527	0	22:10:48	2.8180	1520.13	102.61
528	0	22:11:10	2.8240	1520.04	102.61
529	0	22:11:31	2.8300	1519.96	102.62
530	0	22:11:53	2.8360	1519.88	102.62
531	0	22:12:15	2.8420	1519.80	102.62
532	0	22:12:36	2.8480	1519.72	102.62
533	0	22:12:58	2.8540	1519.65	102.62
534	0	22:13:19	2.8600	1519.57	102.62
535	0	22:13:41	2.8660	1519.50	102.62
536	0	22:14: 3	2.8720	1519.42	102.63
537	0	22:14:24	2.8780	1519.35	102.63
538	0	22:14:46	2.8840	1519.26	102.63
539	0	22:15: 7	2.8900	1519.20	102.63
540	0	22:15:29	2.8960	1519.13	102.63
541	0	22:15:51	2.9020	1519.06	102.63
542	0	22:16:12	2.9080	1518.99	102.63
543	0	22:16:34	2.9140	1518.93	102.63
544	0	22:16:55	2.9200	1518.86	102.63
545	0	22:17:17	2.9260	1518.79	102.64
546	0	22:17:39	2.9320	1518.73	102.64
547	0	22:18: 0	2.9380	1518.66	102.64
548	0	22:18:22	2.9440	1518.60	102.64
549	0	22:18:43	2.9500	1518.53	102.64
550	0	22:19: 5	2.9560	1518.47	102.64
551	0	22:19:30	2.9630	1518.41	102.64
552	0	22:19:48	2.9680	1518.35	102.64
553	0	22:20:13	2.9750	1518.28	102.64
554	0	22:20:35	2.9810	1518.23	102.64
555	0	22:20:57	2.9870	1518.17	102.64
556	0	22:21:18	2.9930	1518.12	102.65
557	0	22:21:40	2.9990	1518.05	102.65
558	0	22:22: 1	3.0050	1518.00	102.65
559	0	22:22:23	3.0110	1517.95	102.65
560	0	22:22:45	3.0170	1517.90	102.65
561	0	22:23: 6	3.0230	1517.83	102.65
562	0	22:23:28	3.0290	1517.79	102.65
563	0	22:23:49	3.0350	1517.73	102.66
564	0	22:24:11	3.0410	1517.68	102.66
565	0	22:24:33	3.0470	1517.63	102.66
566	0	22:24:54	3.0530	1517.58	102.66
567	0	22:25:16	3.0590	1517.53	102.66
568	0	22:25:37	3.0650	1517.48	102.66

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Tuesday: Jan. 23, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
569	0	22:25:59	3.0710	1517.43	102.66
570	0	22:26:21	3.0770	1517.38	102.66
571	0	22:26:42	3.0830	1517.33	102.66
572	0	22:27: 4	3.0890	1517.28	102.67
573	0	22:27:25	3.0950	1517.23	102.67
574	0	22:27:47	3.1010	1517.18	102.67
575	0	22:28: 9	3.1070	1517.14	102.67
576	0	22:28:30	3.1130	1517.09	102.67
577	0	22:28:52	3.1190	1517.05	102.67
578	0	22:29:13	3.1250	1517.00	102.67
579	0	22:29:35	3.1310	1516.95	102.67
580	0	22:29:57	3.1370	1516.91	102.67
581	0	22:30:18	3.1430	1516.87	102.67
582	0	22:30:40	3.1490	1516.83	102.68
583	0	22:31: 1	3.1550	1516.79	102.68
584	0	22:31:23	3.1610	1516.74	102.68
585	0	22:31:59	3.1710	1516.65	102.68
586	0	22:32:28	3.1790	1516.61	102.68
587	0	22:32:57	3.1870	1516.56	102.68
588	0	22:33:25	3.1950	1516.49	102.68
589	0	22:33:54	3.2030	1516.46	102.68
590	0	22:34:23	3.2110	1516.40	102.69
591	0	22:34:52	3.2190	1516.35	102.69
592	0	22:35:21	3.2270	1516.30	102.69
593	0	22:35:49	3.2350	1516.25	102.69
594	0	22:36:18	3.2430	1516.20	102.69
595	0	22:36:47	3.2510	1516.15	102.69
596	0	22:37:16	3.2590	1516.11	102.69
597	0	22:37:45	3.2670	1516.06	102.70
598	0	22:38:13	3.2750	1516.01	102.70
599	0	22:38:42	3.2830	1515.97	102.70
600	0	22:39:11	3.2910	1515.93	102.70
601	0	22:39:40	3.2990	1515.88	102.70
602	0	22:40: 9	3.3070	1515.84	102.70
603	0	22:40:37	3.3150	1515.80	102.70
604	0	22:41: 6	3.3230	1515.75	102.70
605	0	22:41:35	3.3310	1515.71	102.70
606	0	22:42: 4	3.3390	1515.67	102.70
607	0	22:42:33	3.3470	1515.63	102.71
608	0	22:43: 1	3.3550	1515.59	102.71
609	0	22:43:30	3.3630	1515.54	102.71
610	0	22:43:59	3.3710	1515.51	102.71
611	0	22:44:28	3.3790	1515.47	102.71
612	0	22:44:57	3.3870	1515.43	102.72
613	0	22:45:25	3.3950	1515.37	102.71
614	0	22:45:54	3.4030	1515.35	102.72
615	0	22:46:23	3.4110	1515.31	102.72
616	0	22:46:52	3.4190	1515.28	102.72
617	0	22:47:21	3.4270	1515.24	102.72
618	0	22:47:49	3.4350	1515.20	102.72

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Tuesday: Jan. 23, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
619	0	22:48:18	3.4430	1515.17	102.73
620	0	22:48:47	3.4510	1515.13	102.73
621	0	22:49:16	3.4590	1515.10	102.73
622	0	22:49:45	3.4670	1515.06	102.73
623	0	22:50:13	3.4750	1515.03	102.73
624	0	22:50:42	3.4830	1515.00	102.73
625	0	22:51:11	3.4910	1514.97	102.74
626	0	22:51:40	3.4990	1514.93	102.74
627	0	22:52: 9	3.5070	1514.90	102.74
628	0	22:52:37	3.5150	1514.86	102.74
629	0	22:53: 6	3.5230	1514.84	102.74
630	0	22:53:35	3.5310	1514.80	102.74
631	0	22:54: 4	3.5390	1514.77	102.75
632	0	22:54:33	3.5470	1514.74	102.74
633	0	22:55: 1	3.5550	1514.71	102.75
634	0	22:55:30	3.5630	1514.67	102.75
635	0	22:55:59	3.5710	1514.65	102.75
636	0	22:56:28	3.5790	1514.62	102.75
637	0	22:56:57	3.5870	1514.58	102.75
638	0	22:57:25	3.5950	1514.55	102.75
639	0	22:57:54	3.6030	1514.53	102.75
640	0	22:58:23	3.6110	1514.50	102.75
641	0	22:58:52	3.6190	1514.47	102.76
642	0	22:59:21	3.6270	1514.45	102.76
643	0	22:59:49	3.6350	1514.43	102.76
644	0	23: 0:18	3.6430	1514.39	102.76
645	0	23: 0:47	3.6510	1514.37	102.76
646	0	23: 1:16	3.6590	1514.35	102.76
647	0	23: 1:45	3.6670	1514.32	102.76
648	0	23: 2:13	3.6750	1514.29	102.76
649	0	23: 2:42	3.6830	1514.27	102.76
650	0	23: 3:11	3.6910	1514.24	102.76
651	0	23: 3:40	3.6990	1514.22	102.76
652	0	23: 4: 9	3.7070	1514.19	102.77
653	0	23: 4:37	3.7150	1514.17	102.77
654	0	23: 5: 6	3.7230	1514.14	102.77
655	0	23: 5:35	3.7310	1514.12	102.77
656	0	23: 6: 4	3.7390	1514.09	102.77
657	0	23: 6:33	3.7470	1514.07	102.77
658	0	23: 7: 1	3.7550	1514.05	102.77
659	0	23: 7:30	3.7630	1514.02	102.77
660	0	23: 7:59	3.7710	1514.00	102.77
661	0	23: 8:28	3.7790	1513.98	102.78
662	0	23: 8:57	3.7870	1513.96	102.78
663	0	23: 9:25	3.7950	1513.93	102.78
664	0	23: 9:54	3.8030	1513.92	102.78
665	0	23:10:23	3.8110	1513.89	102.78
666	0	23:10:52	3.8190	1513.87	102.78
667	0	23:11:21	3.8270	1513.85	102.78
668	0	23:11:49	3.8350	1513.83	102.79

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Tuesday: Jan. 23, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
669	0	23:12:18	3.8430	1513.81	102.79
670	0	23:12:47	3.8510	1513.78	102.79
671	0	23:13:16	3.8590	1513.76	102.79
672	0	23:13:45	3.8670	1513.74	102.79
673	0	23:14:13	3.8750	1513.72	102.79
674	0	23:14:42	3.8830	1513.70	102.79
675	0	23:15:11	3.8910	1513.68	102.79
676	0	23:15:40	3.8990	1513.66	102.79
677	0	23:16: 9	3.9070	1513.63	102.80
678	0	23:16:37	3.9150	1513.62	102.80
679	0	23:17: 6	3.9230	1513.60	102.80
680	0	23:17:35	3.9310	1513.58	102.80
681	0	23:18: 4	3.9390	1513.56	102.80
682	0	23:18:33	3.9470	1513.54	102.80
683	0	23:19: 1	3.9550	1513.51	102.80
684	0	23:19:30	3.9630	1513.50	102.80
685	0	23:19:59	3.9710	1513.48	102.81
686	0	23:20:28	3.9790	1513.46	102.81
687	0	23:20:57	3.9870	1513.45	102.81
688	0	23:21:25	3.9950	1513.41	102.81
689	0	23:21:54	4.0030	1513.41	102.81
690	0	23:22:23	4.0110	1513.39	102.81
691	0	23:22:52	4.0190	1513.37	102.81
692	0	23:23:21	4.0270	1513.35	102.81
693	0	23:23:49	4.0350	1513.34	102.82
694	0	23:24:18	4.0430	1513.31	102.82
695	0	23:24:47	4.0510	1513.30	102.82
696	0	23:25:16	4.0590	1513.28	102.82
697	0	23:25:45	4.0670	1513.27	102.82
698	0	23:26:13	4.0750	1513.25	102.82
699	0	23:26:42	4.0830	1513.23	102.82
700	0	23:27:11	4.0910	1513.21	102.82
701	0	23:27:40	4.0990	1513.19	102.83
702	0	23:28: 9	4.1070	1513.18	102.83
703	0	23:28:37	4.1150	1513.16	102.83
704	0	23:29: 6	4.1230	1513.14	102.83
705	0	23:29:35	4.1310	1513.13	102.83
706	0	23:30: 4	4.1390	1513.11	102.83
707	0	23:30:33	4.1470	1513.10	102.83
708	0	23:31: 1	4.1550	1513.08	102.83
709	0	23:31:30	4.1630	1513.05	102.84
710	0	23:31:59	4.1710	1513.04	102.83
711	0	23:32:28	4.1790	1513.02	102.84
712	0	23:32:57	4.1870	1513.01	102.84
713	0	23:33:25	4.1950	1512.99	102.84
714	0	23:33:54	4.2030	1512.98	102.84
715	0	23:34:23	4.2110	1512.96	102.84
716	0	23:34:52	4.2190	1512.95	102.84
717	0	23:35:21	4.2270	1512.94	102.85
718	0	23:35:49	4.2350	1512.92	102.85

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Tuesday: Jan. 23, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
719	0	23:36:18	4.2430	1512.90	102.85
720	0	23:36:47	4.2510	1512.89	102.85
721	0	23:37:16	4.2590	1512.87	102.85
722	0	23:37:45	4.2670	1512.86	102.85
723	0	23:38:13	4.2750	1512.85	102.85
724	0	23:38:42	4.2830	1512.84	102.85
725	0	23:39:11	4.2910	1512.82	102.85
726	0	23:39:40	4.2990	1512.80	102.86
727	0	23:40: 9	4.3070	1512.79	102.86
728	0	23:40:37	4.3150	1512.78	102.86
729	0	23:41:10	4.3240	1512.77	102.86
730	0	23:41:39	4.3320	1512.75	102.86
731	0	23:42: 4	4.3390	1512.74	102.86
732	0	23:42:33	4.3470	1512.72	102.86
733	0	23:43: 1	4.3550	1512.71	102.86
734	0	23:43:34	4.3640	1512.70	102.86
735	0	23:44: 3	4.3720	1512.68	102.86
736	0	23:44:28	4.3790	1512.67	102.86
737	0	23:44:57	4.3870	1512.66	102.86
738	0	23:45:25	4.3950	1512.64	102.86
739	0	23:45:58	4.4040	1512.63	102.86
740	0	23:46:27	4.4120	1512.62	102.86
741	0	23:46:52	4.4190	1512.61	102.87
742	0	23:47:21	4.4270	1512.60	102.87
743	0	23:47:49	4.4350	1512.58	102.87
744	0	23:48:22	4.4440	1512.57	102.87
745	0	23:48:51	4.4520	1512.56	102.87
746	0	23:49:16	4.4590	1512.55	102.88
747	0	23:49:45	4.4670	1512.53	102.88
748	0	23:50:13	4.4750	1512.52	102.88
749	0	23:50:46	4.4840	1512.51	102.88
750	0	23:51:15	4.4920	1512.50	102.88
751	0	23:51:40	4.4990	1512.48	102.88
752	0	23:52: 9	4.5070	1512.47	102.89
753	0	23:52:37	4.5150	1512.46	102.89
754	0	23:53:10	4.5240	1512.45	102.89
755	0	23:53:39	4.5320	1512.43	102.89
756	0	23:54: 4	4.5390	1512.42	102.89
757	0	23:54:33	4.5470	1512.41	102.89
758	0	23:55: 1	4.5550	1512.40	102.89
759	0	23:55:30	4.5630	1512.39	102.90
760	0	23:56: 3	4.5720	1512.37	102.90
761	0	23:56:28	4.5790	1512.36	102.90
762	0	23:56:57	4.5870	1512.35	102.90
763	0	23:57:25	4.5950	1512.33	102.90
764	0	23:57:58	4.6040	1512.33	102.90
765	0	23:58:27	4.6120	1512.32	102.90
766	0	23:58:52	4.6190	1512.30	102.90
767	0	23:59:21	4.6270	1512.29	102.90
768	0	23:59:49	4.6350	1512.29	102.91

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Tuesday: Jan. 23, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
[Wednesday: Jan. 24, 1996]					
769	1	0: 0:22	4.6440	1512.27	102.91
770	1	0: 0:51	4.6520	1512.26	102.91
771	1	0: 1:16	4.6590	1512.24	102.91
772	1	0: 1:45	4.6670	1512.23	102.91
773	1	0: 2:13	4.6750	1512.22	102.91
774	1	0: 2:46	4.6840	1512.21	102.91
775	1	0: 3:15	4.6920	1512.20	102.91
776	1	0: 3:40	4.6990	1512.20	102.91
777	1	0: 4: 9	4.7070	1512.18	102.92
778	1	0: 4:37	4.7150	1512.17	102.92
779	1	0: 5:10	4.7240	1512.16	102.92
780	1	0: 5:39	4.7320	1512.14	102.92
781	1	0: 6: 4	4.7390	1512.14	102.92
782	1	0: 6:33	4.7470	1512.12	102.92
783	1	0: 7: 1	4.7550	1512.12	102.92
784	1	0: 7:34	4.7640	1512.10	102.92
785	1	0: 8: 3	4.7720	1512.10	102.93
786	1	0: 8:28	4.7790	1512.08	102.93
787	1	0: 8:57	4.7870	1512.07	102.93
788	1	0: 9:25	4.7950	1512.06	102.93
789	1	0: 9:58	4.8040	1512.05	102.93
790	1	0:10:27	4.8120	1512.04	102.93
791	1	0:10:52	4.8190	1512.03	102.92
792	1	0:11:21	4.8270	1512.02	102.92
793	1	0:11:49	4.8350	1512.01	102.92
794	1	0:12:18	4.8430	1512.00	102.93
795	1	0:12:51	4.8520	1511.99	102.93
796	1	0:13:16	4.8590	1511.99	102.93
797	1	0:13:45	4.8670	1511.97	102.93
798	1	0:14:13	4.8750	1511.97	102.93
799	1	0:14:42	4.8830	1511.96	102.94
800	1	0:15:15	4.8920	1511.95	102.94
801	1	0:15:40	4.8990	1511.94	102.94
802	1	0:16: 9	4.9070	1511.93	102.94
803	1	0:16:37	4.9150	1511.92	102.94
804	1	0:17:10	4.9240	1511.91	102.94
805	1	0:17:39	4.9320	1511.91	102.94
806	1	0:18: 4	4.9390	1511.90	102.95
807	1	0:18:33	4.9470	1511.89	102.95
808	1	0:19: 1	4.9550	1511.89	102.95
809	1	0:19:34	4.9640	1511.87	102.95
810	1	0:20: 3	4.9720	1511.87	102.95
811	1	0:20:28	4.9790	1511.85	102.95
812	1	0:20:57	4.9870	1511.84	102.95
813	1	0:21:25	4.9950	1511.83	102.95
814	1	0:21:54	5.0030	1511.83	102.95
815	1	0:22:27	5.0120	1511.83	102.95
816	1	0:22:52	5.0190	1511.82	102.95
817	1	0:23:21	5.0270	1511.80	102.96

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Wednesday: Jan. 24, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
818	1	0:23:49	5.0350	1511.80	102.96
819	1	0:24:22	5.0440	1511.79	102.96
820	1	0:24:51	5.0520	1511.78	102.96
821	1	0:25:16	5.0590	1511.78	102.96
822	1	0:25:45	5.0670	1511.76	102.96
823	1	0:26:13	5.0750	1511.76	102.96
824	1	0:26:46	5.0840	1511.75	102.96
825	1	0:27:15	5.0920	1511.74	102.96
826	1	0:27:40	5.0990	1511.73	102.96
827	1	0:28: 9	5.1070	1511.73	102.96
828	1	0:28:37	5.1150	1511.72	102.97
829	1	0:29:10	5.1240	1511.71	102.97
830	1	0:29:39	5.1320	1511.71	102.97
831	1	0:30: 4	5.1390	1511.70	102.97
832	1	0:30:33	5.1470	1511.69	102.97
833	1	0:31: 1	5.1550	1511.68	102.97
834	1	0:31:30	5.1630	1511.67	102.97
835	1	0:32: 3	5.1720	1511.67	102.97
836	1	0:32:28	5.1790	1511.65	102.97
837	1	0:32:57	5.1870	1511.65	102.98
838	1	0:33:25	5.1950	1511.65	102.98
839	1	0:33:54	5.2030	1511.63	102.98
840	1	0:34:27	5.2120	1511.63	102.98
841	1	0:34:52	5.2190	1511.62	102.98
842	1	0:35:21	5.2270	1511.61	102.99
843	1	0:35:49	5.2350	1511.60	102.99
844	1	0:36:22	5.2440	1511.59	102.99
845	1	0:36:51	5.2520	1511.59	102.99
846	1	0:37:16	5.2590	1511.59	102.99
847	1	0:37:45	5.2670	1511.57	102.99
848	1	0:38:13	5.2750	1511.56	102.99
849	1	0:38:46	5.2840	1511.56	102.99
850	1	0:39:15	5.2920	1511.55	102.99
851	1	0:39:40	5.2990	1511.54	102.99
852	1	0:40: 9	5.3070	1511.54	102.99
853	1	0:40:37	5.3150	1511.53	102.99
854	1	0:41: 6	5.3230	1511.53	103.00
855	1	0:41:39	5.3320	1511.52	103.00
856	1	0:42: 4	5.3390	1511.51	103.00
857	1	0:42:33	5.3470	1511.50	103.00
858	1	0:43: 1	5.3550	1511.49	103.00
859	1	0:43:34	5.3640	1511.48	103.00
860	1	0:44: 3	5.3720	1511.48	103.00
861	1	0:44:28	5.3790	1511.48	103.01
862	1	0:44:57	5.3870	1511.47	103.01
863	1	0:45:25	5.3950	1511.46	103.01
864	1	0:45:58	5.4040	1511.46	103.01
865	1	0:46:27	5.4120	1511.44	103.01
866	1	0:46:52	5.4190	1511.44	103.01
867	1	0:47:21	5.4270	1511.43	103.01

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Wednesday: Jan. 24, 1

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
868	1	0:47:49	5.4350	1511.42	103.01
869	1	0:48:22	5.4440	1511.41	103.01
870	1	0:48:51	5.4520	1511.41	103.01
871	1	0:49:16	5.4590	1511.41	103.02
872	1	0:49:45	5.4670	1511.41	103.02
873	1	0:50:13	5.4750	1511.39	103.02
874	1	0:50:46	5.4840	1511.39	103.02
875	1	0:51:15	5.4920	1511.38	103.02
876	1	0:51:40	5.4990	1511.37	103.02
877	1	0:52: 9	5.5070	1511.37	103.02
878	1	0:52:37	5.5150	1511.36	103.02
879	1	0:53: 6	5.5230	1511.36	103.02
880	1	0:53:39	5.5320	1511.35	103.03
881	1	0:54: 4	5.5390	1511.35	103.03
882	1	0:54:33	5.5470	1511.34	103.03
883	1	0:55: 1	5.5550	1511.33	103.03
884	1	0:55:34	5.5640	1511.33	103.03
885	1	0:56: 3	5.5720	1511.32	103.03
886	1	0:56:28	5.5790	1511.32	103.03
887	1	0:56:57	5.5870	1511.30	103.03
888	1	0:57:25	5.5950	1511.29	103.03
889	1	0:57:58	5.6040	1511.29	103.03
890	1	0:58:27	5.6120	1511.29	103.03
891	1	0:58:52	5.6190	1511.28	103.03
892	1	0:59:21	5.6270	1511.28	103.03
893	1	0:59:49	5.6350	1511.27	103.04
894	1	1: 0:18	5.6430	1511.27	103.04
895	1	1: 0:51	5.6520	1511.26	103.04
896	1	1: 1:16	5.6590	1511.25	103.04
897	1	1: 1:45	5.6670	1511.24	103.04
898	1	1: 2:13	5.6750	1511.24	103.04
899	1	1: 2:46	5.6840	1511.23	103.04
900	1	1: 3:15	5.6920	1511.23	103.04
901	1	1: 3:40	5.6990	1511.22	103.04
902	1	1: 4: 9	5.7070	1511.22	103.05
903	1	1: 4:37	5.7150	1511.21	103.05
904	1	1: 5:10	5.7240	1511.20	103.05
905	1	1: 5:39	5.7320	1511.20	103.05
906	1	1: 6: 4	5.7390	1511.19	103.05
907	1	1: 6:33	5.7470	1511.19	103.06
908	1	1: 7: 1	5.7550	1511.18	103.06
909	1	1: 7:34	5.7640	1511.17	103.06
910	1	1: 8: 3	5.7720	1511.17	103.06
911	1	1: 8:28	5.7790	1511.16	103.06
912	1	1: 8:57	5.7870	1511.15	103.06
913	1	1: 9:40	5.7990	1511.13	103.06
914	1	1:10: 9	5.8070	1511.13	103.06
915	1	1:10:37	5.8150	1511.13	103.06
916	1	1:11:10	5.8240	1511.13	103.06
917	1	1:11:39	5.8320	1511.12	103.06

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Wednesday: Jan. 24, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
918	1	1:12: 4	5.8390	1511.12	103.07
919	1	1:12:51	5.8520	1511.09	103.07
920	1	1:13:16	5.8590	1511.09	103.07
921	1	1:13:45	5.8670	1511.10	103.07
922	1	1:14:13	5.8750	1511.09	103.07
923	1	1:15:15	5.8920	1511.06	103.07
924	1	1:16: 9	5.9070	1511.06	103.07
925	1	1:17:10	5.9240	1511.05	103.07
926	1	1:18: 4	5.9390	1511.04	103.07
927	1	1:19: 1	5.9550	1511.03	103.07
928	1	1:20: 3	5.9720	1511.02	103.08
929	1	1:20:57	5.9870	1511.01	103.08
930	1	1:21:58	6.0040	1510.99	103.08
931	1	1:22:52	6.0190	1510.98	103.08
932	1	1:23:49	6.0350	1510.97	103.08
933	1	1:24:51	6.0520	1510.96	103.08
934	1	1:25:45	6.0670	1510.95	103.08
935	1	1:26:46	6.0840	1510.94	103.09
936	1	1:27:40	6.0990	1510.93	103.09
937	1	1:28:37	6.1150	1510.92	103.09
938	1	1:29:39	6.1320	1510.91	103.09
939	1	1:30:33	6.1470	1510.90	103.10
940	1	1:31:30	6.1630	1510.89	103.10
941	1	1:32:28	6.1790	1510.88	103.10
942	1	1:33:25	6.1950	1510.87	103.10
943	1	1:34:27	6.2120	1510.86	103.10
944	1	1:35:21	6.2270	1510.84	103.11
945	1	1:36:22	6.2440	1510.83	103.11
946	1	1:37:16	6.2590	1510.82	103.11
947	1	1:38:13	6.2750	1510.81	103.11
948	1	1:39:15	6.2920	1510.80	103.11
949	1	1:40: 9	6.3070	1510.80	103.12
950	1	1:41:10	6.3240	1510.79	103.12
951	1	1:42: 4	6.3390	1510.78	103.13
952	1	1:43: 1	6.3550	1510.77	103.13
953	1	1:44: 3	6.3720	1510.76	103.13
954	1	1:44:57	6.3870	1510.75	103.13
955	1	1:45:58	6.4040	1510.74	103.13
956	1	1:46:52	6.4190	1510.73	103.13
957	1	1:47:49	6.4350	1510.73	103.14
958	1	1:48:51	6.4520	1510.72	103.14
959	1	1:49:45	6.4670	1510.71	103.15
960	1	1:50:42	6.4830	1510.70	103.15
961	1	1:51:40	6.4990	1510.69	103.15
962	1	1:52:37	6.5150	1510.68	103.15
963	1	1:53:39	6.5320	1510.67	103.15
964	1	1:54:33	6.5470	1510.66	103.15
965	1	1:55:34	6.5640	1510.65	103.15
966	1	1:56:28	6.5790	1510.64	103.15
967	1	1:57:25	6.5950	1510.64	103.15

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Wednesday: Jan. 24, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
968	1	1:58:27	6.6120	1510.63	103.16
969	1	1:59:21	6.6270	1510.62	103.16
970	1	2: 0:22	6.6440	1510.61	103.16
971	1	2: 1:16	6.6590	1510.61	103.16
972	1	2: 2:13	6.6750	1510.60	103.17
973	1	2: 3:15	6.6920	1510.59	103.17
974	1	2: 4: 9	6.7070	1510.58	103.18
975	1	2: 5:10	6.7240	1510.57	103.18
976	1	2: 6: 4	6.7390	1510.57	103.18
977	1	2: 7: 1	6.7550	1510.56	103.18
978	1	2: 8: 3	6.7720	1510.55	103.18
979	1	2: 8:57	6.7870	1510.54	103.18
980	1	2: 9:54	6.8030	1510.53	103.18
981	1	2:10:52	6.8190	1510.52	103.18
982	1	2:11:49	6.8350	1510.51	103.18
983	1	2:12:51	6.8520	1510.50	103.18
984	1	2:13:45	6.8670	1510.50	103.18
985	1	2:14:46	6.8840	1510.49	103.19
986	1	2:15:40	6.8990	1510.49	103.19
987	1	2:16:37	6.9150	1510.48	103.20
988	1	2:17:39	6.9320	1510.47	103.20
989	1	2:18:33	6.9470	1510.47	103.20
990	1	2:19:34	6.9640	1510.46	103.21
991	1	2:20:28	6.9790	1510.45	103.21
992	1	2:21:25	6.9950	1510.45	103.21
993	1	2:22:27	7.0120	1510.43	103.21
994	1	2:23:21	7.0270	1510.43	103.21
995	1	2:24:22	7.0440	1510.42	103.21
996	1	2:25:16	7.0590	1510.42	103.21
997	1	2:26:13	7.0750	1510.41	103.21
998	1	2:27:15	7.0920	1510.40	103.22
999	1	2:28: 9	7.1070	1510.39	103.22
1000	1	2:29:10	7.1240	1510.39	103.22
1001	1	2:30: 4	7.1390	1510.38	103.22
1002	1	2:31: 1	7.1550	1510.38	103.23
1003	1	2:32: 3	7.1720	1510.37	103.23
1004	1	2:32:57	7.1870	1510.36	103.23
1005	1	2:33:58	7.2040	1510.36	103.23
1006	1	2:34:52	7.2190	1510.35	103.23
1007	1	2:35:49	7.2350	1510.34	103.23
1008	1	2:36:51	7.2520	1510.34	103.23
1009	1	2:37:45	7.2670	1510.33	103.24
1010	1	2:38:46	7.2840	1510.33	103.24
1011	1	2:39:40	7.2990	1510.31	103.24
1012	1	2:40:37	7.3150	1510.31	103.24
1013	1	2:41:39	7.3320	1510.30	103.24
1014	1	2:42:33	7.3470	1510.30	103.25
1015	1	2:43:34	7.3640	1510.29	103.25
1016	1	2:44:28	7.3790	1510.28	103.25
1017	1	2:45:25	7.3950	1510.28	103.25

1		
1		
10		
10		
102		
102		
1028		
1029		
1030		
1031		
1032		
1033		
1034		
1035	1	
1036	1	
1037	1	
1038	1	
1039	1	
1040	1	
1041	1	
1042	1	
1043	1	
1044	1	3
1045	1	3
1046	1	3:
1047	1	3:7
1048	1	3:1
1049	1	3:16
1050	1	3:17
1051	1	3:18
1052	1	3:19:
1053	1	3:20:
1054	1	3:20:5
1055	1	3:21:54
1056	1	3:22:52
1057	1	3:23:49
1058	1	3:24:51
1059	1	3:25:45
1060	1	3:26:46
1061	1	3:27:40
1062	1	3:28:37
1063	1	3:29:39
1064	1	3:30:33
1065	1	3:31:30
1066	1	3:32:28
1067	1	3:33:25

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Wednesday: Jan. 24, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1018	1	2:46:27	7.4120	1510.27	103.26
1019	1	2:47:21	7.4270	1510.27	103.26
1020	1	2:48:22	7.4440	1510.26	103.26
1021	1	2:49:16	7.4590	1510.25	103.26
1022	1	2:50:13	7.4750	1510.25	103.26
1023	1	2:51:15	7.4920	1510.24	103.26
1024	1	2:52: 9	7.5070	1510.23	103.26
1025	1	2:53:10	7.5240	1510.23	103.27
1026	1	2:54: 4	7.5390	1510.22	103.26
1027	1	2:55: 1	7.5550	1510.21	103.27
1028	1	2:56: 3	7.5720	1510.21	103.27
1029	1	2:56:57	7.5870	1510.20	103.27
1030	1	2:57:58	7.6040	1510.19	103.27
1031	1	2:58:52	7.6190	1510.19	103.28
1032	1	2:59:49	7.6350	1510.18	103.28
1033	1	3: 0:51	7.6520	1510.18	103.28
1034	1	3: 1:45	7.6670	1510.17	103.28
1035	1	3: 2:46	7.6840	1510.16	103.28
1036	1	3: 3:40	7.6990	1510.16	103.28
1037	1	3: 4:37	7.7150	1510.15	103.28
1038	1	3: 5:39	7.7320	1510.14	103.29
1039	1	3: 6:33	7.7470	1510.14	103.29
1040	1	3: 7:34	7.7640	1510.13	103.29
1041	1	3: 8:28	7.7790	1510.13	103.29
1042	1	3: 9:25	7.7950	1510.12	103.29
1043	1	3:10:27	7.8120	1510.11	103.29
1044	1	3:11:21	7.8270	1510.11	103.30
1045	1	3:12:18	7.8430	1510.11	103.30
1046	1	3:13:16	7.8590	1510.10	103.30
1047	1	3:14:13	7.8750	1510.09	103.30
1048	1	3:15:15	7.8920	1510.08	103.30
1049	1	3:16: 9	7.9070	1510.08	103.30
1050	1	3:17:10	7.9240	1510.07	103.31
1051	1	3:18: 4	7.9390	1510.07	103.31
1052	1	3:19: 1	7.9550	1510.06	103.31
1053	1	3:20: 3	7.9720	1510.05	103.31
1054	1	3:20:57	7.9870	1510.05	103.31
1055	1	3:21:54	8.0030	1510.04	103.32
1056	1	3:22:52	8.0190	1510.04	103.32
1057	1	3:23:49	8.0350	1510.03	103.32
1058	1	3:24:51	8.0520	1510.03	103.32
1059	1	3:25:45	8.0670	1510.02	103.32
1060	1	3:26:46	8.0840	1510.01	103.33
1061	1	3:27:40	8.0990	1510.01	103.33
1062	1	3:28:37	8.1150	1510.00	103.33
1063	1	3:29:39	8.1320	1509.99	103.33
1064	1	3:30:33	8.1470	1509.99	103.33
1065	1	3:31:30	8.1630	1509.99	103.33
1066	1	3:32:28	8.1790	1509.98	103.33
1067	1	3:33:25	8.1950	1509.97	103.33

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Wednesday: Jan. 24, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1068	1	3:34:27	8.2120	1509.97	103.34
1069	1	3:35:21	8.2270	1509.96	103.34
1070	1	3:36:22	8.2440	1509.95	103.34
1071	1	3:37:16	8.2590	1509.95	103.34
1072	1	3:38:13	8.2750	1509.95	103.34
1073	1	3:39:15	8.2920	1509.94	103.35
1074	1	3:40: 9	8.3070	1509.94	103.35
1075	1	3:41: 6	8.3230	1509.93	103.35
1076	1	3:42: 4	8.3390	1509.92	103.35
1077	1	3:43: 1	8.3550	1509.92	103.35
1078	1	3:44: 3	8.3720	1509.92	103.36
1079	1	3:44:57	8.3870	1509.91	103.36
1080	1	3:45:58	8.4040	1509.90	103.36
1081	1	3:46:52	8.4190	1509.90	103.36
1082	1	3:47:49	8.4350	1509.89	103.36
1083	1	3:48:51	8.4520	1509.89	103.36
1084	1	3:49:45	8.4670	1509.88	103.36
1085	1	3:50:46	8.4840	1509.87	103.37
1086	1	3:51:40	8.4990	1509.87	103.37
1087	1	3:52:37	8.5150	1509.87	103.37
1088	1	3:53:39	8.5320	1509.86	103.37
1089	1	3:54:33	8.5470	1509.86	103.37
1090	1	3:55:34	8.5640	1509.85	103.37
1091	1	3:56:28	8.5790	1509.85	103.38
1092	1	3:57:25	8.5950	1509.84	103.38
1093	1	3:58:27	8.6120	1509.83	103.38
1094	1	3:59:21	8.6270	1509.83	103.38
1095	1	4: 0:18	8.6430	1509.83	103.38
1096	1	4: 1:16	8.6590	1509.82	103.39
1097	1	4: 2:13	8.6750	1509.81	103.39
1098	1	4: 3:15	8.6920	1509.81	103.39
1099	1	4: 4: 9	8.7070	1509.80	103.39
1100	1	4: 5:10	8.7240	1509.80	103.39
1101	1	4: 6: 4	8.7390	1509.79	103.39
1102	1	4: 7: 1	8.7550	1509.79	103.39
1103	1	4: 8: 3	8.7720	1509.78	103.40
1104	1	4: 8:57	8.7870	1509.78	103.40
1105	1	4: 9:58	8.8040	1509.77	103.40
1106	1	4:10:52	8.8190	1509.77	103.40
1107	1	4:11:49	8.8350	1509.76	103.40
1108	1	4:12:51	8.8520	1509.76	103.40
1109	1	4:13:45	8.8670	1509.75	103.40
1110	1	4:14:46	8.8840	1509.75	103.40
1111	1	4:15:40	8.8990	1509.74	103.41
1112	1	4:16:37	8.9150	1509.74	103.41
1113	1	4:17:39	8.9320	1509.73	103.41
1114	1	4:18:33	8.9470	1509.73	103.41
1115	1	4:19:30	8.9630	1509.72	103.41
1116	1	4:20:28	8.9790	1509.72	103.41
1117	1	4:21:25	8.9950	1509.72	103.42

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Wednesday: Jan. 24, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1118	1	4:22:27	9.0120	1509.71	103.42
1119	1	4:23:21	9.0270	1509.71	103.42
1120	1	4:24:22	9.0440	1509.70	103.42
1121	1	4:25:16	9.0590	1509.70	103.42
1122	1	4:26:13	9.0750	1509.69	103.42
1123	1	4:27:15	9.0920	1509.69	103.42
1124	1	4:28: 9	9.1070	1509.68	103.43
1125	1	4:29:10	9.1240	1509.67	103.43
1126	1	4:30: 4	9.1390	1509.67	103.43
1127	1	4:31: 1	9.1550	1509.67	103.43
1128	1	4:32: 3	9.1720	1509.66	103.43
1129	1	4:32:57	9.1870	1509.66	103.44
1130	1	4:33:58	9.2040	1509.66	103.44
1131	1	4:34:52	9.2190	1509.65	103.44
1132	1	4:35:49	9.2350	1509.65	103.44
1133	1	4:36:51	9.2520	1509.64	103.44
1134	1	4:37:45	9.2670	1509.64	103.44
1135	1	4:38:42	9.2830	1509.63	103.45
1136	1	4:39:40	9.2990	1509.63	103.45
1137	1	4:40:37	9.3150	1509.62	103.45
1138	1	4:41:39	9.3320	1509.62	103.45
1139	1	4:42:33	9.3470	1509.61	103.45
1140	1	4:43:34	9.3640	1509.61	103.45
1141	1	4:44:28	9.3790	1509.61	103.46
1142	1	4:45:25	9.3950	1509.60	103.46
1143	1	4:46:27	9.4120	1509.59	103.46
1144	1	4:47:21	9.4270	1509.59	103.46
1145	1	4:48:22	9.4440	1509.59	103.46
1146	1	4:49:16	9.4590	1509.58	103.46
1147	1	4:50:13	9.4750	1509.57	103.46
1148	1	4:51:15	9.4920	1509.57	103.46
1149	1	4:52: 9	9.5070	1509.57	103.46
1150	1	4:53:10	9.5240	1509.57	103.47
1151	1	4:54: 4	9.5390	1509.56	103.47
1152	1	4:55: 1	9.5550	1509.56	103.47
1153	1	4:56: 3	9.5720	1509.55	103.47
1154	1	4:56:57	9.5870	1509.55	103.47
1155	1	4:57:54	9.6030	1509.55	103.48
1156	1	4:58:52	9.6190	1509.54	103.48
1157	1	4:59:49	9.6350	1509.54	103.48
1158	1	5: 0:51	9.6520	1509.53	103.48
1159	1	5: 1:45	9.6670	1509.52	103.48
1160	1	5: 2:46	9.6840	1509.52	103.48
1161	1	5: 3:40	9.6990	1509.52	103.49
1162	1	5: 4:37	9.7150	1509.51	103.49
1163	1	5: 5:39	9.7320	1509.51	103.49
1164	1	5: 6:33	9.7470	1509.51	103.49
1165	1	5: 7:34	9.7640	1509.50	103.49
1166	1	5: 8:28	9.7790	1509.50	103.49
1167	1	5: 9:25	9.7950	1509.49	103.49

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
ield: BAY CITY PLANT

[Wednesday: Jan. 24, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1168	1	5:10:27	9.8120	1509.49	103.49
1169	1	5:11:21	9.8270	1509.49	103.50
1170	1	5:12:22	9.8440	1509.48	103.50
1171	1	5:13:16	9.8590	1509.48	103.50
1172	1	5:14:13	9.8750	1509.47	103.50
1173	1	5:15:15	9.8920	1509.47	103.50
1174	1	5:16: 9	9.9070	1509.47	103.50
1175	1	5:17: 6	9.9230	1509.46	103.51
1176	1	5:18: 4	9.9390	1509.46	103.51
1177	1	5:19: 1	9.9550	1509.45	103.51
1178	1	5:20: 3	9.9720	1509.45	103.51
1179	1	5:20:57	9.9870	1509.45	103.51
1180	1	5:21:58	10.0040	1509.44	103.51
1181	1	5:22:52	10.0190	1509.44	103.51
1182	1	5:23:49	10.0350	1509.43	103.52
1183	1	5:24:51	10.0520	1509.43	103.52
1184	1	5:25:45	10.0670	1509.43	103.52
1185	1	5:26:46	10.0840	1509.42	103.52
1186	1	5:27:40	10.0990	1509.42	103.52
1187	1	5:28:37	10.1150	1509.41	103.52
1188	1	5:29:39	10.1320	1509.41	103.53
1189	1	5:30:33	10.1470	1509.40	103.53
1190	1	5:31:34	10.1640	1509.40	103.53
1191	1	5:32:28	10.1790	1509.40	103.53
1192	1	5:33:25	10.1950	1509.39	103.53
1193	1	5:34:27	10.2120	1509.39	103.53
1194	1	5:35:21	10.2270	1509.39	103.53
1195	1	5:36:18	10.2430	1509.38	103.53
1196	1	5:37:16	10.2590	1509.38	103.54
1197	1	5:38:13	10.2750	1509.37	103.54
1198	1	5:39:15	10.2920	1509.37	103.54
1199	1	5:40: 9	10.3070	1509.37	103.54
1200	1	5:41:10	10.3240	1509.36	103.54
1201	1	5:42: 4	10.3390	1509.36	103.54
1202	1	5:43: 1	10.3550	1509.36	103.54
1203	1	5:44: 3	10.3720	1509.35	103.55
1204	1	5:44:57	10.3870	1509.35	103.55
1205	1	5:45:58	10.4040	1509.34	103.55
1206	1	5:46:52	10.4190	1509.34	103.55
1207	1	5:47:49	10.4350	1509.34	103.55
1208	1	5:48:51	10.4520	1509.33	103.55
1209	1	5:49:45	10.4670	1509.33	103.55
1210	1	5:50:46	10.4840	1509.32	103.55
1211	1	5:51:40	10.4990	1509.32	103.55
1212	1	5:52:37	10.5150	1509.31	103.55
1213	1	5:53:39	10.5320	1509.31	103.55
1214	1	5:54:33	10.5470	1509.31	103.55
1215	1	5:55:30	10.5630	1509.30	103.56
1216	1	5:56:28	10.5790	1509.31	103.56
1217	1	5:57:25	10.5950	1509.30	103.56

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Wednesday: Jan. 24, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1218	1	5:58:27	10.6120	1509.30	103.57
1219	1	5:59:21	10.6270	1509.29	103.57
		Cotinuing to monitor Bottom-Hole Fall-Off press.			
1220	1	6: 0:22	10.6440	1509.29	103.57
1221	1	6: 1:16	10.6590	1509.29	103.57
1222	1	6: 2:13	10.6750	1509.28	103.57
1223	1	6: 3:15	10.6920	1509.28	103.58
1224	1	6: 4: 9	10.7070	1509.28	103.58
1225	1	6: 5:10	10.7240	1509.27	103.58
1226	1	6: 6: 4	10.7390	1509.27	103.58
1227	1	6: 7: 1	10.7550	1509.26	103.58
1228	1	6: 8: 3	10.7720	1509.26	103.58
1229	1	6: 8:57	10.7870	1509.26	103.58
1230	1	6: 9:58	10.8040	1509.26	103.58
1231	1	6:10:52	10.8190	1509.25	103.58
1232	1	6:11:49	10.8350	1509.25	103.59
1233	1	6:12:51	10.8520	1509.24	103.59
1234	1	6:13:45	10.8670	1509.24	103.59
1235	1	6:14:42	10.8830	1509.23	103.59
1236	1	6:15:40	10.8990	1509.23	103.59
1237	1	6:16:37	10.9150	1509.23	103.59
1238	1	6:17:39	10.9320	1509.22	103.60
1239	1	6:18:33	10.9470	1509.22	103.60
1240	1	6:19:34	10.9640	1509.22	103.60
1241	1	6:20:28	10.9790	1509.21	103.60
1242	1	6:21:25	10.9950	1509.21	103.60
1243	1	6:22:27	11.0120	1509.21	103.60
1244	1	6:23:21	11.0270	1509.20	103.60
1245	1	6:24:22	11.0440	1509.20	103.61
1246	1	6:25:16	11.0590	1509.20	103.61
1247	1	6:26:13	11.0750	1509.19	103.61
1248	1	6:27:15	11.0920	1509.19	103.61
1249	1	6:28: 9	11.1070	1509.19	103.61
1250	1	6:29:10	11.1240	1509.18	103.61
1251	1	6:30: 4	11.1390	1509.18	103.61
1252	1	6:31: 1	11.1550	1509.17	103.61
1253	1	6:32: 3	11.1720	1509.17	103.61
1254	1	6:32:57	11.1870	1509.17	103.62
1255	1	6:33:54	11.2030	1509.17	103.62
1256	1	6:34:52	11.2190	1509.16	103.62
1257	1	6:35:49	11.2350	1509.16	103.62
1258	1	6:36:51	11.2520	1509.15	103.62
1259	1	6:37:45	11.2670	1509.15	103.62
1260	1	6:38:46	11.2840	1509.15	103.63
1261	1	6:39:40	11.2990	1509.15	103.63
1262	1	6:40:37	11.3150	1509.14	103.63
1263	1	6:41:39	11.3320	1509.13	103.63
1264	1	6:42:33	11.3470	1509.14	103.63
1265	1	6:43:34	11.3640	1509.13	103.63
1266	1	6:44:28	11.3790	1509.13	103.63

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A [Wednesday: Jan. 24, 1996]
Field: BAY CITY PLANT Page 22

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1267	1	6:45:25	11.3950	1509.12	103.64
1268	1	6:46:27	11.4120	1509.12	103.64
1269	1	6:47:21	11.4270	1509.12	103.64
1270	1	6:48:22	11.4440	1509.11	103.64
1271	1	6:49:16	11.4590	1509.11	103.64
1272	1	6:50:13	11.4750	1509.10	103.64
1273	1	6:51:15	11.4920	1509.10	103.64
1274	1	6:52: 9	11.5070	1509.10	103.64
1275	1	6:53: 6	11.5230	1509.09	103.65
1276	1	6:54: 4	11.5390	1509.09	103.65
1277	1	6:55: 1	11.5550	1509.09	103.65
1278	1	6:56: 3	11.5720	1509.08	103.65
1279	1	6:56:57	11.5870	1509.08	103.65
1280	1	6:57:58	11.6040	1509.08	103.65
1281	1	6:58:52	11.6190	1509.07	103.65
1282	1	6:59:49	11.6350	1509.07	103.65
1283	1	7: 0:51	11.6520	1509.06	103.65
1284	1	7: 1:45	11.6670	1509.06	103.65
1285	1	7: 2:46	11.6840	1509.06	103.65
1286	1	7: 3:40	11.6990	1509.05	103.66
1287	1	7: 4:37	11.7150	1509.05	103.66
1288	1	7: 5:39	11.7320	1509.05	103.66
1289	1	7: 6:33	11.7470	1509.05	103.66
1290	1	7: 7:34	11.7640	1509.04	103.66
1291	1	7: 8:28	11.7790	1509.04	103.67
1292	1	7: 9:25	11.7950	1509.04	103.67
1293	1	7:10:27	11.8120	1509.03	103.67
1294	1	7:11:21	11.8270	1509.03	103.67
1295	1	7:12:18	11.8430	1509.03	103.67
1296	1	7:13:16	11.8590	1509.02	103.67
1297	1	7:14:13	11.8750	1509.02	103.68
1298	1	7:15:15	11.8920	1509.02	103.68
1299	1	7:16: 9	11.9070	1509.01	103.68
1300	1	7:17:10	11.9240	1509.01	103.68
1301	1	7:18: 4	11.9390	1509.01	103.68
1302	1	7:19: 1	11.9550	1509.00	103.68
1303	1	7:20: 3	11.9720	1509.00	103.68
1304	1	7:20:57	11.9870	1509.00	103.68
1305	1	7:21:58	12.0040	1509.00	103.69
1306	1	7:22:52	12.0190	1508.99	103.69
1307	1	7:23:49	12.0350	1508.99	103.69
1308	1	7:24:51	12.0520	1508.99	103.69
1309	1	7:25:45	12.0670	1508.98	103.69
1310	1	7:26:46	12.0840	1508.98	103.69
1311	1	7:27:40	12.0990	1508.97	103.69
1312	1	7:28:37	12.1150	1508.97	103.70
1313	1	7:29:39	12.1320	1508.97	103.70
1314	1	7:30:33	12.1470	1508.97	103.70
1315	1	7:31:30	12.1630	1508.96	103.70
1316	1	7:32:28	12.1790	1508.96	103.70

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Wednesday: Jan. 24, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1317	1	7:33:25	12.1950	1508.96	103.70
1318	1	7:34:27	12.2120	1508.95	103.71
1319	1	7:35:21	12.2270	1508.95	103.70
1320	1	7:36:22	12.2440	1508.95	103.71
1321	1	7:37:16	12.2590	1508.95	103.71
1322	1	7:38:13	12.2750	1508.94	103.71
1323	1	7:39:15	12.2920	1508.94	103.71
1324	1	7:40: 9	12.3070	1508.94	103.71
1325	1	7:41:10	12.3240	1508.93	103.71
1326	1	7:42: 4	12.3390	1508.93	103.71
1327	1	7:43: 1	12.3550	1508.93	103.72
1328	1	7:44: 3	12.3720	1508.93	103.72
1329	1	7:44:57	12.3870	1508.92	103.72
1330	1	7:45:58	12.4040	1508.92	103.72
1331	1	7:46:52	12.4190	1508.92	103.72
1332	1	7:47:49	12.4350	1508.91	103.72
1333	1	7:48:51	12.4520	1508.91	103.72
1334	1	7:49:45	12.4670	1508.91	103.72
1335	1	7:50:42	12.4830	1508.90	103.72
1336	1	7:51:40	12.4990	1508.90	103.72
1337	1	7:52:37	12.5150	1508.90	103.72
1338	1	7:53:39	12.5320	1508.89	103.73
1339	1	7:54:33	12.5470	1508.89	103.73
1340	1	7:55:34	12.5640	1508.89	103.73
1341	1	7:56:28	12.5790	1508.88	103.73
1342	1	7:57:25	12.5950	1508.88	103.73
1343	1	7:58:27	12.6120	1508.88	103.73
1344	1	7:59:21	12.6270	1508.88	103.73
1345	1	8: 0:22	12.6440	1508.87	103.74
1346	1	8: 1:16	12.6590	1508.87	103.74
1347	1	8: 2:13	12.6750	1508.87	103.74
1348	1	8: 3:15	12.6920	1508.86	103.74
1349	1	8: 4: 9	12.7070	1508.86	103.74
1350	1	8: 5:10	12.7240	1508.86	103.74
1351	1	8: 6: 4	12.7390	1508.86	103.74
1352	1	8: 7: 1	12.7550	1508.85	103.74
1353	1	8: 8: 3	12.7720	1508.85	103.75
1354	1	8: 8:57	12.7870	1508.85	103.75
1355	1	8: 9:54	12.8030	1508.84	103.75
1356	1	8:10:52	12.8190	1508.84	103.75
1357	1	8:11:49	12.8350	1508.84	103.75
1358	1	8:12:51	12.8520	1508.83	103.75
1359	1	8:13:45	12.8670	1508.83	103.75
1360	1	8:14:46	12.8840	1508.82	103.75
1361	1	8:15:40	12.8990	1508.82	103.75
1362	1	8:16:37	12.9150	1508.82	103.75
1363	1	8:17:39	12.9320	1508.81	103.76
1364	1	8:18:33	12.9470	1508.81	103.76
1365	1	8:19:34	12.9640	1508.81	103.76
1366	1	8:20:28	12.9790	1508.81	103.76

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A [Wednesday: Jan. 24, 1996]
Field: BAY CITY PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1367	1	8:21:25	12.9950	1508.81	103.76
1368	1	8:22:27	13.0120	1508.80	103.77
1369	1	8:23:21	13.0270	1508.80	103.77
1370	1	8:24:22	13.0440	1508.80	103.77
1371	1	8:25:16	13.0590	1508.80	103.77
1372	1	8:26:13	13.0750	1508.79	103.77
1373	1	8:27:15	13.0920	1508.79	103.78
1374	1	8:28: 9	13.1070	1508.79	103.78
1375	1	8:29:10	13.1240	1508.79	103.78
1376	1	8:30: 4	13.1390	1508.78	103.78
1377	1	8:31: 1	13.1550	1508.78	103.78
1378	1	8:32: 3	13.1720	1508.78	103.78
1379	1	8:32:57	13.1870	1508.77	103.79
1380	1	8:33:58	13.2040	1508.77	103.78
1381	1	8:34:52	13.2190	1508.77	103.79
1382	1	8:35:49	13.2350	1508.77	103.79
1383	1	8:36:51	13.2520	1508.76	103.79
1384	1	8:37:45	13.2670	1508.76	103.79
1385	1	8:38:46	13.2840	1508.76	103.79
1386	1	8:39:40	13.2990	1508.76	103.79
1387	1	8:40:37	13.3150	1508.75	103.80
1388	1	8:41:39	13.3320	1508.74	103.80
1389	1	8:42:33	13.3470	1508.75	103.80
1390	1	8:43:34	13.3640	1508.74	103.80
1391	1	8:44:28	13.3790	1508.74	103.80
1392	1	8:45:25	13.3950	1508.74	103.80
1393	1	8:46:27	13.4120	1508.74	103.80
1394	1	8:47:21	13.4270	1508.73	103.80
1395	1	8:48:22	13.4440	1508.73	103.80
1396	1	8:49:16	13.4590	1508.73	103.80
1397	1	8:50:13	13.4750	1508.73	103.81
1398	1	8:51:15	13.4920	1508.73	103.81
1399	1	8:52: 9	13.5070	1508.72	103.81
1400	1	8:53:10	13.5240	1508.72	103.81
1401	1	8:54: 4	13.5390	1508.72	103.81
1402	1	8:55: 1	13.5550	1508.71	103.81
1403	1	8:56: 3	13.5720	1508.71	103.81
1404	1	8:56:57	13.5870	1508.71	103.81
1405	1	8:57:58	13.6040	1508.71	103.82
1406	1	8:58:52	13.6190	1508.71	103.82
1407	1	8:59:49	13.6350	1508.70	103.82
1408	1	9: 0:51	13.6520	1508.70	103.82
1409	1	9: 1:45	13.6670	1508.70	103.82
1410	1	9: 2:46	13.6840	1508.69	103.82
1411	1	9: 3:40	13.6990	1508.69	103.82
1412	1	9: 4:37	13.7150	1508.68	103.82
1413	1	9: 5:39	13.7320	1508.68	103.82
1414	1	9: 6:33	13.7470	1508.68	103.82
1415	1	9: 7:34	13.7640	1508.68	103.82
1416	1	9: 8:28	13.7790	1508.67	103.83

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Wednesday: Jan. 24, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1417	1	9: 9:25	13.7950	1508.67	103.82
1418	1	9:10:27	13.8120	1508.67	103.83
1419	1	9:11:21	13.8270	1508.67	103.83
1420	1	9:12:18	13.8430	1508.66	103.83
1421	1	9:13:16	13.8590	1508.66	103.83
1422	1	9:14:13	13.8750	1508.66	103.83
1423	1	9:15:15	13.8920	1508.66	103.83
1424	1	9:16: 9	13.9070	1508.65	103.84
1425	1	9:17:10	13.9240	1508.65	103.84
1426	1	9:18: 4	13.9390	1508.65	103.84
1427	1	9:19: 1	13.9550	1508.65	103.84
1428	1	9:20: 3	13.9720	1508.64	103.84
1429	1	9:20:57	13.9870	1508.64	103.84
1430	1	9:21:54	14.0030	1508.64	103.84
1431	1	9:22:52	14.0190	1508.64	103.84
1432	1	9:23:49	14.0350	1508.64	103.84
1433	1	9:24:51	14.0520	1508.63	103.84
1434	1	9:25:45	14.0670	1508.63	103.85
1435	1	9:26:46	14.0840	1508.63	103.85
1436	1	9:27:40	14.0990	1508.63	103.85
1437	1	9:28:37	14.1150	1508.62	103.85
1438	1	9:29:39	14.1320	1508.62	103.85
1439	1	9:30:33	14.1470	1508.62	103.85
1440	1	9:31:30	14.1630	1508.62	103.85
1441	1	9:32:28	14.1790	1508.61	103.85
1442	1	9:33:25	14.1950	1508.61	103.86
1443	1	9:34:27	14.2120	1508.61	103.86
1444	1	9:35:21	14.2270	1508.61	103.86
1445	1	9:36:22	14.2440	1508.61	103.86
1446	1	9:37:16	14.2590	1508.61	103.86
1447	1	9:38:13	14.2750	1508.60	103.86
1448	1	9:39:15	14.2920	1508.60	103.86
1449	1	9:40: 9	14.3070	1508.60	103.86
1450	1	9:41: 6	14.3230	1508.59	103.86
1451	1	9:42: 4	14.3390	1508.59	103.86
1452	1	9:43: 1	14.3550	1508.59	103.86
1453	1	9:44: 3	14.3720	1508.59	103.87
1454	1	9:44:57	14.3870	1508.59	103.87
1455	1	9:45:58	14.4040	1508.58	103.87
1456	1	9:46:52	14.4190	1508.58	103.87
1457	1	9:47:49	14.4350	1508.58	103.87
1458	1	9:48:51	14.4520	1508.58	103.87
1459	1	9:49:45	14.4670	1508.57	103.87
1460	1	9:50:46	14.4840	1508.57	103.87
1461	1	9:51:40	14.4990	1508.57	103.88
1462	1	9:52:37	14.5150	1508.57	103.88
1463	1	9:53:39	14.5320	1508.56	103.88
1464	1	9:54:33	14.5470	1508.56	103.88
1465	1	9:55:34	14.5640	1508.56	103.88
1466	1	9:56:28	14.5790	1508.56	103.88

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Wednesday: Jan. 24, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1467	1	9:57:25	14.5950	1508.56	103.88
1468	1	9:58:27	14.6120	1508.55	103.88
1469	1	9:59:21	14.6270	1508.55	103.89
1470	1	10: 0:18	14.6430	1508.55	103.89
1471	1	10: 1:16	14.6590	1508.54	103.89
1472	1	10: 2:13	14.6750	1508.54	103.89
1473	1	10: 3:15	14.6920	1508.54	103.89
1474	1	10: 4: 9	14.7070	1508.54	103.89
1475	1	10: 5:10	14.7240	1508.54	103.89
1476	1	10: 6: 4	14.7390	1508.53	103.89
1477	1	10: 7: 1	14.7550	1508.53	103.90
1478	1	10: 8: 3	14.7720	1508.53	103.90
1479	1	10: 8:57	14.7870	1508.53	103.90
1480	1	10: 9:58	14.8040	1508.53	103.90
1481	1	10:10:52	14.8190	1508.53	103.90
1482	1	10:11:49	14.8350	1508.52	103.90
1483	1	10:12:51	14.8520	1508.52	103.90
1484	1	10:13:45	14.8670	1508.52	103.90
1485	1	10:14:46	14.8840	1508.51	103.90
1486	1	10:15:40	14.8990	1508.51	103.91
1487	1	10:16:37	14.9150	1508.51	103.91
1488	1	10:17:39	14.9320	1508.51	103.91
1489	1	10:18:33	14.9470	1508.51	103.91
1490	1	10:19:30	14.9630	1508.51	103.91
1491	1	10:20:28	14.9790	1508.50	103.91
1492	1	10:21:25	14.9950	1508.50	103.91
1493	1	10:22:27	15.0120	1508.50	103.91
1494	1	10:23:21	15.0270	1508.50	103.92
1495	1	10:24:22	15.0440	1508.49	103.92
1496	1	10:25:16	15.0590	1508.49	103.92
1497	1	10:26:13	15.0750	1508.49	103.92
1498	1	10:27:15	15.0920	1508.48	103.92
1499	1	10:28: 9	15.1070	1508.48	103.92
1500	1	10:29:10	15.1240	1508.48	103.92
1502	1	10:31: 1	15.1550	1508.48	103.93
1503	1	10:32: 3	15.1720	1508.47	103.93
1505	1	10:33:58	15.2040	1508.47	103.93
1507	1	10:35:49	15.2350	1508.47	103.93
1508	1	10:36:51	15.2520	1508.46	103.93
1510	1	10:38:42	15.2830	1508.46	103.93
1512	1	10:40:37	15.3150	1508.46	103.94
1513	1	10:41:39	15.3320	1508.45	103.94
1515	1	10:43:34	15.3640	1508.45	103.94
1517	1	10:45:25	15.3950	1508.44	103.94
1518	1	10:46:27	15.4120	1508.43	103.94
1520	1	10:48:22	15.4440	1508.43	103.94
1522	1	10:50:13	15.4750	1508.43	103.95
1523	1	10:51:15	15.4920	1508.43	103.95
1525	1	10:53:10	15.5240	1508.42	103.95
1527	1	10:55: 1	15.5550	1508.42	103.96

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1528	1	10:56: 3	15.5720	1508.42	103.96
1530	1	10:57:54	15.6030	1508.41	103.96
1532	1	10:59:49	15.6350	1508.40	103.96
1533	1	11: 0:51	15.6520	1508.40	103.96
1535	1	11: 2:46	15.6840	1508.40	103.96
1537	1	11: 4:37	15.7150	1508.40	103.97
1538	1	11: 5:39	15.7320	1508.39	103.97
1540	1	11: 7:34	15.7640	1508.39	103.97
1542	1	11: 9:25	15.7950	1508.38	103.97
1543	1	11:10:27	15.8120	1508.38	103.97
1545	1	11:12:22	15.8440	1508.38	103.97
1547	1	11:14:13	15.8750	1508.37	103.98
1548	1	11:15:15	15.8920	1508.37	103.97
1550	1	11:17: 6	15.9230	1508.37	103.98
1552	1	11:19: 1	15.9550	1508.36	103.98
1553	1	11:20: 3	15.9720	1508.36	103.98
1555	1	11:21:58	16.0040	1508.36	103.99
1557	1	11:23:49	16.0350	1508.35	103.99
1558	1	11:24:51	16.0520	1508.35	103.99
1560	1	11:26:46	16.0840	1508.34	103.99
1562	1	11:28:37	16.1150	1508.34	103.99
1563	1	11:29:39	16.1320	1508.34	103.99
1565	1	11:31:34	16.1640	1508.34	104.00
1567	1	11:33:25	16.1950	1508.34	104.00
1568	1	11:34:27	16.2120	1508.33	104.00
1570	1	11:36:18	16.2430	1508.33	104.00
1572	1	11:38:13	16.2750	1508.32	104.00
1573	1	11:39:15	16.2920	1508.32	104.00
1575	1	11:41:10	16.3240	1508.31	104.01
1577	1	11:43: 1	16.3550	1508.31	104.01
1578	1	11:44: 3	16.3720	1508.31	104.01
1580	1	11:45:58	16.4040	1508.30	104.01
1582	1	11:47:49	16.4350	1508.30	104.01
1583	1	11:48:51	16.4520	1508.30	104.02
1585	1	11:50:46	16.4840	1508.29	104.01
1587	1	11:52:37	16.5150	1508.29	104.02
1588	1	11:53:39	16.5320	1508.28	104.02
1590	1	11:55:30	16.5630	1508.28	104.02
1592	1	11:57:25	16.5950	1508.28	104.02
1593	1	11:58:27	16.6120	1508.28	104.02
1595	1	12: 0:22	16.6440	1508.27	104.03
1597	1	12: 2:13	16.6750	1508.27	104.03
1598	1	12: 3:15	16.6920	1508.26	104.03
1600	1	12: 5:10	16.7240	1508.26	104.03
1602	1	12: 7: 1	16.7550	1508.26	104.03
1603	1	12: 8: 3	16.7720	1508.26	104.04
1605	1	12: 9:58	16.8040	1508.25	104.04
1607	1	12:11:49	16.8350	1508.25	104.04
1608	1	12:12:51	16.8520	1508.25	104.04
1610	1	12:14:42	16.8830	1508.24	104.04

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Wednesday: Jan. 24, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1612	1	12:16:37	16.9150	1508.24	104.05
1613	1	12:17:39	16.9320	1508.23	104.04
1615	1	12:19:34	16.9640	1508.23	104.05
1617	1	12:21:25	16.9950	1508.22	104.05
1618	1	12:22:27	17.0120	1508.22	104.05
1620	1	12:24:22	17.0440	1508.21	104.05
1622	1	12:26:13	17.0750	1508.21	104.05
1623	1	12:27:15	17.0920	1508.21	104.05
1625	1	12:29:10	17.1240	1508.20	104.05
1627	1	12:31: 1	17.1550	1508.20	104.06
1628	1	12:32: 3	17.1720	1508.20	104.06
1630	1	12:33:54	17.2030	1508.20	104.06
1632	1	12:35:49	17.2350	1508.19	104.06
1633	1	12:36:51	17.2520	1508.19	104.07
1635	1	12:38:46	17.2840	1508.19	104.07
1637	1	12:40:37	17.3150	1508.18	104.07
1638	1	12:41:39	17.3320	1508.17	104.07
1640	1	12:43:34	17.3640	1508.18	104.07
1642	1	12:45:25	17.3950	1508.18	104.07
1643	1	12:46:27	17.4120	1508.17	104.08
1645	1	12:48:22	17.4440	1508.17	104.08
1647	1	12:50:13	17.4750	1508.16	104.08
1648	1	12:51:15	17.4920	1508.16	104.08
1650	1	12:53: 6	17.5230	1508.15	104.08
1652	1	12:55: 1	17.5550	1508.15	104.08
1653	1	12:56: 3	17.5720	1508.15	104.09
1655	1	12:57:58	17.6040	1508.14	104.09
1657	1	12:59:49	17.6350	1508.14	104.09
1658	1	13: 0:51	17.6520	1508.13	104.09
1660	1	13: 2:46	17.6840	1508.13	104.09
1662	1	13: 4:37	17.7150	1508.13	104.09
1663	1	13: 5:39	17.7320	1508.12	104.09
1665	1	13: 7:34	17.7640	1508.13	104.10
1667	1	13: 9:25	17.7950	1508.12	104.10
1668	1	13:10:27	17.8120	1508.12	104.10
1670	1	13:12:18	17.8430	1508.12	104.10
1672	1	13:14:13	17.8750	1508.11	104.10
1673	1	13:15:15	17.8920	1508.11	104.10
1675	1	13:17:10	17.9240	1508.10	104.11
1677	1	13:19: 1	17.9550	1508.10	104.11
1678	1	13:20: 3	17.9720	1508.10	104.11
1680	1	13:21:58	18.0040	1508.09	104.11
1682	1	13:23:49	18.0350	1508.09	104.11
1683	1	13:24:51	18.0520	1508.09	104.11
1685	1	13:26:46	18.0840	1508.08	104.12
1687	1	13:28:37	18.1150	1508.08	104.12
1688	1	13:29:39	18.1320	1508.07	104.12
1690	1	13:31:30	18.1630	1508.07	104.12
1692	1	13:33:25	18.1950	1508.06	104.12
1693	1	13:34:27	18.2120	1508.06	104.12

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Wednesday: Jan. 24, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1695	1	13:36:22	18.2440	1508.06	104.13
1697	1	13:38:13	18.2750	1508.06	104.13
1698	1	13:39:15	18.2920	1508.06	104.13
1700	1	13:41:10	18.3240	1508.05	104.13
1702	1	13:43: 1	18.3550	1508.04	104.13
1703	1	13:44: 3	18.3720	1508.04	104.14
1705	1	13:45:58	18.4040	1508.04	104.14
1707	1	13:47:49	18.4350	1508.03	104.14
1708	1	13:48:51	18.4520	1508.03	104.14
1710	1	13:50:42	18.4830	1508.02	104.14
1712	1	13:52:37	18.5150	1508.02	104.14
1713	1	13:53:39	18.5320	1508.01	104.14
1715	1	13:55:34	18.5640	1508.01	104.14
1717	1	13:57:25	18.5950	1508.01	104.14
1718	1	13:58:27	18.6120	1508.01	104.15
1720	1	14: 0:22	18.6440	1508.01	104.15
1722	1	14: 2:13	18.6750	1508.00	104.15
1723	1	14: 3:15	18.6920	1508.00	104.15
1725	1	14: 5:10	18.7240	1507.99	104.15
1727	1	14: 7: 1	18.7550	1507.99	104.15
1728	1	14: 8: 3	18.7720	1507.99	104.15
1730	1	14: 9:54	18.8030	1507.98	104.15
1732	1	14:11:49	18.8350	1507.98	104.16
1733	1	14:12:51	18.8520	1507.97	104.16
1735	1	14:14:46	18.8840	1507.97	104.16
1737	1	14:16:37	18.9150	1507.97	104.16
1738	1	14:17:39	18.9320	1507.96	104.16
1740	1	14:19:34	18.9640	1507.96	104.16
1742	1	14:21:25	18.9950	1507.95	104.17
1743	1	14:22:27	19.0120	1507.95	104.17
1745	1	14:24:22	19.0440	1507.95	104.17
1747	1	14:26:13	19.0750	1507.94	104.17
1748	1	14:27:15	19.0920	1507.94	104.17
1750	1	14:29:10	19.1240	1507.94	104.17
1752	1	14:31: 1	19.1550	1507.93	104.18
1753	1	14:32: 3	19.1720	1507.93	104.18
1755	1	14:33:58	19.2040	1507.93	104.18
1757	1	14:35:49	19.2350	1507.92	104.18
1758	1	14:36:51	19.2520	1507.92	104.18
1760	1	14:38:46	19.2840	1507.91	104.18
1762	1	14:40:37	19.3150	1507.91	104.18
1763	1	14:41:39	19.3320	1507.90	104.19
1765	1	14:43:34	19.3640	1507.90	104.19
1767	1	14:45:25	19.3950	1507.90	104.19
1768	1	14:46:27	19.4120	1507.89	104.19
1770	1	14:48:22	19.4440	1507.89	104.19
1772	1	14:50:13	19.4750	1507.88	104.19
1773	1	14:51:15	19.4920	1507.88	104.19
1775	1	14:53:10	19.5240	1507.88	104.19
1777	1	14:55: 1	19.5550	1507.87	104.19

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Wednesday: Jan. 24, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1778	1	14:56: 3	19.5720	1507.87	104.20
1780	1	14:57:58	19.6040	1507.86	104.20
1782	1	14:59:49	19.6350	1507.86	104.20
1783	1	15: 0:51	19.6520	1507.86	104.20
1785	1	15: 2:46	19.6840	1507.85	104.20
1787	1	15: 4:37	19.7150	1507.85	104.21
1788	1	15: 5:39	19.7320	1507.84	104.20
1790	1	15: 7:34	19.7640	1507.84	104.21
1792	1	15: 9:25	19.7950	1507.83	104.21
1793	1	15:10:27	19.8120	1507.83	104.21
1795	1	15:12:18	19.8430	1507.83	104.21
1797	1	15:14:13	19.8750	1507.82	104.21
1798	1	15:15:15	19.8920	1507.82	104.21
1800	1	15:17:10	19.9240	1507.82	104.22
1802	1	15:19: 1	19.9550	1507.81	104.22
1803	1	15:20: 3	19.9720	1507.81	104.22
1805	1	15:21:54	20.0030	1507.81	104.22
1807	1	15:23:49	20.0350	1507.80	104.22
1808	1	15:24:51	20.0520	1507.80	104.23
1810	1	15:26:46	20.0840	1507.80	104.23
1812	1	15:28:37	20.1150	1507.79	104.23
1813	1	15:29:39	20.1320	1507.79	104.23
1815	1	15:32: 3	20.1720	1507.77	104.23
1817	1	15:33:54	20.2030	1507.78	104.23
1819	1	15:36:22	20.2440	1507.77	104.23
1821	1	15:38:13	20.2750	1507.77	104.24
1822	1	15:39:15	20.2920	1507.77	104.24
1824	1	15:41: 6	20.3230	1507.76	104.24
1826	1	15:43: 1	20.3550	1507.76	104.24
1827	1	15:44: 3	20.3720	1507.76	104.24
1829	1	15:45:58	20.4040	1507.75	104.24
1831	1	15:47:49	20.4350	1507.75	104.25
1832	1	15:48:51	20.4520	1507.75	104.25
1833	1	15:53:42	20.5330	1507.75	104.25
1836	1	15:55:27	20.5620	1507.73	104.25
1838	1	15:57:18	20.5930	1507.73	104.25
1839	1	15:58:19	20.6100	1507.73	104.25
1841	1	16: 0:15	20.6420	1507.72	104.26
1843	1	16: 2:10	20.6740	1507.72	104.26
1845	1	16: 4: 1	20.7050	1507.71	104.26
1846	1	16: 5: 3	20.7220	1507.71	104.26
1848	1	16: 6:54	20.7530	1507.71	104.26
1849	1	16: 7:55	20.7700	1507.70	104.26
1851	1	16: 9:51	20.8020	1507.70	104.26
1853	1	16:11:46	20.8340	1507.69	104.27
1855	1	16:13:37	20.8650	1507.69	104.27
1856	1	16:14:39	20.8820	1507.68	104.27
1858	1	16:16:30	20.9130	1507.68	104.27
1859	1	16:17:31	20.9300	1507.68	104.27
1861	1	16:19:27	20.9620	1507.68	104.27

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A [Wednesday: Jan. 24, 1996]
Field: BAY CITY PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1863	1	16:21:22	20.9940	1507.67	104.27
1865	1	16:23:13	21.0250	1507.67	104.27
1866	1	16:24:15	21.0420	1507.66	104.28
1868	1	16:26: 6	21.0730	1507.66	104.28
1869	1	16:27: 7	21.0900	1507.66	104.28
1871	1	16:29: 3	21.1220	1507.65	104.28
1873	1	16:30:58	21.1540	1507.65	104.28
1875	1	16:32:49	21.1850	1507.64	104.28
1876	1	16:33:51	21.2020	1507.64	104.28
1878	1	16:35:46	21.2340	1507.64	104.28
1880	1	16:37:37	21.2650	1507.63	104.29
1881	1	16:38:39	21.2820	1507.63	104.29
1883	1	16:40:34	21.3140	1507.62	104.29
1885	1	16:42:25	21.3450	1507.62	104.29
1886	1	16:43:27	21.3620	1507.62	104.29
1888	1	16:45:18	21.3930	1507.61	104.29
1889	1	16:46:19	21.4100	1507.60	104.29
1891	1	16:48:15	21.4420	1507.60	104.29
1893	1	16:50:10	21.4740	1507.60	104.29
1895	1	16:52: 1	21.5050	1507.58	104.30
1896	1	16:53: 3	21.5220	1507.59	104.30
1898	1	16:54:58	21.5540	1507.58	104.30
1900	1	16:56:49	21.5850	1507.58	104.30
1901	1	16:57:51	21.6020	1507.57	104.30
1903	1	16:59:46	21.6340	1507.57	104.30
1905	1	17: 1:37	21.6650	1507.56	104.30
1906	1	17: 2:39	21.6820	1507.56	104.30
1908	1	17: 4:30	21.7130	1507.55	104.30
1909	1	17: 5:31	21.7300	1507.55	104.31
1911	1	17: 7:27	21.7620	1507.54	104.31
1913	1	17: 9:22	21.7940	1507.54	104.31
1915	1	17:11:13	21.8250	1507.53	104.31
1916	1	17:12:15	21.8420	1507.53	104.31
1918	1	17:14:10	21.8740	1507.53	104.31
1920	1	17:16: 1	21.9050	1507.51	104.32
1921	1	17:17: 3	21.9220	1507.51	104.32
1923	1	17:18:58	21.9540	1507.51	104.32
1925	1	17:20:49	21.9850	1507.50	104.32
1926	1	17:21:51	22.0020	1507.49	104.32
1928	1	17:23:42	22.0330	1507.48	104.32
1929	1	17:24:43	22.0500	1507.48	104.32
1931	1	17:26:39	22.0820	1507.47	104.32
1933	1	17:28:34	22.1140	1507.46	104.32
1935	1	17:30:25	22.1450	1507.45	104.33
1936	1	17:31:27	22.1620	1507.45	104.33
1938	1	17:33:22	22.1940	1507.44	104.33
1940	1	17:35:13	22.2250	1507.43	104.33
1941	1	17:36:15	22.2420	1507.43	104.33
1943	1	17:38:10	22.2740	1507.43	104.33
1945	1	17:40: 1	22.3050	1507.41	104.33

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A [Wednesday: Jan. 24, 1996]
Field: BAY CITY PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
1946	1	17:41: 3	22.3220	1507.42	104.33
1948	1	17:42:54	22.3530	1507.41	104.33
1949	1	17:43:55	22.3700	1507.41	104.33
1951	1	17:45:51	22.4020	1507.40	104.33
1953	1	17:47:46	22.4340	1507.40	104.33
1955	1	17:49:37	22.4650	1507.39	104.33
1956	1	17:50:39	22.4820	1507.39	104.33
1958	1	17:52:34	22.5140	1507.38	104.33
1960	1	17:54:25	22.5450	1507.38	104.34
1961	1	17:55:27	22.5620	1507.38	104.34
1963	1	17:57:22	22.5940	1507.38	104.34
1965	1	17:59:13	22.6250	1507.37	104.34
		Continuing to monitor Bottom-Hole Fall-Off press.			
1966	1	18: 0:15	22.6420	1507.37	104.34
1968	1	18: 2: 6	22.6730	1507.37	104.34
1969	1	18: 3: 7	22.6900	1507.36	104.34
1971	1	18: 5: 3	22.7220	1507.36	104.34
1973	1	18: 6:58	22.7540	1507.36	104.35
1975	1	18: 8:49	22.7850	1507.36	104.35
1976	1	18: 9:51	22.8020	1507.36	104.35
1978	1	18:11:46	22.8340	1507.35	104.35
1980	1	18:13:37	22.8650	1507.35	104.35
1981	1	18:14:39	22.8820	1507.34	104.35
1983	1	18:16:34	22.9140	1507.35	104.35
1985	1	18:18:25	22.9450	1507.34	104.35
1986	1	18:19:27	22.9620	1507.34	104.35
1988	1	18:21:18	22.9930	1507.33	104.36
1989	1	18:22:19	23.0100	1507.33	104.36
1991	1	18:24:15	23.0420	1507.33	104.36
1993	1	18:26:10	23.0740	1507.33	104.36
1995	1	18:28: 1	23.1050	1507.33	104.36
1996	1	18:29: 3	23.1220	1507.32	104.36
1998	1	18:30:58	23.1540	1507.33	104.36
2001	1	18:33:51	23.2020	1507.32	104.36
2004	1	18:36:43	23.2500	1507.32	104.36
2007	1	18:39:36	23.2980	1507.31	104.37
2010	1	18:42:25	23.3450	1507.30	104.37
2013	1	18:45:22	23.3940	1507.30	104.37
2016	1	18:48:15	23.4420	1507.30	104.37
2019	1	18:51: 7	23.4900	1507.30	104.38
2022	1	18:54: 0	23.5380	1507.29	104.38
2025	1	18:56:49	23.5850	1507.29	104.38
2028	1	18:59:42	23.6330	1507.28	104.38
2031	1	19: 2:39	23.6820	1507.28	104.38
2034	1	19: 5:31	23.7300	1507.28	104.39
2037	1	19: 8:24	23.7780	1507.27	104.39
2040	1	19:11:13	23.8250	1507.27	104.39
2043	1	19:14:10	23.8740	1507.27	104.39
2046	1	19:17: 3	23.9220	1507.26	104.39
2049	1	19:19:55	23.9700	1507.26	104.40

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A [Wednesday: Jan. 24, 1996]
Field: BAY CITY PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
2052	1	19:22:48	24.0180	1507.26	104.40
2055	1	19:25:37	24.0650	1507.26	104.40
2058	1	19:28:34	24.1140	1507.25	104.40
2061	1	19:31:27	24.1620	1507.25	104.41
2064	1	19:34:19	24.2100	1507.25	104.40
2067	1	19:37:12	24.2580	1507.24	104.41
2070	1	19:40: 1	24.3050	1507.23	104.41
2073	1	19:42:58	24.3540	1507.24	104.41
2076	1	19:45:51	24.4020	1507.23	104.41
2079	1	19:48:43	24.4500	1507.23	104.42
2082	1	19:51:36	24.4980	1507.23	104.42
2085	1	19:54:25	24.5450	1507.23	104.42
2088	1	19:57:18	24.5930	1507.22	104.42
2091	1	20: 0:15	24.6420	1507.22	104.43
2094	1	20: 3: 7	24.6900	1507.22	104.43
2097	1	20: 6: 0	24.7380	1507.21	104.43
2100	1	20: 8:49	24.7850	1507.21	104.43
2103	1	20:11:46	24.8340	1507.20	104.43
2106	1	20:14:39	24.8820	1507.20	104.44
2109	1	20:17:31	24.9300	1507.20	104.44
2112	1	20:20:24	24.9780	1507.20	104.44
2115	1	20:23:13	25.0250	1507.19	104.44
2118	1	20:26:10	25.0740	1507.19	104.45
2121	1	20:29: 3	25.1220	1507.18	104.45
2124	1	20:31:55	25.1700	1507.18	104.45
2127	1	20:34:48	25.2180	1507.18	104.45
2130	1	20:37:37	25.2650	1507.17	104.45
2133	1	20:40:34	25.3140	1507.17	104.46
2136	1	20:43:27	25.3620	1507.17	104.46
2139	1	20:46:19	25.4100	1507.16	104.46
2142	1	20:49:12	25.4580	1507.16	104.46
2145	1	20:52: 1	25.5050	1507.15	104.47
2148	1	20:54:58	25.5540	1507.15	104.47
2151	1	20:57:51	25.6020	1507.15	104.47
2154	1	21: 0:43	25.6500	1507.14	104.47
2157	1	21: 3:36	25.6980	1507.14	104.47
2160	1	21: 6:25	25.7450	1507.14	104.48
2163	1	21: 9:22	25.7940	1507.13	104.48
2166	1	21:12:15	25.8420	1507.13	104.48
2169	1	21:15: 7	25.8900	1507.13	104.48
2172	1	21:18: 0	25.9380	1507.12	104.48
2175	1	21:20:49	25.9850	1507.12	104.49
2178	1	21:23:46	26.0340	1507.11	104.49
2181	1	21:26:39	26.0820	1507.11	104.49
2184	1	21:29:31	26.1300	1507.11	104.50
2187	1	21:32:24	26.1780	1507.11	104.50
2190	1	21:35:13	26.2250	1507.10	104.50
2193	1	21:38:10	26.2740	1507.10	104.50
2196	1	21:41: 3	26.3220	1507.09	104.50
2199	1	21:43:55	26.3700	1507.09	104.50

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A [Wednesday: Jan. 24, 1996]
Field: BAY CITY PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
2202	1	21:46:48	26.4180	1507.09	104.51
2205	1	21:49:37	26.4650	1507.08	104.51
2208	1	21:52:34	26.5140	1507.08	104.51
2211	1	21:55:27	26.5620	1507.08	104.51
2214	1	21:58:19	26.6100	1507.07	104.52
2217	1	22: 1:12	26.6580	1507.07	104.52
2220	1	22: 4: 1	26.7050	1507.06	104.52
2223	1	22: 6:54	26.7530	1507.06	104.52
2226	1	22: 9:51	26.8020	1507.06	104.53
2229	1	22:12:43	26.8500	1507.05	104.53
2232	1	22:15:36	26.8980	1507.05	104.53
2235	1	22:18:25	26.9450	1507.04	104.53
2238	1	22:21:22	26.9940	1507.04	104.53
2241	1	22:24:15	27.0420	1507.04	104.53
2244	1	22:27: 7	27.0900	1507.04	104.54
2247	1	22:30: 0	27.1380	1507.03	104.54
2250	1	22:32:49	27.1850	1507.03	104.54
2253	1	22:35:46	27.2340	1507.02	104.54
2256	1	22:38:39	27.2820	1507.02	104.54
2259	1	22:41:31	27.3300	1507.02	104.55
2262	1	22:44:24	27.3780	1507.01	104.55
2265	1	22:47:13	27.4250	1507.01	104.55
2268	1	22:50:10	27.4740	1507.01	104.55
2271	1	22:53: 3	27.5220	1507.00	104.55
2274	1	22:55:55	27.5700	1507.00	104.55
2277	1	22:58:48	27.6180	1507.00	104.56
2280	1	23: 1:37	27.6650	1506.99	104.56
2283	1	23: 4:30	27.7130	1506.99	104.56
2286	1	23: 7:27	27.7620	1506.98	104.57
2289	1	23:10:19	27.8100	1506.98	104.57
2292	1	23:13:12	27.8580	1506.98	104.57
2295	1	23:16: 1	27.9050	1506.97	104.57
2298	1	23:18:58	27.9540	1506.97	104.57
2301	1	23:21:51	28.0020	1506.96	104.58
2304	1	23:24:43	28.0500	1506.96	104.58
2307	1	23:27:36	28.0980	1506.96	104.58
2310	1	23:30:25	28.1450	1506.95	104.58
2313	1	23:33:22	28.1940	1506.95	104.58
2316	1	23:36:15	28.2420	1506.94	104.58
2319	1	23:39: 7	28.2900	1506.94	104.59
2322	1	23:42: 0	28.3380	1506.94	104.59
2325	1	23:44:49	28.3850	1506.93	104.59
2328	1	23:47:46	28.4340	1506.93	104.59
2331	1	23:50:39	28.4820	1506.92	104.59
2334	1	23:53:31	28.5300	1506.92	104.60
2337	1	23:56:24	28.5780	1506.92	104.60
2340	1	23:59:13	28.6250	1506.92	104.60
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2343	2	0: 2: 6	28.6730	1506.91	104.60
2346	2	0: 5: 3	28.7220	1506.91	104.60

y: HOECHST CELANESE CHEMICAL CO.
WDW-110 Well 1-A
BAY CITY PLANT

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EC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
2349	2	0: 7:55	28.7700	1506.90	104.61
2352	2	0:10:48	28.8180	1506.90	104.61
2355	2	0:13:37	28.8650	1506.89	104.61
2358	2	0:16:34	28.9140	1506.89	104.61
2361	2	0:19:27	28.9620	1506.88	104.61
2364	2	0:22:19	29.0100	1506.88	104.61
2367	2	0:25:12	29.0580	1506.88	104.62
2370	2	0:28: 1	29.1050	1506.87	104.62
2373	2	0:30:58	29.1540	1506.87	104.62
2376	2	0:33:51	29.2020	1506.87	104.62
2379	2	0:36:43	29.2500	1506.86	104.62
2382	2	0:39:36	29.2980	1506.86	104.62
2385	2	0:42:25	29.3450	1506.86	104.63
2388	2	0:45:22	29.3940	1506.85	104.63
2391	2	0:48:15	29.4420	1506.85	104.63
2394	2	0:51: 7	29.4900	1506.85	104.64
2397	2	0:54: 0	29.5380	1506.84	104.64
2400	2	0:56:49	29.5850	1506.84	104.64
2403	2	0:59:42	29.6330	1506.83	104.64
2406	2	1: 2:39	29.6820	1506.83	104.64
2409	2	1: 5:31	29.7300	1506.83	104.64
2412	2	1: 8:24	29.7780	1506.82	104.64
2415	2	1:11:13	29.8250	1506.82	104.65
2418	2	1:14:10	29.8740	1506.81	104.65
2421	2	1:17: 3	29.9220	1506.81	104.65
2424	2	1:19:55	29.9700	1506.81	104.65
2427	2	1:22:48	30.0180	1506.80	104.65
2430	2	1:25:37	30.0650	1506.80	104.66
2433	2	1:28:34	30.1140	1506.79	104.66
2436	2	1:31:27	30.1620	1506.79	104.66
2439	2	1:34:19	30.2100	1506.79	104.66
2442	2	1:37:12	30.2580	1506.78	104.66
2445	2	1:40: 1	30.3050	1506.77	104.66
2448	2	1:42:58	30.3540	1506.78	104.67
2451	2	1:45:51	30.4020	1506.77	104.67
2454	2	1:48:43	30.4500	1506.77	104.67
2457	2	1:51:36	30.4980	1506.76	104.67
2460	2	1:54:25	30.5450	1506.76	104.67
2463	2	1:57:18	30.5930	1506.76	104.68
2466	2	2: 0:15	30.6420	1506.75	104.68
2469	2	2: 3: 7	30.6900	1506.75	104.68
2472	2	2: 6: 0	30.7380	1506.75	104.68
2475	2	2: 8:49	30.7850	1506.74	104.69
2478	2	2:11:46	30.8340	1506.74	104.69
2481	2	2:14:39	30.8820	1506.74	104.69
2484	2	2:17:31	30.9300	1506.73	104.69
2487	2	2:20:24	30.9780	1506.73	104.69
2490	2	2:23:13	31.0250	1506.73	104.69
2493	2	2:26:10	31.0740	1506.72	104.69
2496	2	2:29: 3	31.1220	1506.72	104.69

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

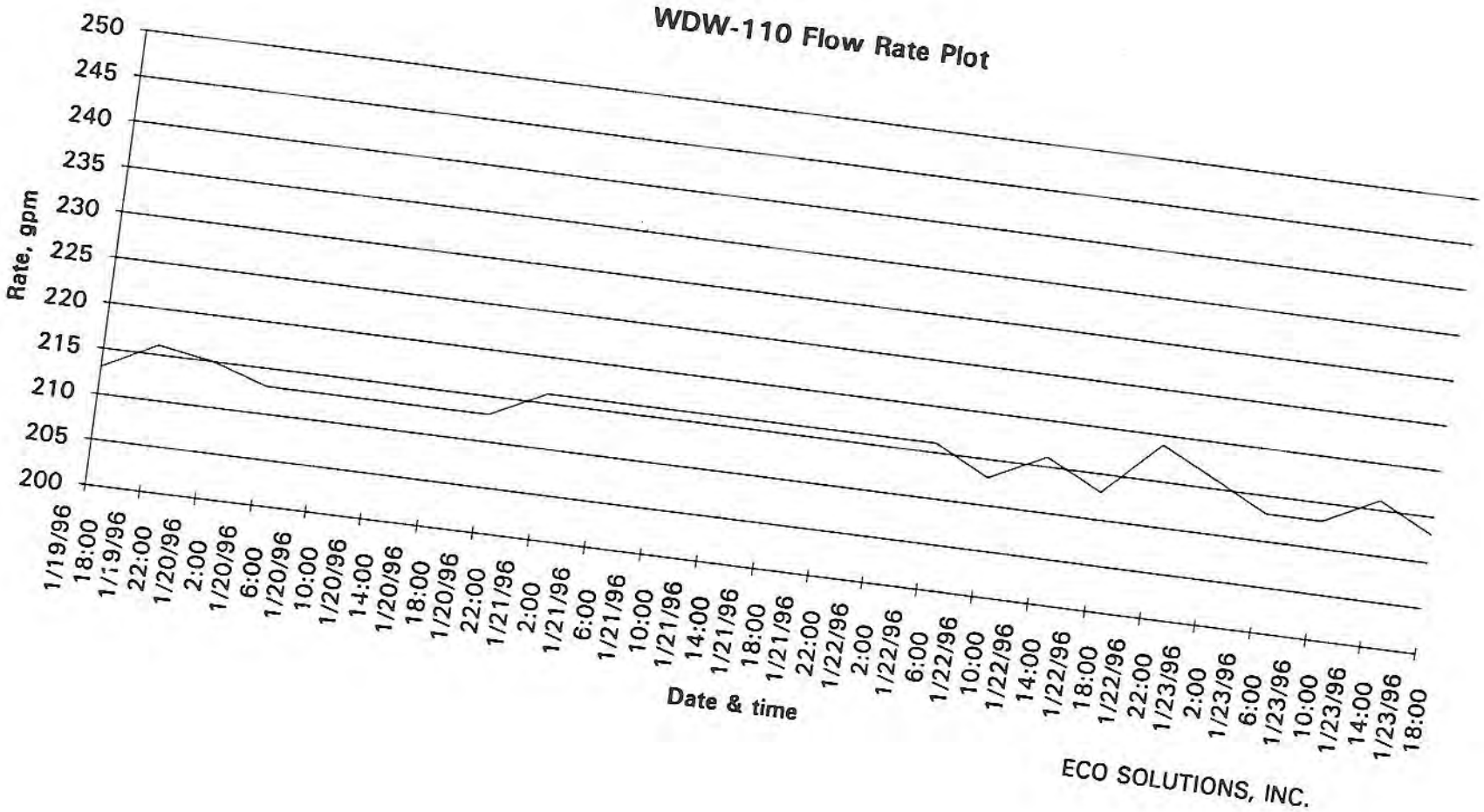
[Thursday: Jan. 25, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
2499	2	2:31:55	31.1700	1506.72	104.70
2502	2	2:34:48	31.2180	1506.71	104.70
2505	2	2:37:37	31.2650	1506.71	104.70
2508	2	2:40:34	31.3140	1506.70	104.70
2511	2	2:43:27	31.3620	1506.70	104.70
2514	2	2:46:19	31.4100	1506.70	104.71
2517	2	2:49:12	31.4580	1506.69	104.71
2520	2	2:52: 1	31.5050	1506.68	104.71
2523	2	2:54:54	31.5530	1506.68	104.71
2526	2	2:57:51	31.6020	1506.68	104.71
2529	2	3: 0:43	31.6500	1506.68	104.71
2532	2	3: 3:36	31.6980	1506.67	104.71
2535	2	3: 6:25	31.7450	1506.66	104.72
2538	2	3: 9:22	31.7940	1506.66	104.72
2541	2	3:12:15	31.8420	1506.66	104.72
2544	2	3:15: 7	31.8900	1506.66	104.72
2547	2	3:18: 0	31.9380	1506.65	104.72
2550	2	3:20:49	31.9850	1506.65	104.72
2553	2	3:23:46	32.0340	1506.65	104.73
2556	2	3:26:39	32.0820	1506.64	104.73
2559	2	3:29:31	32.1300	1506.64	104.73
2562	2	3:32:24	32.1780	1506.64	104.73
2565	2	3:35:13	32.2250	1506.64	104.74
2568	2	3:38:10	32.2740	1506.63	104.74
2571	2	3:41: 3	32.3220	1506.63	104.74
2574	2	3:43:55	32.3700	1506.63	104.74
2577	2	3:46:48	32.4180	1506.63	104.74
2580	2	3:49:37	32.4650	1506.63	104.75
2583	2	3:52:34	32.5140	1506.63	104.75
2586	2	3:55:27	32.5620	1506.62	104.75
2589	2	3:58:19	32.6100	1506.62	104.75
2592	2	4: 1:12	32.6580	1506.62	104.75
2595	2	4: 4: 1	32.7050	1506.61	104.75
2598	2	4: 6:54	32.7530	1506.61	104.76
2600	2	4: 8:49	32.7850	1506.61	104.76
2601	2	4: 9:51	32.8020	1506.61	104.76
2602	2	4:10:48	32.8180	1506.61	104.76
2603	2	4:11:46	32.8340	1506.61	104.76
2604	2	4:12:43	32.8500	1506.60	104.76
2605	2	4:13:37	32.8650	1506.60	104.76
2606	2	4:14:39	32.8820	1506.60	104.76
2607	2	4:15:36	32.8980	1506.60	104.76
2608	2	4:16:30	32.9130	1506.60	104.76
2609	2	4:17:31	32.9300	1506.59	104.76
2610	2	4:18:25	32.9450	1506.60	104.76
2611	2	4:19:27	32.9620	1506.59	104.76
2612	2	4:20:24	32.9780	1506.60	104.76
2613	2	4:21:22	32.9940	1506.59	104.77
		End of Fall-Off Test. Shut-Down Data Acquisition System to tie-in to packer and E.O.T. with CCL.			
2614	2	4:22:19	33.0100	1506.59	104.77

Hoechst Celanese Chemical Group, Inc.
Bay City Plant

Flow Rate Data - WDW110 (Well No. 1-A)

DATE	TIME	FLOW (GPM)
1/19/96	1800 hrs	213
	2200 hrs	216
1/20/96	0200 hrs	215
	0600 hrs	213
	1000 hrs	213
	1400 hrs	213
	1800 hrs	213
	2200 hrs	213
1/21/96	0200 hrs	216
	0600 hrs	216
	1000 hrs	216
	1400 hrs	216
	1800 hrs	216
	2200 hrs	216
1/22/96	0200 hrs	216
	0600 hrs	216
	1000 hrs	213
	1400 hrs	216
	1800 hrs	213
1/23/96	0200 hrs	216
	0600 hrs	213
	1000 hrs	213
	1400 hrs	216
	1800 hrs	213


WDW-110 Flow Rate Plot
Rate, gpm
250
245
240
235
230
225
220
215
210
205
200
1/19/96 18:00
1/19/96 22:00
1/20/96 2:00
1/20/96 6:00
1/20/96 10:00
1/20/96 14:00
1/20/96 18:00
1/20/96 22:00
1/21/96 2:00
1/21/96 6:00
1/21/96 10:00
1/21/96 14:00
1/21/96 18:00
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1/22/96 2:00
1/22/96 6:00
1/22/96 10:00
1/22/96 14:00
1/22/96 18:00
1/22/96 22:00
1/23/96 2:00
1/23/96 6:00
1/23/96 10:00
1/23/96 14:00
1/23/96 18:00
Date & time
ECO SOLUTIONS, INC.

Interoffice Memo

Hoechst Celanese

Date:: January 26, 1996

To:: H. R. Horton

Dept/Location:: Maintenance Engr/BCP

PLR-0003-96

From: P. L. Richard

Dept/Location: Site Services Tech/BCI

Subject:: **Analyses of 1A Well Feed Samples for Mechanical Integrity Testing**

cc:

R. S. O'Neal
P. H. Richardson
R. E. Van Wie --> L. P. Molina
~~Wes~~ Smith - ECO Solutions, Inc.
W. E. Dentler
B. G. Campbell
G. J. McCarthy

Samples of the 1A 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 120°F as requested. The results are tabulated below.

Sample Date	Sample Time	Specific Gravity	Viscosity (cps)
1/19/95	6 PM	1.0002	0.552
1/20/95	2 AM	1.0002	0.539
1/20/95	10 AM	1.0002	0.556
1/20/95	6 PM	1.0002	0.565
1/21/95	2 AM	1.0002	0.560
1/21/95	10 AM	1.0001	0.517
1/21/95	6 PM	1.0002	0.555
1/22/95	2 AM	1.0002	0.575
1/22/95	10 AM	1.0002	0.534
1/22/95	6 PM	1.0002	0.547
1/23/95	2 AM	1.0002	0.571
1/23/95	10 AM	1.0002	0.548
1/23/95	6 PM	1.0002	0.565

I would like to acknowledge Luis Molina for his timely analysis of these samples.

Paul L. Richard

P. L. Richard

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APPENDIX F

CALCULATION FLOW CHART AND CALCULATIONS 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.

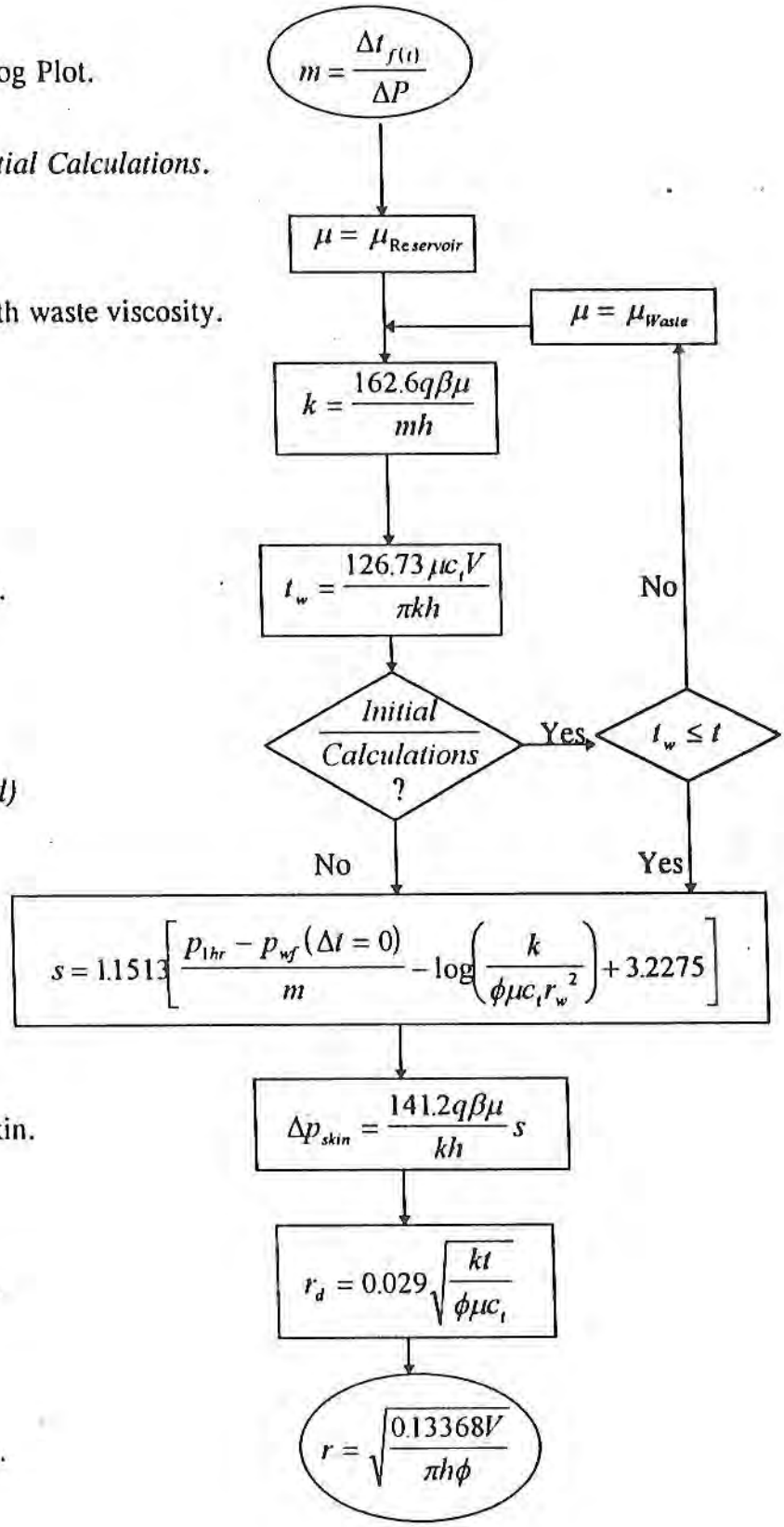
5. Conditional statements.
   (t, beginning of radial flow period)

6. Calculate skin factor.

7. Calculate Pressure drop due to skin.

8. Calculate radius of investigation.

9. Calculate distance to waste front.



FALLOFF TEST - EQUATIONS AND CALCULATIONS

Input Parameters

Symbol	Name	Unit	Value
k	Permeability	millidarcies	938
q_{gpm}	Flow rate	gallons per minute	215
q_{bpd}	Flow rate	barrels per day	7,371
β	Formation volume factor	RB/STB	1
μ	Fluid viscosity	centipoise	0.71
m	Semi-log slope,	psi per cycle	5.5
h	Net sand thickness	feet	165
Ct	Total compressibility	1/psi	.00000414
π	Pi		3.1416
s	Skin Factor	total	57
ϕ	Porosity	fraction	.33
V	Total injected volume	gallons	176815232
t	Time to radial flow period	hours	2

Calculate Permeability

Equation: $$k = \frac{162.6 q_{bpd} \mu \beta}{mh}$$

$$k = \frac{(162.6)\,(7{,}371)\,(1)\,(0.71)}{(5.5)\,(165)}$$

$$k = \frac{850{,}952.47}{907.5}$$

k = 938 md

Calculate Time To Exit Waste Front

Equation: $$T_w = \frac{126.73 \mu C_t V}{\pi k h}$$

$$T_w = \frac{(126.73)\,(0.71)\,(0.00000414)\,(176{,}815{,}232)}{(3.1416)\,(938)\,(165)}$$

$$T_w = \frac{65865.47}{486225.43}$$

T_w = 0.14 hrs.

SOLUTIONS, INC.

Calculate Pressure Drop Due To Skin

Equation: $$\Delta P_{skin} = \frac{141.2 q_{bpd} \mu \beta}{kh} s$$

$$\Delta P_{skin} = \frac{(141.2)\ (7{,}371)\ (1)\ (0.71)}{(938)\ (165)} \times (57)$$

$$\Delta P_{skin} = \frac{(42{,}120{,}577)}{(154{,}770)}$$

$$\Delta P_{skin} = 272.15 \text{ psi}$$

Calculate Radius Of Investigation

Equation: $$R_i = 0.029\sqrt{\frac{kt}{\phi \mu C_t}}$$

$$Ri = 0.029\ [(938)\ (2)/\ (0.33)\ (0.71)\ (0.00000414)]^{1/2}$$

$$R_i = 0.029\ [1{,}876/0.0000010]^{1/2}$$

$$R_i = 0.029\ (1{,}876{,}000{,}000)^{1/2}$$

$$R_i = 0.029\ (43{,}313)$$

$$R_i = 1{,}256'$$

Calculate Distance To Waste Front

Equation: $$R_{wf} = \sqrt{\frac{0.13368V}{\pi h \phi}}$$

$$R_{wf} = [(0.13368)(176{,}815{,}232)/(3.14)(165)(0.33)]^{1/2}$$

$$R_{wf} = [23{,}636{,}660/171.1]^{1/2}$$

$$R_{wf} = [138{,}145.3]^{1/2}$$

$$R_{wf} = 372'$$

SOLUTIONS, INC.

APPENDIX G

STATIC GRADIENT SURVEY

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

County: MATAGORDA
State: TEXAS

Engineer: DOUG BEALL
Gauge Type: GRC EPG-520
Serial No.: 69681
Gauge Range: 0 - 2,500 PSI
Gauge Depth: 3300 ft

Date: 01/25/1996

Well Type: INJECTION WELL
Test Type: GRADIENT SURVEY
Well Status: SHUT-IN

Tubing: 5-1/2" TO 3,380'
Tubing: TO
Casing: 9-5/8" TO 4,618'
Perfs.: 3376-3426 & 3460-3471 FT.
Perfs.: 3494-3524 & 3543-3572 FT.
Elevation: 17'
Shut-in Time 31 hrs

Packer Depth 3330 ft
PBTD 4616 ft
Oil Level
H2O Level 0 ft

Zero: KB

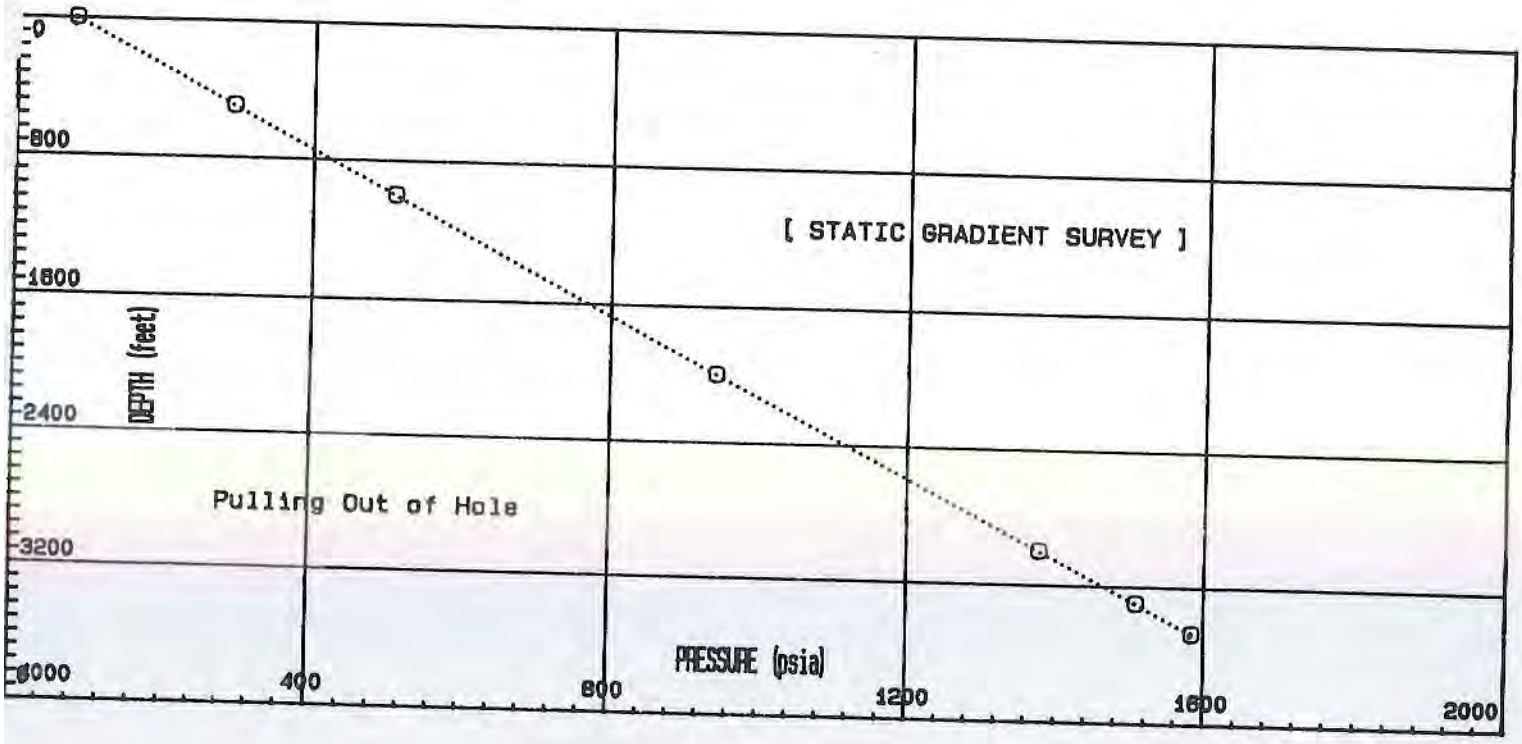
Shut-in BHP	1507	@	3300 ft	Shut-in BHT	105 F	@	3300 ft
Flowing BHP	1818	@	3300 ft	Flowing BHT	102 F	@	3300 ft
Shut-in WHP	78			Shut-in WHT	52 F		
Flowing WHP	412			Flowing WHT	83 F		

[GRADIENT DATA]

#	MD	TVD	PRESSURE	PSI/ft
1	0	0	77.99	
2	500	500	292.00	0.428
3	1000	1000	508.70	0.433
4	2000	2000	941.92	0.433
5	3000	3000	1375.99	0.434
6	3300	3300	1506.59	0.435
7	3474	3474	1582.34	0.435

MILTON M. COOKE CO.
2310 McAllister St.
Houston, Tx. 77092
Ph. 713-683-0333

Tagged fill @ 3,574 feet
Pressure extrapolated to mid-point perforations



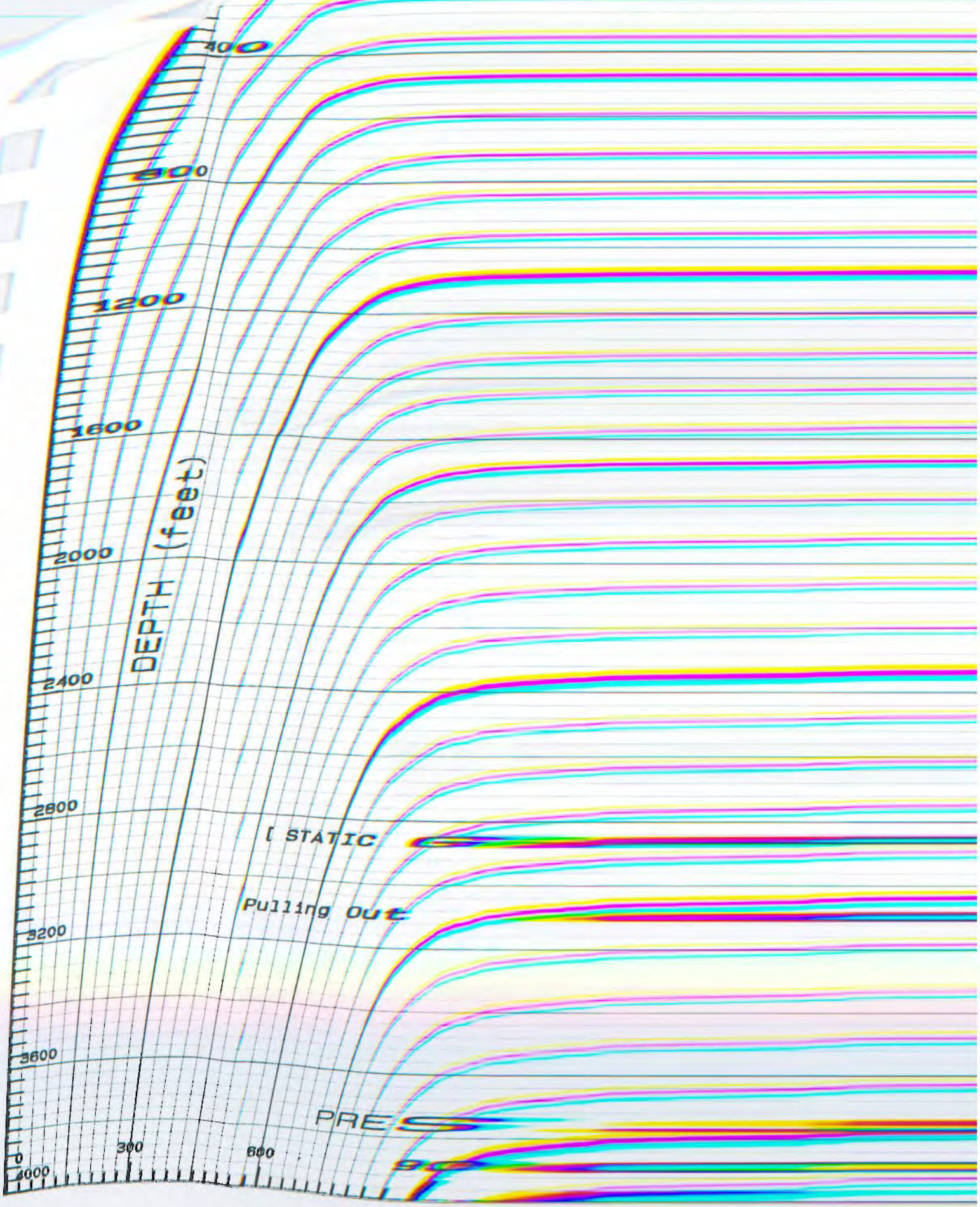
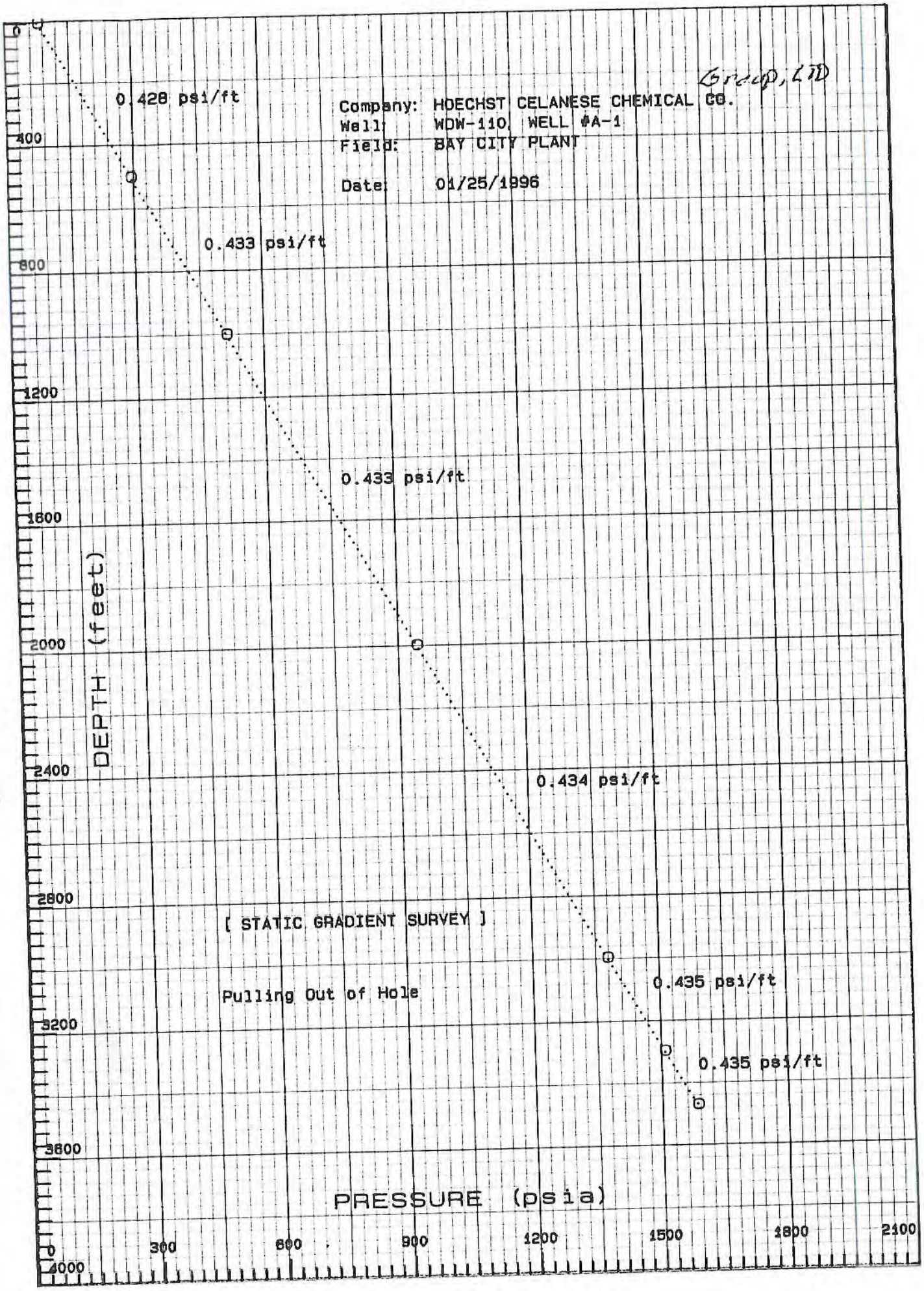

DEPTH (feet)
400
800
1200
1600
2000
2400
2800
3200
3600
4000
0
300
600
STATIC
Pulling Out
PRES

FIGURE 6


Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110, WELL #A-1
Field: BAY CITY PLANT
Date: 01/25/1996
0.428 psi/ft
0.433 psi/ft
0.433 psi/ft
0.434 psi/ft
0.435 psi/ft
0.435 psi/ft
[STATIC GRADIENT SURVEY]
Pulling Out of Hole
DEPTH (feet)
0
400
800
1200
1600
2000
2400
2800
3200
3600
4000
PRESSURE (psia)
0
300
600
900
1200
1500
1800
2100

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
		Tied into Packer & E.O.T. with CCL.			
		Start Gradient Survey.			
2615	2	5:36:15	34.2420	1506.81	104.49
2616	2	5:37:12	34.2580	1506.66	104.57
2617	2	5:38:10	34.2740	1506.62	104.62
2618	2	5:39: 7	34.2900	1506.60	104.65
2619	2	5:40: 5	34.3060	1506.60	104.68
2620	2	5:41: 3	34.3220	1506.60	104.70
2621	2	5:42: 0	34.3380	1506.60	104.72
2622	2	5:42:54	34.3530	1506.60	104.74
2623	2	5:43:55	34.3700	1506.59	104.75
2624	2	5:44:53	34.3860	1506.59	104.76
		Depart 3,300'			
2625	2	5:45:51	34.4020	1506.59	104.77
2626	2	5:46:48	34.4180	1494.73	104.78
2627	2	5:47:46	34.4340	1470.38	104.67
2628	2	5:48:43	34.4500	1448.56	104.37
2629	2	5:49:41	34.4660	1425.30	103.87
2630	2	5:50:39	34.4820	1402.45	103.53
2631	2	5:51:36	34.4980	1379.19	103.26
2632	2	5:52:34	34.5140	1375.67	103.01
2633	2	5:53:31	34.5300	1375.81	102.91
2634	2	5:54:29	34.5460	1375.88	102.88
2635	2	5:55:27	34.5620	1375.91	102.86
2636	2	5:56:24	34.5780	1375.94	102.85
2637	2	5:57:22	34.5940	1375.95	102.85
2638	2	5:58:19	34.6100	1375.97	102.84
2639	2	5:59:17	34.6260	1375.97	102.84
2640	2	6: 0:15	34.6420	1375.98	102.83
2641	2	6: 1:12	34.6580	1375.98	102.83
2642	2	6: 2: 6	34.6730	1375.99	102.83
		Depart 3,000'			
2643	2	6: 3: 7	34.6900	1375.99	102.83
2644	2	6: 4: 5	34.7060	1369.95	102.83
2645	2	6: 5: 3	34.7220	1343.56	102.74
2646	2	6: 6: 0	34.7380	1311.54	102.53
2647	2	6: 6:58	34.7540	1279.72	102.32
2648	2	6: 7:55	34.7700	1247.84	101.89
2649	2	6: 8:53	34.7860	1215.78	101.48
2650	2	6: 9:51	34.8020	1184.15	101.24
2651	2	6:10:48	34.8180	1151.88	100.90
2652	2	6:11:46	34.8340	1117.80	100.55
2653	2	6:12:43	34.8500	1087.59	100.25
2654	2	6:13:41	34.8660	1054.86	99.93
2655	2	6:14:39	34.8820	1022.16	99.58
2656	2	6:15:36	34.8980	989.05	99.24
2657	2	6:16:34	34.9140	956.23	99.02
2658	2	6:17:31	34.9300	941.31	98.67
2659	2	6:18:29	34.9460	941.60	98.43
2660	2	6:19:27	34.9620	941.71	98.36

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A [Thursday: Jan. 25, 1996]
Field: BAY CITY PLANT

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
2661	2	6:20:24	34.9780	941.77	98.33
2662	2	6:21:18	34.9930	941.81	98.30
2663	2	6:22:19	35.0100	941.84	98.29
2664	2	6:23:17	35.0260	941.86	98.27
2665	2	6:24:15	35.0420	941.88	98.26
2666	2	6:25:12	35.0580	941.89	98.26
2667	2	6:26:10	35.0740	941.90	98.25
2668	2	6:27: 7	35.0900	941.90	98.24
2669	2	6:28: 5	35.1060	941.91	98.24
2670	2	6:29: 3	35.1220	941.91	98.24
2671	2	6:30: 0	35.1380	941.91	98.23
2672	2	6:30:58	35.1540	941.92	98.23
		Depart 2,000'			
2673	2	6:31:55	35.1700	941.92	98.23
2674	2	6:32:53	35.1860	930.93	98.23
2675	2	6:33:51	35.2020	889.55	98.14
2676	2	6:34:48	35.2180	850.21	97.76
2677	2	6:35:46	35.2340	846.13	97.32
2678	2	6:36:43	35.2500	814.07	97.14
2679	2	6:37:41	35.2660	774.28	97.03
2680	2	6:38:39	35.2820	734.78	96.90
2681	2	6:39:36	35.2980	694.07	96.46
2682	2	6:40:30	35.3130	653.77	96.04
2683	2	6:41:31	35.3300	615.33	95.82
2684	2	6:42:29	35.3460	593.78	95.36
2685	2	6:43:27	35.3620	553.53	95.03
2686	2	6:44:24	35.3780	513.98	94.82
2687	2	6:45:22	35.3940	508.17	94.31
2688	2	6:46:19	35.4100	508.40	94.14
2689	2	6:47:17	35.4260	508.51	94.09
2690	2	6:48:15	35.4420	508.56	94.05
2691	2	6:49:12	35.4580	508.61	94.04
2692	2	6:50:10	35.4740	508.64	94.03
2693	2	6:51: 7	35.4900	508.65	94.02
2694	2	6:52: 5	35.5060	508.67	94.01
2695	2	6:53: 3	35.5220	508.68	94.01
2696	2	6:54: 0	35.5380	508.69	94.01
2697	2	6:54:58	35.5540	508.69	94.00
2698	2	6:55:55	35.5700	508.70	94.00
		Depart 1,000'			
2699	2	6:56:53	35.5860	508.70	93.99
2700	2	6:57:51	35.6020	493.93	93.99
2701	2	6:58:48	35.6180	457.11	94.01
2702	2	6:59:42	35.6330	417.54	93.88
2703	2	7: 0:43	35.6500	383.52	93.33
2704	2	7: 1:41	35.6660	345.49	93.26
2705	2	7: 2:39	35.6820	309.99	92.64
2706	2	7: 3:36	35.6980	291.47	93.01
2707	2	7: 4:34	35.7140	291.72	92.79
2708	2	7: 5:31	35.7300	291.84	92.71

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A [Thursday: Jan. 25, 1996]
Field: BAY CITY PLANT Page 39

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
2709	2	7: 6:29	35.7460	291.90	92.68
2710	2	7: 7:27	35.7620	291.94	92.66
2711	2	7: 8:24	35.7780	291.96	92.65
2712	2	7: 9:22	35.7940	291.97	92.64
2713	2	7:10:19	35.8100	291.98	92.64
2714	2	7:11:17	35.8260	291.99	92.63
2715	2	7:12:15	35.8420	292.00	92.63
2716	2	7:13:12	35.8580	291.99	92.62
2717	2	7:14:10	35.8740	292.00	92.61
		Depart 500'			
2718	2	7:15: 7	35.8900	292.00	92.61
2719	2	7:16: 5	35.9060	288.39	92.60
2720	2	7:17: 3	35.9220	271.86	92.53
2721	2	7:18: 0	35.9380	253.16	92.26
2722	2	7:18:54	35.9530	226.69	92.45
2723	2	7:19:55	35.9700	199.10	92.28
2724	2	7:20:53	35.9860	170.51	92.31
2725	2	7:21:51	36.0020	142.38	91.56
2726	2	7:22:48	36.0180	115.01	91.31
2727	2	7:23:46	36.0340	96.05	90.96
2728	2	7:24:43	36.0500	82.90	88.06
		Arrived @ Surface.			
2729	2	7:25:41	36.0660	74.51	71.07
2730	2	7:26:39	36.0820	71.39	63.30
2731	2	7:27:36	36.0980	72.88	60.98
2732	2	7:28:34	36.1140	73.86	59.43
2733	2	7:29:31	36.1300	74.56	58.31
2734	2	7:30:29	36.1460	75.10	57.40
2735	2	7:31:27	36.1620	75.51	56.65
2736	2	7:32:24	36.1780	75.87	56.03
2737	2	7:33:22	36.1940	76.15	55.49
2738	2	7:34:19	36.2100	76.40	55.03
2739	2	7:35:17	36.2260	76.61	54.63
2740	2	7:36:15	36.2420	76.80	54.26
2741	2	7:37:12	36.2580	76.95	53.97
2742	2	7:38: 6	36.2730	77.11	53.69
2743	2	7:39: 7	36.2900	77.22	53.45
2744	2	7:40: 5	36.3060	77.33	53.23
2745	2	7:41: 3	36.3220	77.44	53.04
2746	2	7:42: 0	36.3380	77.52	52.88
2747	2	7:42:58	36.3540	77.60	52.73
2748	2	7:43:55	36.3700	77.66	52.60
2749	2	7:44:53	36.3860	77.72	52.49
2750	2	7:45:51	36.4020	77.78	52.39
2751	2	7:46:48	36.4180	77.83	52.30
2752	2	7:47:46	36.4340	77.87	52.23
2753	2	7:48:43	36.4500	77.93	52.16
2754	2	7:49:41	36.4660	77.96	52.11
		End of Gradient Survey.			
		Bleed-Off Lubricator and rig down e-line equip.			
2755	2	7:50:39	36.4820	77.99	52.08

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW-110 Well 1-A
Field: BAY CITY PLANT

[Thursday: Jan. 25, 1996]

REC #	DAY	REAL TIME	DT (HRS)	BHP (PSIA)	BHT (Deg.F)
2756	2	7:51:36	36.4980	12.74	52.05
2757	2	7:52:34	36.5140	5.59	52.00

[MILTON M. COOKE COMPANY]

APPENDIX H

CORRESPONDENCE

Hoechst Celanese

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

November 28, 1995
IOC-079-95

FEDERAL EXPRESS MAIL

Mr. Ben Knape, Head
Underground Injection Control Unit
Texas Natural Resource Conservation Commission
P. O. Box 13087
12100 Park 35 Circle (78753)
Austin, Texas 78711-3087

Subject: PROPOSED MECHANICAL INTEGRITY TESTING (MIT) WDW-49 (PLANT WELL NO. 4) AND WDW-110 (PLANT WELL NO. 1A) HOECHST CELANESE CHEMICAL GROUP, INC. BAY CITY PLANT, BAY CITY, TEXAS

Dear Mr. Knape:

Enclosed herewith are the following documents: (1) Addendum I - Proposed Procedure To Demonstrate Mechanical Integrity For WDW-49 and (2) Addendum II - Proposed Procedure To Demonstrate Mechanical Integrity For WDW-110. These documents, which outline proposed procedures for demonstrating mechanical integrity of the two wells, are provided for your review and approval at your earliest convenience.

The tentative schedule for performing the above MITs is as follows:

INJECTION WELL	DATE
WDW-110	JANUARY 25, 1996
WDW-49	MARCH 7, 1996

Your consideration of our request to expedite review and approval of these proposed MIT procedures is appreciated.

Please contact me or Mr. H. R. Horton by telephone at 409/241-4197 or 409/241-4076 respectively if you have questions.

Very truly yours,

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
12100 Park 35 Circle
Austin, Texas 78711-3087

bcc: C. J. Griffith
W. E. Dentler
R. J. Johnston
R. S. O'Neal
H. R. Horton
B. S. Barrington
G. J. McCarthy
A. Conley-Pitchell - Bridgewater
Environmental File No. 202.4, 202.5 and 203.13

Mr. Wesley W. Smith - w/o attached MIT procedures
ECO Solutions
9800 Richmond Avenue
Suite 320
Houston, Texas 77042

Interoffice Memo

Hoechst Celanese

Date: January 4, 1996

IOC-002-96

To: As Listed*

From: I. O. Coleman, Jr.

Dept/Location: Bay City Plant

Dept/Location: EHSA/Bay City Plant

Subject: TEXAS NATURAL RESOURCE CONSERVATION COMMISSION (TNRCC) APPROVAL OF PROPOSED MECHANICAL INTERGITY TESTING (MIT) AND FALL OFF TEST PROCEDURES FOR BAY CITY PLANT WASTE DISPOSAL WELLS, WDW-49 (No. 4 WELL) AND WDW-110 (No. 1A WELL)

*C. R. Pennington
W. G. Cornman
B. L. Fritz
J. V. Anderson
B. R. Hightower
W. E. Dentler
C. J. Griffith
R. S. O'Neal
G. J. McCarthy
B. S. Barrington
H. R. Horton
R. J. Johnston
P. H. Richardson
R. E. Tower
M. D. Garcia
A. Conley-Pitchell - Bridgewater
Environmental File No. 203.13
Tom Jones, ECO Solutions, Inc. - Houston
Bob Hall, ECO Solutions, Inc. - Houston

The attached letter from Jim Boswell, TNRCC, which was received January 4, 1996, documents TNRCC approval of of the subject proposed procedures and is provided for your information.

Per reference letter IOC- 079-95, dated November 28, 1995, the schedule for conducting the MITs and Fall Off Tests is as follows: January 25, 1996 for WDW-110 (No. 1A Well) and March 7, 1996 for WDW-49 (No. 4 Well).

Please contact me if you have questions.

I. O. Coleman, Jr.

IOC/cjs
attachment

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

I.D.C.

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

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

RE: Approval of Proposed Mechanical Integrity Testing and Fall Off Test Procedure, TNRCC Permits No. WDW-49 and WDW-110

Dear Mr. Coleman:

The staff has reviewed the proposed procedures dated November 28, 1995 for mechanical integrity testing including fall-off tests, an annulus pressure test, and a RAT survey, for the above referenced wells scheduled to begin January 25, 1995, for WDW-110 and March 7, 1995, for WDW-49 and finds it to be satisfactory.

Pursuant to 30 TAC §331.65(b)(4), within 30 days of completion of the tests, please submit a report to the executive director containing the results of the mechanical integrity testing.

A representative of the Commission does not intend to witness the MITs. Your report will serve as the evidence for confirming the integrity of the well. Should your plans change, please contact Jim Boswell at 512/239-6196, Mail Code MC-131.

Sincerely,

Jim L. Boswell

Jim L. Boswell, Permit Coordinator
Underground Injection Control
UIC, Uranium, & Radioactive Waste Section
Industrial & Hazardous Waste Division

JLB/jlb/jm

cc: Brian Graves, EPA Region 6, Dallas\

November 22, 1995

SOLUTIONS, INC.

Mr. Ray Horton
Hoechst Celanese Chemical Group, Inc.
Post Office Box 509
Bay City, Texas 77404-0509

RE: Proposed Mechanical Integrity Testing, Hoechst Celanese Chemical Group, Inc., Class I Injection Wellls, WDW-49 and WDW-110, Bay City Facility

Dear Mr. Horton:

As requested, attached are two copies of ECO Solutions, Inc.'s (ECO) proposed procedures to perform the 1996 annual mechanical integrity testing (MIT) on Hoechst Celanese Chemical Group, Inc.'s (HCCG) WDW-49 (Well No. 4) and WDW-110 (Well No. 1-A) at the Bay City Facility. The previous MITs were conducted on WDW-110 on January 28, 1995 and WDW-49 on March 9, 1995. ECO recommends that the MITs be scheduled for January 25, 1996 and March 7, 1996, respectively. The MIT to be performed on WDW-110 is imminent and a copy of the attached MIT procedure should be submitted to the Texas Natural Resources Conservation Commission for their review and approval soon.

Please note that following the MIT procedure on WDW-49, I presented the option of either returning the well to injection service, or brining-in prior to plugging and abandonment. As on WDW-32, if brining-in is the selected option, you may wish to make this cost item a separate project. If you have any questions regarding the MITs, please contact me at our Houston office at (713)780-1955 or via FAX at (713)780-0870.

Sincerely,

ECO Solutions, Inc.

Wesley W. Smith

Wesley W. Smith, P.E.
Vice President, UIC

cc: I.O. Coleman (HCCG)
Brian Berrington (HCCG)
Thomas Jones (ECO)
Bob Hall (ECO)

9800 Richmond Avenue - Suite 320 - Houston, Texas 77042 - Phone (713) 780-1955 - FAX (713) 780-0870

HOECHST CELANESE CHEMICAL GROUP, INC.
BAY CITY FACILITY

PROPOSED PROCEDURE TO DEMONSTRATE MECHANICAL INTEGRITY TESTING FOR WDW-110 (WELL #1-A)

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 demonstrate mechanical integrity testing (MIT). (ECO/HCCG)**

* Define annulus pressure test and downhole logging procedures.

* Draft a letter including MIT procedures for review and approval by HCCG's personnel which will provide formal notification to the TNRCC of the intent and scope to demonstrate MIT.

* Modify these procedures as per HCCG's comments and submit to the TNRCC for review and approval.

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 #1-A 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 #1-A at a stable, high rate for a minimum of four days prior to performing the falloff test. HCCG will furnish non-hazardous fluid. All other injection wells should operated at a constant flowrate, or be shut-in for a period extending from one (1) day prior to the start of the falloff 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 representative samples of the effluent pumped into Well #1-A.

* 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 unit and install onto the annulus outlet. Also, adjust facility digital recorder to measure annulus pressure from zero to 1,200 psig.

* HCCG's personnel will pressurize the annulus using nitrogen and adjust annulus pressure to be at least 1000 psi higher 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 unit and adjust facility recorder to normal annulus pressure range, i.e. zero to 1,000 psig.

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 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 (@ 3,330'), or up to ±3,000'. Make short repeat G/R run to prove tool repeatability.

* Run one (1) five-minute statistical log at a depth of 3,310'.

* Release first radioactive (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 the multiple pass survey.

* Release second R/A slug from tool at ±20' above top perforation, or at ±3,310' and hold tool 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 #1-A. (ECO)

* Rig down all rental equipment and move off the location.

* Advise TNRCC of test results.

* If Well #1-A has successfully passed all MIT tests, then return the well to injection service.

7) Submit MIT report. (ECO/HCCG)

* Prepare a draft copy of the MIT report detailing the demonstration of MIT on WDW-110 (Well #1-A).

* 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.

SOLUTIONS, INC.

Final Report

Hoechst Celanese Chemical Group, Ltd.
Bay City, Texas
MIT/Fall-off Report
Injection Well WDW-110 (Well No. 1A)

ECO Solutions, Inc.
9800 Richmond Avenue
Suite 320
Houston, Texas 77042
(713) 780-1955
FAX (713) 780-0870

ECO Job No. 96039

February, 1997

RECEIVED
MAR 10 1997
6 W-SU

ECO SOLUTIONS, INC.

HOECHST CELANESE CHEMICAL GROUP, LTD.
BAY CITY PLANT
BOTTOM HOLE PRESSURE FALLOFF AND MECHANICAL INTEGRITY TESTING FOR INJECTION WELL WDW-110 (WELL NO. 1A)

RECEIVED
MAR 10 1997
6 W-SU

ECO Solutions, Inc.
9800 Richmond Suite 320
Houston, Texas 77042
(713) 780-1955

February 1997

ECO Job # 96039

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APPENDIX H CORRESPONDENCE

APPENDIX I FALLOFF DATA DISKETTE

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1.0 INTRODUCTION

1.0 INTRODUCTION

Hoechst Celanese Chemical Group, Ltd. (HCCG) contracted ECO Solutions, Inc. (ECO) to perform the annual mechanical integrity testing on their Class I nonhazardous injection well, WDW-110 (Well No. 1-A), located at their Bay City facility. A schematic drawing of the well 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-110 (Well No. 1-A).

- Bottom Hole Pressure falloff (BHP)/Falloff testing was conducted to satisfy the annual ambient monitoring requirements of the US Environmental Protection Agency (EPA) and the Texas Natural Resource Conservation Commission (TNRCC) , Underground Injection Control (UIC) Program.
- An Annulus pressure test (APT) was conducted to satisfy the annual mechanical integrity test (MIT) requirements of the TNRCC.
- A Radioactive tracer (RAT) survey was conducted to satisfy the annual MIT requirements of the TNRCC.

HCCG personnel contacted the TNRCC personnel to inform them of the MIT schedule on WDW-110 and ask whether a field inspector would be present. TNRCC informed HCCG that a field inspector would be present for the MIT field work.

The BHP/falloff test was conducted on Tuesday; January 21, 1997 through Thursday, January 23, 1997 and was witnessed by Mr. Ken Hood of Gulf Coast Well Analysis (GCWA). and supervised by Mr. Wes Smith of ECO

The APT and RAT on WDW-110 (Well No. 1-A) were conducted on Thursday, January 23, 1997, and was witnessed by Mr. Wesley Smith of ECO. Mr. Chuck Green with TNRCC reviewed the APT data and witnessed the RAT.

1.2 EXECUTIVE SUMMARY

Following the successful completion of the MIT conducted on January 23, 1997 on WDW-110, HCCG returned WDW-110 to standby status. A summary of the results of the BHP/falloff survey and MIT are as follows:

Bottom Hole Pressure/Falloff Testing

Waste effluent was injected into WDW-110 at an average rate of 207 gallons per minute (gpm) for 92 hours and then shut-in for a total of 38 hours. The BHP/falloff survey was conducted by GCWA. There is good agreement between the measured data and model response. Superposition and Pressure History Simulation analysis also provide results consistent with the log-log analysis presented herein. A full discussion of the falloff analysis is presented in Section 4.0.

Annulus Pressure Test

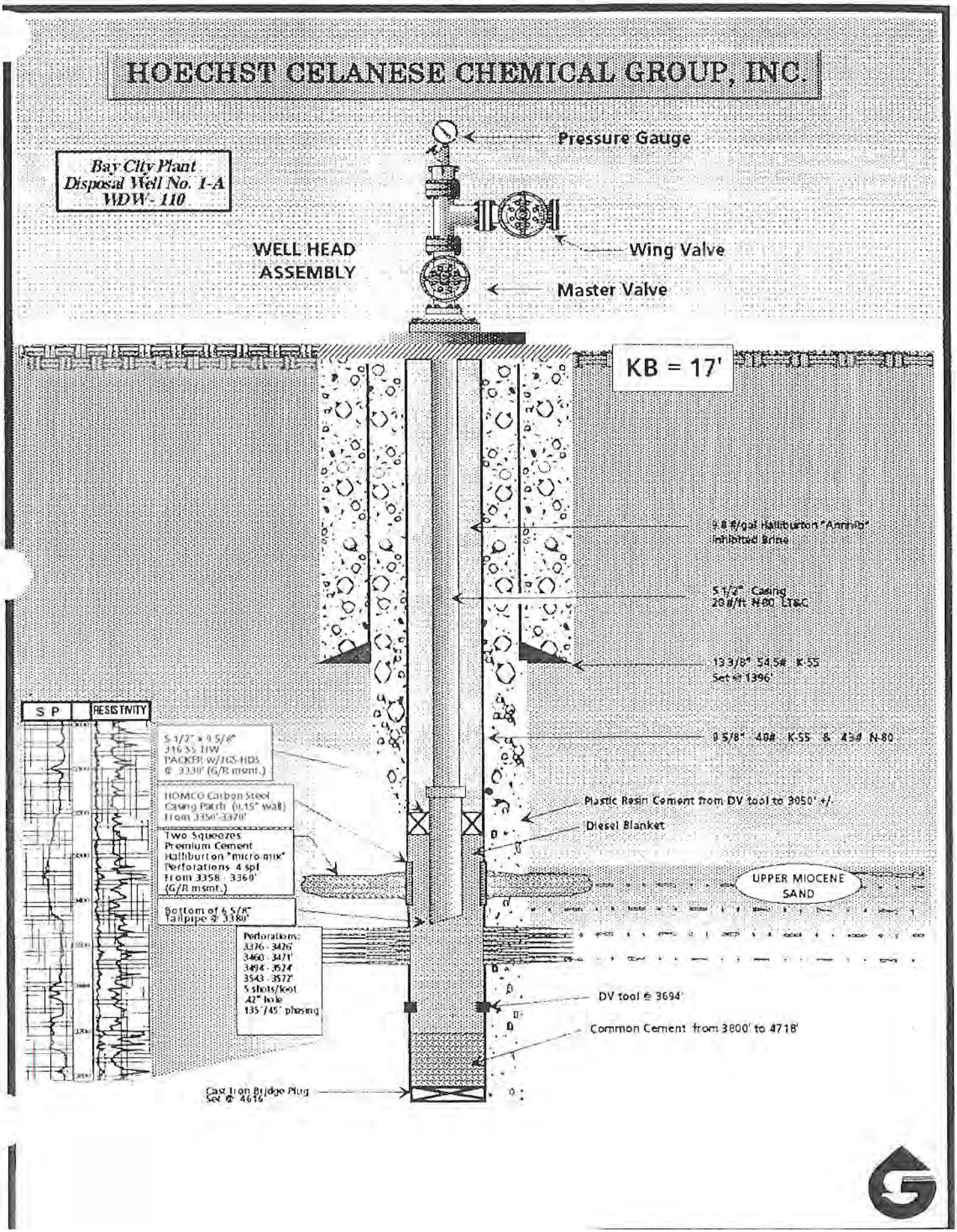
A demonstration of internal mechanical integrity was supported by an APT conducted on January 23, 1997. The annulus was pressurized to a maximum of 1100 pounds per square inch gauge (psig). The APT was monitored for sixty minutes. During the final 30 minutes the pressure loss with HCCG's digital pressure gauge was measured from 1097 to 1094.5 psig, or 2.5 pounds per square inch (psi) (0.23%), which is well within the 5% pressure loss criteria set by the TNRCC. The APT data and plot are included in Appendix A.

Radioactive Tracer Survey

The RAT survey performed on January 23, 1997 demonstrated external mechanical integrity since no upward fluid movement from the injection interval adjacent to the long string casing was occurring. Additionally, this determination can be made as a results of (1) the favorable comparison of the "before" and "after" base gamma ray surveys, (2) the two multiple-pass tracer surveys and (3) the two stationary surveys conducted 20' above the perforated interval. This interpretation was supported by an independent evaluation letter provided by GCWA and is included in Appendix B together with the RAT log.

FINAL COMPLETION

Detailed Upper Hole Section



2.0 FIELD OPERATIONS SUMMARY

2.1 BOTTOM HOLE PRESSURE FALLOFF SURVEY

Thursday, January 2, 1997

Mr. Wes Smith with ECO traveled from Houston to HCCG Bay City Plant and met with Mr. Bryan Barrington. The procedures for conducting the BHP/falloff survey and MIT on WDW-110 and a testing schedule was discussed, written and later circulated to pertinent HCCG personnel. Mr. Smith returned to Houston.

Tuesday, January 21, 1997

At 0630 hours Mr. Wes Smith arrived at HCCG's security office. Mr. Smith was informed of a delay in arrival of the GCWA's equipment and personnel due to a traffic accident in Houston. At 0930 hours met Mr. Ken Hood and personnel (GCWA) and was processed through HCCG's safety orientation. Moved in and rigged up GCWA's wireline unit with BHP/falloff tools including a Panex, Model 1100 digital tool and surface readout (SRO) unit. Note: WDW-110 had been operating at an average injection rate of 207 gpm since January 17, 1997. Also, fluid samples were caught at prescribed intervals to measure viscosity and specific gravity at bottom hole conditions. A lubricator was installed on top the wellhead and the tool ran slowly into the well to a maximum depth of 3300'. NOTE: All depths are referenced to kelly bushing (KB) at 17' above ground level. The tool was allowed to thermally stabilize.

WDW-110 was shut-in at 1400 hours following 92 hour injection period. GCWA's BHP tools monitored the falloff pressure using the SRO recorder.

Wednesday, January 22, 1997

The SRO continued to measure BHP readings until 1930 hours. GCWA downloaded the BHP data. Mr. Smith contacted Mr. Tom Jones (ECO) in Houston and conveyed the results of the BHP data. It was mutually agreed to continue monitoring falloff pressures until 0400 hours on January 23, 1997 for a total falloff period of 38 hours.

Thursday, January 23, 1997

At 0400 hours stopped monitoring BHP/falloff data. Commenced pulling BHP tool out of the borehole to obtain pressure gradient readings at depths of 3,000', 2,000', 1,000', 500' and at the surface. Removed the BHP tool from the well. Conducted APT and RAT survey. Rigged down wireline unit and moved off the location.

2.2 MECHANICAL INTEGRITY TESTING

Thursday, January 23, 1996

At 0730 hours HCCG's personnel commenced preparing to conduct the annulus pressure test (APT). Using nitrogen gas, the annulus was pressured up from 200 to 1105 psig at 0900 hours. The APT was monitored for one hour. Using the HCCG digital pressure gauge and during the final 30 minutes, the pressure loss was measured from 1097 to 1094.5 psig, or 2.5 psi (0.23%). Also, at 0900 hours lowered the RAT tool into WDW-110 and tagged bottom at 3545'. Ran base line gamma ray (GR) log, a short GR repeat section to confirm tool repeatability and two statistical checks at 3310' and 3356'. Ran first multi-pass survey from 2900' to 3460' depicting that all injected fluid was entering the perforated interval . Repeated the multipass survey. Set the RAT tool at 3356' for the first stationary survey, ejected a radioactive (RA) slug and with the GR detectors monitored for 20 minutes with no indicated upward flow. Repeated an identical stationary survey with the same successful results. Ran the after-survey base GR log from 3545' to 2900'. The lower section of the injection interval reflected high GR readings due to a large quantity of RA material remaining from the two stationary surveys. Ran BHP tool to bottom of borehole and dumped the RA material. Pulled the RAT tool out of the hole, rigged down and moved off the location. At 1500 hours returned WDW-110 to HCCG for standby service. Mr. Smith returned to Houston.

3.0 MECHANICAL INTEGRITY TESTING

3.1 ANNULUS PRESSURE TEST

An APT was conducted on Thursday, January 23, 1997 to demonstrate internal mechanical integrity. The APT was witnessed by Mr. Willy Cupples of HCCG, Mr. Ken Hood of GCWA and Mr. Wesley Smith of ECO. The annulus was pressurized to a maximum pressure of 1105 psig. The APT was monitored for sixty (60) minutes using (1) HCCG's certified calibrated pressure gauge and (2) pressure recorder as well as (3) GCWA Panex digital tool and recorder. All calibration certificates for each instrument are included in Appendix C. During the final 30 minutes the pressure loss (HCCG's pressure gauge) was measured from 1097.0 to 1094.5 psig, or 2.5 psi (0.25%), which was well within the 5% pressure loss criteria set by the TNRCC. The APT data and a plot is included in Appendix B.

3.2 RADIOACTIVE TRACER SURVEY

On Thursday, January 23, 1997 a RAT survey was conducted by GCWA to insure that all fluids are entering the injection interval. Analysis of the RAT showed no upward fluid movement. GCWA and ECO personnel conducted the RAT as follows:

1. Ran GR tie-in strip log.
2. Ran initial baseline GR log from 3545' to 2900'.
3. Ran repeat gamma-ray log from 3200' to 2900' to confirm tool repeatability.
4. Ran 5-minute statistical checks at 3310' and 3356'.
5. Made multiple pass survey #1 with a RA slug ejected at 2900' and a pump rate of 50 gpm.
6. Made multiple pass survey #2 with a RA slug ejected at 2900' and a pump rate of 50 gpm.
7. Ran stationary survey #1 at 3356'. Watched RA slug pass tool and monitored for 20 minutes. Pump rate at 200 gpm.
8. Ran stationary survey #2 at 3356'. Watched RA slug pass tool and monitored for 20 minutes. Pump rate at 200 gpm.
9. Ran after-survey base GR log from 3545' to 2900'.

Summary

The results of the radioactive tracer survey conducted on January 23, 1997 were analyzed by ECO and by GCWA personnel. No anomalies were detected on any of the logging runs which would indicate a loss of mechanical integrity. Each part of the log is discussed in detail below.

Profile Survey

Two (2) separate profile runs were made across the packer and perforated interval within WDW-110 (Well # 1-A). Profile run No. 1 and 2 included six and seven separate overlapping passes, respectively, extending from 2900 ± ft. to 3470 ± ft while pumping at 50 gpm. On the profile runs made below the packer, all tracer material moves downward and into the perforations.

Time Drive Survey

Two (2) time drives, or stationary checks, were made on WDW-110 (Well # 1-A). This type of survey is the best indicator to determine whether or not upward fluid movement exists in the well. The flow rate for the time drive portion of the testing was 200 gpm. The two 20 minute checks were each made at 3356', or 20' above the top perforation. No upward movement was observed on any of the time drive surveys. On the first stationary check, a slight increase in radioactivity by one of the two detectors was depicted. The radioactive anomaly was not reflected on the second detector, nor on either of the two detectors during the second stationary check. ECO believes that a small quantity of "131 isotope" was lost from the ejector tool while injecting fresh water into the well at a rate of 200 gpm. The results of the time drive surveys indicate that WDW-110 (Well # 1-A) has mechanical integrity at this time.

Before and After Baseline Gamma Ray Logs

A comparison of the before and after GR logs show residual tracer material in the "after baseline GR log" at the base of the perforated interval resulting from the high volume of RA material ejected during the stationary checks. There was no indication of upward fluid movement.

4.0 BOTTOM HOLE PRESSURE/FALLOFF TEST

4.1 BOTTOM HOLE PRESSURE/FALLOFF ANALYSIS

Purpose Of Test: Required annual Reservoir Evaluation Test for year **1997.** Calculate the following reservoir characteristics: permeability, skin damage, pressure drop due to skin and flow efficiency.

Analysis Description - Fall-Off Test

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 92 hours. The semi-log straight line was calculated by linear regression through the infinite acting flow period of the curve. The slope **m**, $\mathbf{P_{1hr}}$, and $\mathbf{P^*}$ 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.

Semi-Log: 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 **5.878 psi/cycle (Horner)** and a P_{1hr} of **1513 psi**. The pressure difference between P_{1hr} and the injection pressure, P_{inj} of **1895** psi compared with the calculated slope would give indications of positive skin damage and relatively high permeability. The beginning of radial flow was observed approximately 4.175 hours into the fall-off test and ended after 18.625 hours.

Conclusions: This particular well was diagnosed to be injecting into a homogeneous reservoir with a calculated permeability of **850 (md)** and skin damage of **+68** utilizing an h_{net} value of **165** feet. 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 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
01/97	**206**	**165**	**0.7100**	**5.878**	**197535**	**140229**	**850**	**+68**
01/96	**215**	**165**	**0.7100**	**5.5**	**217708**	**154573**	**937**	**+57**
01/95	**192**	**165**	**0.7100**	**4.299**	**249010**	**176797**	**1071**	**+ 40**
02/94	**279**	**165**	**0.5914**	**5.308**	**292995**	**173277**	**1050**	**+ 43**
03/93	**200**	**165**	**0.5560**	**3.200**	**348621**	**193833**	**1175**	**+ 29**

The calculated results indicate a difference in transmissibility, (kh/μ) of **-9.3%** coupled with a **+19.3%** difference in skin values between 1996 and 1997. In addition, the results calculated from superposition and pressure history simulation analysis provide results consistent with the log-log analysis thus supporting the integrity of the calculated results.

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.

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 Trans - II.

Table 4.2
Well Information

Well Type: INJECTION
Perforations: 3376' - 3426' & 3460' - 3471'
Perforations: 3494' - 3524' & 3543' - 3572'
Gauge Depth ..... 3300 feet

[Input Parameters]

Reservoir Pressure	psia	P	1499
Reservoir Temperature	Deg F	T	105
Final Static Pressure	psia	P_{si}	1499
Final Injection Pressure	psia	Pinj	1895
Water Flow Rate	gal/min	qw	207
Sand Thickness	feet	h_{net}	165
Perforated Thickness	feet	h_{perf}	120
Wellbore Radius	feet	r_w	0.3000
Formation Porosity	%	ϕ	33.0
Extrapolated Press @ 1hr	psia	P_{1hr}	1513
Semi-Log Slope	psi/cycle	M	5.878
Production Time	hrs	t_p	92
Shut-in Time	hrs	t_{si}	38

[Fluid Properties]

Fluid Viscosity	cp	μw	7.1000E-01
Formation Volume Factor	RB/STB	βw	1.0058E+00
Fluid Compressibility	1/psi	Cw	3.0345E-06
Total Compressibility	1/psi	Ct	6.0000E-06

Company: HOECHST CELANESE CHEMICAL CO.
Well: WDW 110, Well #1-A
Field: Bay City Facility, TX. Test Date: 01/23/1997

Table 4.3
Calculated Results

[Log-Log Analysis]

Transmissibility	md-ft/cp	kh/u	197535
Flow Capacity	md-ft	kh	140250
Permeability	md	k	850
Skin Damage	total	S	+68
Pressure Drop due to Skin	psi	dP	+402
Drainage Radius	feet	r_d	4895

[Superposition Analysis]

Transmissibility	md-ft/cp	kh/u	197505
Flow Capacity	md-ft	kh	140229
Permeability	md	k	849.87
Skin Damage	total	S	+68.27
Drainage Radius	feet	r_d	4894

4.2 STATIC GRADIENT SURVEY

A static Gradient Survey was run while pulling out of the hole immediately after the end of the BHP/falloff survey. Stops were made at 3300', 3000', 2000', 1000', and 500'. Data collected during the static gradient survey is included in Appendix G and presented graphically in Figure 7. Data collected at each gradient stop were as follows:

Table 4.4
Static Gradient Survey Results

Depth (ft)	Pressure	PSI/ft
0	77.95	
500	301.23	0.449
1000	515.47	0.428
2000	943.07	0.428
3000	1370.59	0.427
3300	1498.97	0.428

APPENDIX A

ANNULUS PRESSURE TEST DATA AND PLOTS

SOLUTIONS, INC.

ANNULUS PRESSURE TEST DATA
HOECHST CELANESE CHEMICAL GROUP, LTD.
Bay City Plant
Waste Disposal Well No. 110 (Well No. 1-A)

January 23, 1997

Time (am)	Tubing Pressure (psig)	Casing Pressure (psig)	Remarks
9:00	200	74	SI 43 hours
9:05	210	74	Start pressurizing w/N_2 gas
9:08	550	74	
9:10	760	74	
9:13	1100	74	Shut off N_2 gas
9:15	1101.5	74	Start APT
9:20	1099.0	74	
9:25	1098.0	74	
9:30	1097.0	74	
9:35	1097.0	74	
9:40	1097.5	74	
9:45	1097.0	74	
9:50	1096.5	74	
9:55	1096.0	74	
10:00	1095.5	74	
10:05	1095.0	74	
10:10	1094.5	74	
10:15	1094.5	74	Stop APT
10:20	500	74	Bleeding off excess pressure
10:25	200	74	Resume shut-in status

NOTE:

Pressure was measured using HCCG's certified calibrated pressure instrument, a portable digital Eaton Pressure Sensor, Type UPC5000BACB, Serial No. A1258, with optional ranges, 0 to 400 psig, 0 to 1,000 psig and 0 to 2,000 psig and was installed onto the annulus outlet. Note: The 0- 2,000 psig range was utilized for this test. A certificate of calibration (See Appendix C) shows that the pressure sensor was calibrated on December 4, 1996.

HCCG's facility digital transmitter pressure recorder, Honeywell Instruments Corp., Smart Honeywell Model ST 3000, normally has a pressure range from zero to 1,000 psig. However, for the APT, the range was modified by Mr. Wilson Cupples to a range of zero to 1,200 psig. A copy of the computer run (Included in Appendix B) shows that the annulus transmitter and recorder were calibrated as an "End to End" unit. The same calibration standard was used on both the Eaton Pressure Sensor and the facility digital transmitter pressure recorder.

Also, GCWA's digital pressure unit was tied into the annulus and recorded the APT and the data is included in this section. A calibration chart on this tool is included in Appendix c and was calibrated on September 23, 1996.

Company: HOECHST CELANESE CO.
Well: WASTE DISPOSAL WELL # 110 [Thursday: Jan. 23, 1997]
Field: BAY CITY FACILITY

REC #	DAY	REAL TIME	DT (HRS)	ANNULAR (PSIA)	DELTA (PSI)
		START ANNULAR PRESSURE TEST			
		PANEX MODEL 1100 SERIAL 2-1207			
		CALIBRATED 09-23-1996			
1	0	9:10:30	0.0000	1111.97	0.00
2	0	9:11: 0	0.0083	1112.19	0.22
3	0	9:11:30	0.0167	1112.26	0.29
4	0	9:12: 0	0.0250	1112.22	0.25
5	0	9:12:30	0.0333	1112.03	0.06
6	0	9:13: 0	0.0417	1111.93	-0.04
7	0	9:13:30	0.0500	1111.77	-0.20
8	0	9:14: 0	0.0583	1111.71	-0.26
9	0	9:14:30	0.0667	1111.75	-0.22
10	0	9:15: 0	0.0750	1111.77	-0.20
11	0	9:15:30	0.0833	1111.75	-0.22
12	0	9:16: 0	0.0917	1111.73	-0.24
13	0	9:16:30	0.1000	1111.69	-0.28
14	0	9:17: 0	0.1083	1111.62	-0.35
15	0	9:17:30	0.1167	1111.47	-0.50
16	0	9:18: 0	0.1250	1111.27	-0.70
17	0	9:18:30	0.1333	1111.06	-0.91
18	0	9:19: 0	0.1417	1111.05	-0.92
19	0	9:19:30	0.1500	1111.06	-0.91
20	0	9:20: 0	0.1583	1110.95	-1.02
21	0	9:20:30	0.1667	1110.79	-1.18
22	0	9:21: 0	0.1750	1110.59	-1.38
23	0	9:21:30	0.1833	1110.42	-1.55
24	0	9:22: 0	0.1917	1110.38	-1.59
25	0	9:22:30	0.2000	1110.35	-1.62
26	0	9:23: 0	0.2083	1110.30	-1.67
27	0	9:23:30	0.2167	1110.25	-1.72
28	0	9:24: 0	0.2250	1110.20	-1.77
29	0	9:24:30	0.2333	1110.17	-1.80
30	0	9:25: 0	0.2417	1110.14	-1.83
31	0	9:25:30	0.2500	1110.14	-1.83
32	0	9:26: 0	0.2583	1110.17	-1.80
33	0	9:26:30	0.2667	1110.14	-1.83
34	0	9:27: 0	0.2750	1110.08	-1.89
35	0	9:27:30	0.2833	1110.04	-1.93
36	0	9:28: 0	0.2917	1110.04	-1.93
37	0	9:28:30	0.3000	1110.05	-1.92
38	0	9:29: 0	0.3083	1110.06	-1.91
39	0	9:29:30	0.3167	1110.06	-1.91
40	0	9:30: 0	0.3250	1110.03	-1.94
41	0	9:30:30	0.3333	1109.96	-2.01
42	0	9:31: 0	0.3417	1109.89	-2.08
43	0	9:31:30	0.3500	1109.91	-2.06
44	0	9:32: 0	0.3583	1109.89	-2.08
45	0	9:32:30	0.3667	1109.86	-2.11
46	0	9:33: 0	0.3750	1109.78	-2.19
47	0	9:33:30	0.3833	1109.72	-2.25

Company: HOECHST CELANESE CO.
Well: WASTE DISPOSAL WELL # 110 [Thursday: Jan. 23, 1997]
Field: BAY CITY FACILITY

REC #	DAY	REAL TIME	DT (HRS)	ANNULAR (PSIA)	DELTA (PSI)
48	0	9:34: 0	0.3917	1109.68	-2.29
49	0	9:34:30	0.4000	1109.57	-2.40
50	0	9:35: 0	0.4083	1109.61	-2.36
51	0	9:35:30	0.4167	1109.64	-2.33
52	0	9:36: 0	0.4250	1109.59	-2.38
53	0	9:36:30	0.4333	1109.45	-2.52
54	0	9:37: 0	0.4417	1109.28	-2.69
55	0	9:37:30	0.4500	1109.19	-2.78
56	0	9:38: 0	0.4583	1108.84	-3.13
57	0	9:38:30	0.4667	1108.71	-3.26
58	0	9:39: 0	0.4750	1108.69	-3.28
59	0	9:39:30	0.4833	1108.69	-3.28
60	0	9:40: 0	0.4917	1108.71	-3.26
61	0	9:40:30	0.5000	1108.71	-3.26
62	0	9:41: 0	0.5083	1108.72	-3.25
63	0	9:41:30	0.5167	1108.64	-3.33
64	0	9:42: 0	0.5250	1108.61	-3.36
65	0	9:42:30	0.5333	1108.57	-3.40
66	0	9:43: 0	0.5417	1108.58	-3.39
67	0	9:43:30	0.5500	1108.55	-3.42
68	0	9:44: 0	0.5583	1108.47	-3.50
69	0	9:44:30	0.5667	1108.45	-3.52
70	0	9:45: 0	0.5750	1108.43	-3.54
71	0	9:45:30	0.5833	1108.40	-3.57
72	0	9:46: 0	0.5917	1108.36	-3.61
73	0	9:46:30	0.6000	1108.27	-3.70
74	0	9:47: 0	0.6083	1108.19	-3.78
75	0	9:47:30	0.6167	1108.16	-3.81
76	0	9:48: 0	0.6250	1108.15	-3.82
77	0	9:48:30	0.6333	1108.14	-3.83
78	0	9:49: 0	0.6417	1108.19	-3.78
79	0	9:49:30	0.6500	1108.23	-3.74
80	0	9:50: 0	0.6583	1108.21	-3.76
81	0	9:50:30	0.6667	1108.16	-3.81
82	0	9:51: 0	0.6750	1108.15	-3.82
83	0	9:51:30	0.6833	1108.17	-3.80
84	0	9:52: 0	0.6917	1108.14	-3.83
85	0	9:52:30	0.7000	1108.09	-3.88
86	0	9:53: 0	0.7083	1108.06	-3.91
87	0	9:53:30	0.7167	1108.02	-3.95
88	0	9:54: 0	0.7250	1108.02	-3.95
89	0	9:54:30	0.7333	1107.99	-3.98
90	0	9:55: 0	0.7417	1107.98	-3.99
91	0	9:55:30	0.7500	1108.00	-3.97
92	0	9:56: 0	0.7583	1107.99	-3.98
93	0	9:56:30	0.7667	1107.93	-4.04
94	0	9:57: 0	0.7750	1107.89	-4.08
95	0	9:57:30	0.7833	1107.84	-4.13
96	0	9:58: 0	0.7917	1107.81	-4.16
97	0	9:58:30	0.8000	1107.80	-4.17

Company: HOECHST CELANESE CO.
Well: WASTE DISPOSAL WELL # 110 [Thursday: Jan. 23, 1997]
Field: BAY CITY FACILITY

REC #	DAY	REAL TIME	DT (HRS)	ANNULAR (PSIA)	DELTA (PSI)
98	0	9:59: 0	0.8083	1107.76	-4.21
99	0	9:59:30	0.8167	1107.67	-4.30
100	0	10: 0: 0	0.8250	1107.61	-4.36
101	0	10: 0:30	0.8333	1107.61	-4.36
102	0	10: 1: 0	0.8417	1107.60	-4.37
103	0	10: 1:30	0.8500	1107.53	-4.44
104	0	10: 2: 0	0.8583	1107.50	-4.47
105	0	10: 2:30	0.8667	1107.45	-4.52
106	0	10: 3: 0	0.8750	1107.43	-4.54
107	0	10: 3:30	0.8833	1107.39	-4.58
108	0	10: 4: 0	0.8917	1107.31	-4.66
109	0	10: 4:30	0.9000	1107.16	-4.81
110	0	10: 5: 0	0.9083	1107.03	-4.94
111	0	10: 5:30	0.9167	1106.95	-5.02
112	0	10: 6: 0	0.9250	1106.85	-5.12
113	0	10: 6:30	0.9333	1106.82	-5.15
114	0	10: 7: 0	0.9417	1106.81	-5.16
115	0	10: 7:30	0.9500	1106.84	-5.13
116	0	10: 8: 0	0.9583	1106.88	-5.09
117	0	10: 8:30	0.9667	1106.89	-5.08
118	0	10: 9: 0	0.9750	1106.91	-5.06
119	0	10: 9:30	0.9833	1106.89	-5.08
120	0	10:10: 0	0.9917	1106.89	-5.08
121	0	10:10:30	1.0000	1106.88	-5.09

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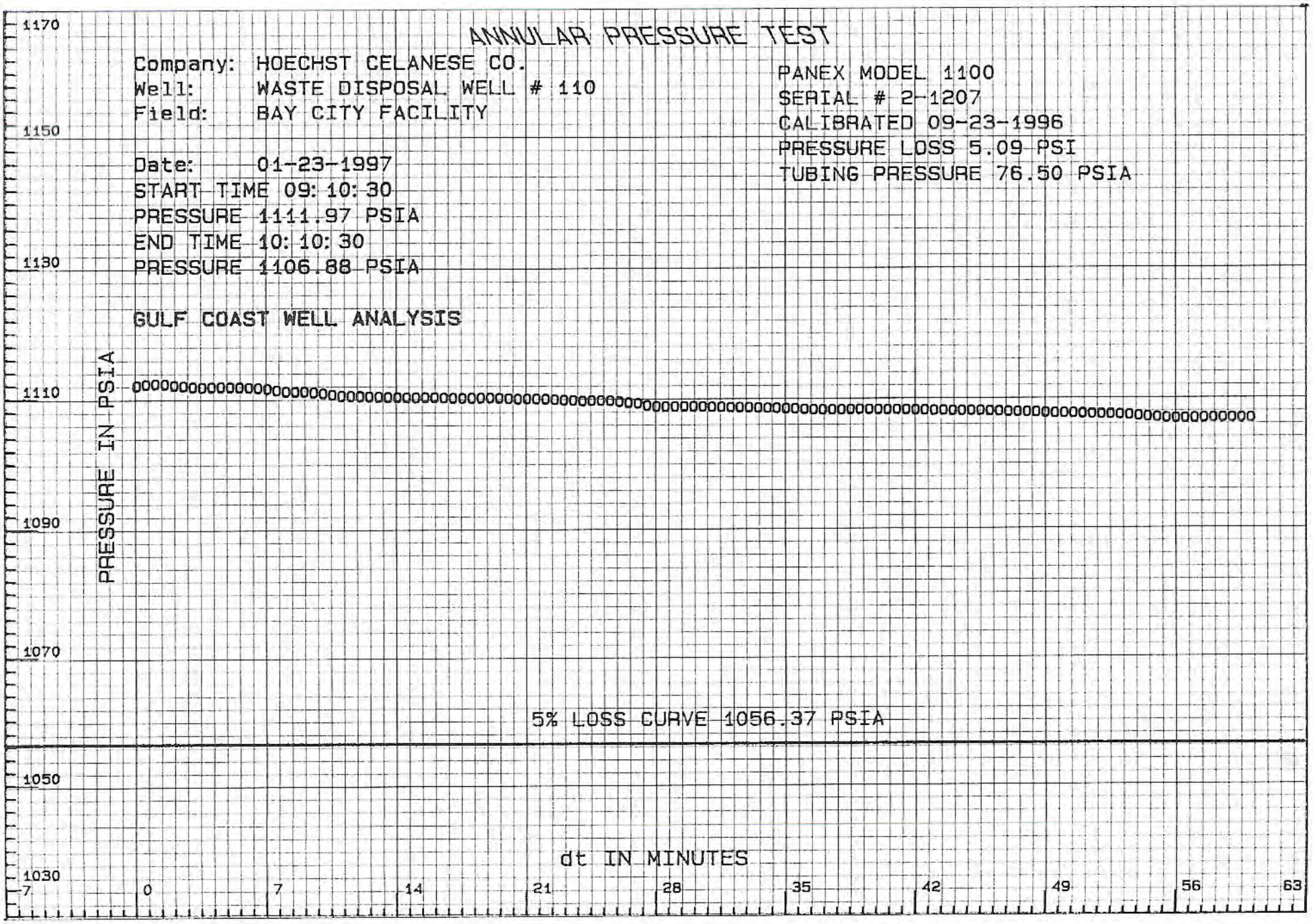
ANNULAR PRESSURE TEST

Company: HOECHST CELANESE CO.
Well: WASTE DISPOSAL WELL # 110
Field: BAY CITY FACILITY

PANEX MODEL 1100
SERIAL # 2-1207
CALIBRATED 09-23-1996
PRESSURE LOSS 5.09 PSI
TUBING PRESSURE 76.50 PSIA

Date: 01-23-1997
START TIME 09:10:30
PRESSURE 1111.97 PSIA
END TIME 10:10:30
PRESSURE 1106.88 PSIA

GULF COAST WELL ANALYSIS



GULF
COAST
WELL
ANALYSIS

COASTAL WIRELINE SERVICES, INC.

Hoechst Celanese
Waste Disposal Well # 110
Bay City Facility
Bay City, Texas
January 23, 1997

ANNULAR PRESSURE TEST

This test included the hook up of a Panex Model 1100 electronic pressure transducer # 2-1207 calibrated September 23, 1996 on the tubing casing side of the well. The test began by pressuring up the annulus with brine to 1112 psia, then blocked in the annular injection lines. Started annular pressure test at 09:10:30 with an annular pressure of 1111.97 psia and tubing pressure of 76.50 psia. Recorded annular pressure test on computer system for sixty minutes at 30 second intervals. Ended annular pressure test at 10:10:30 with an annular pressure of 1106.88 psia and tubing pressure of 76.50 psia. Annular pressure had a loss of 5.09 psi which is .46%. This test serves to prove the integrity of the casing and tubing above the packer as well as the packer and tubing sealing elements. This test was conducted by Ken Rood (Gulf Coast Well Analysis) and witnessed by Mr. Wes Smith (ECO Solutions) and Mr. Chuck Greene (T.N.R.C.C.).

Sincerely

Stoney Johnson
Engineer G.C.W.A.

3909 Halik Road - Pearland, Texas 77581 - Office 281-485-6548 Fax 281-485-1954

APPENDIX B

RADIOACTIVE TRACER LOG AND GCWA'S INTERPRETATION LETTER

SOLUTIONS, INC.

GULF
COAST
WELL
ANALYSIS

COASTAL WIRELINE SERVICES, INC.

Hoechst Celanese
Waste Disposal Well # 110
Bay City Facility
Bay City, Texas
January 23, 1997

RADIOACTIVE TRACER SURVEY

The two phases of this test included; 1) Determining the flow through and from the tubing by ejecting a slug of radioactive material (Iodine-131 10mci) and monitoring the flow profile as it moves down the tubing and into the formation. 2) Testing the mechanical integrity of the casing, cement, and formation bond by positioning gamma-ray detector slightly above the point where the formation accepts fluid and monitoring the gamma radiation response from an ejected slug of radioactive material. A baseline gamma-ray log was ran from 3,545 feet to 2,900 feet (420 feet above top of packer assembly). The injection rate was 50 gpm for the profile runs and 200 gpm for the time drive surveys.

The first phase of this test incorporates the injection of radioactive slug at 2,900 feet (420 feet above top of packer assembly) and passing the detector through the radioactive material until it passes from the tubing and into the formation. The first slug gave an indication of leaving the packer at 3,320 feet and going into the formation from 3,376 feet to 3,524 feet. Made seven (7) passes and chased slug down to 3,429 feet. This portion of this test was repeated with six (6) passes and slug chased down to 3,420 feet. Profile survey indicates that all fluid is going into injection interval at this time. No indication of any fluid migrating up hole behind pipe above 3,376 feet.

The second phase of this test involved setting lower detector at 3,356 feet (20 feet above top of perfs.) and ejecting a slug of radioactive material at 3,351 feet and recorded on time drive for twenty two (22) minutes with an injection rate of 200 gpm. This portion of this test was repeated at same depth and rate. Time drive survey indicates no fluid migrating up hole behind pipe at this time.

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RADIOACTIVE TRACER SURVEY CONTINUE

A Base after survey gamma ray log was ran from 3,545 feet to 2,900 feet and compared to original base gamma ray log which indicated no residue of radioactive material above 3,376 feet in formation, casing, tubing, or packer.

Radioactive Tracer Survey was conducted by Dannie Koonce (Gulf Coast Well Analysis) and witnessed by Mr. Wes Smith (ECO Solution) and Mr. Chuck Greene (T.N.R.C.C.).

Sincerely

Stoney Johnson
Engineer G.C.W.A.

Gulf Coast Well Analysis

3909 Halik Road - Pearland, Texas 77581 - Office 281-485-6548 Telecopier 281-485-1954

Hoechst Celanese Chemical Group, Ltd.
Radioactive Tracer Survey
WDW-110
(January 23, 1997)

TRACER #1

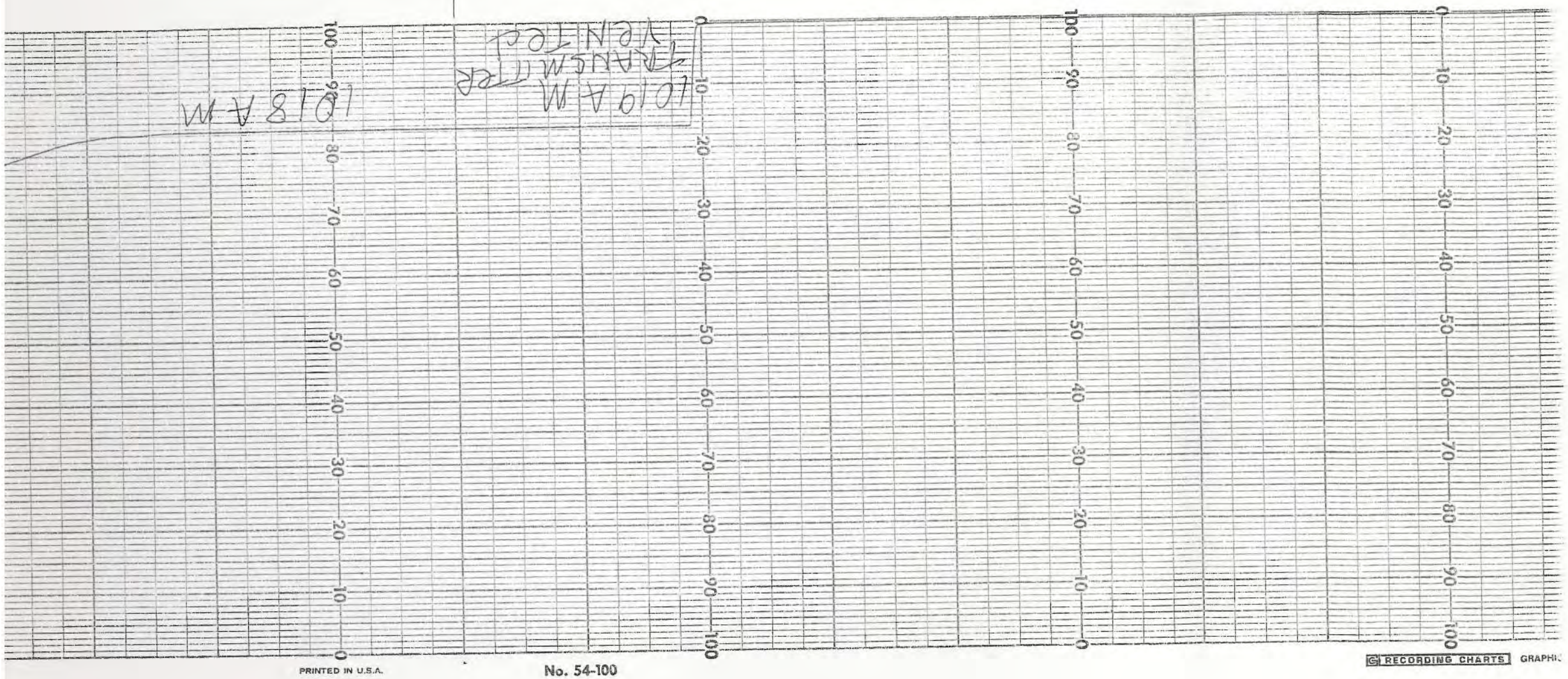
No.	Depth		Time		Slug		Remarks
Pass	Start	Stop	Start	Stop	Depth	Time	
	2900		11:52:00				3 seconds
1	3000	2900	11:52:15	11:54:20	2971	11:53:25	50 gpm rate
2	3200	2920	11:55:55	11:59:20	3163	11;56:35	
3	3460	3100	12:02:15	12:07:15	3400	12:03:10	
4	3470	3340	12:10:00	12:12:05	3419	12:11:00	Injection press - 220 psig
5	3460	3370	12:14:00	12:16:05	3422	12:15:08	
6	3460	3370	12:18:40	12:20:35	3425	12:14:48	
7	3460	3370	12:24:00	12:26:00	3429	12:24:55	Stop tracer survey

TRACER #2

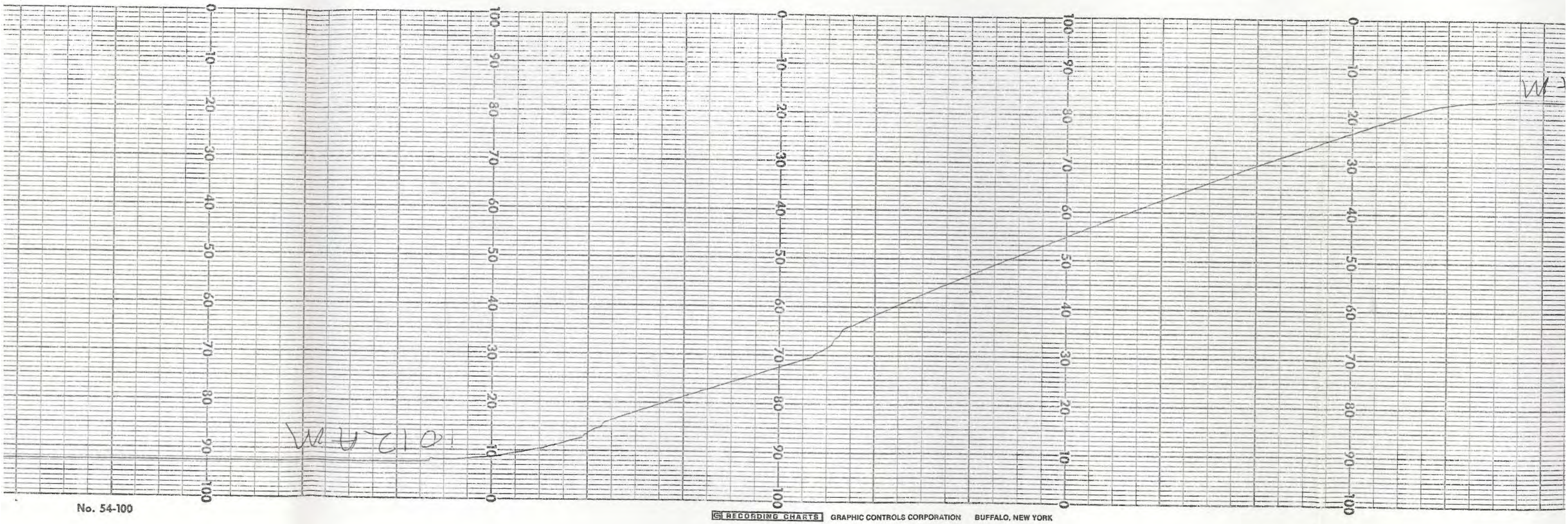
	2900		12:29:20				4 second slug
1	3040	2900	12:30:05	12:31:25	2974	12:30:50	
2	3300	2920	12:33:00	12:36:22	3150	12:33:50	
3	3470	3070	12:38:52	12:44:12	3391	12:40:05	Injection press - 230 psig
4	3470	3340	12:48:42	12:51:25	3415	12:50:00	
5	3470	3370	12:54:15	12:55:52	3416	12:55:20	
6	3470	3370	12:57:25	12:59:25	3420	12:58:35	Stop tracer survey

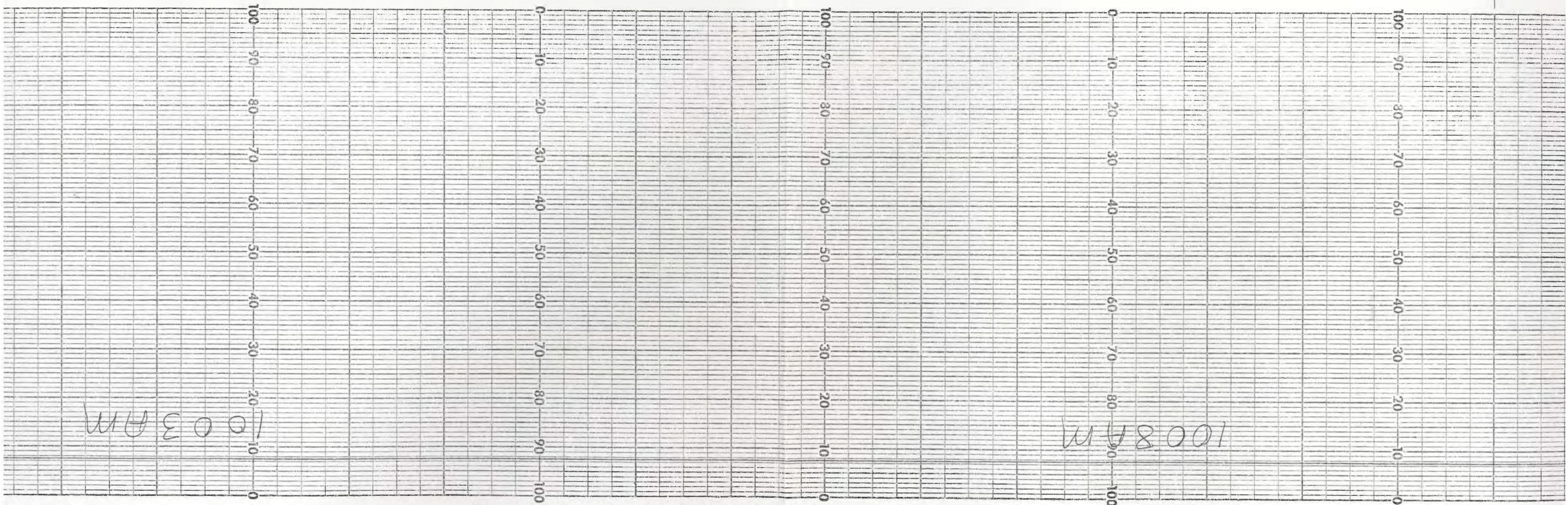
Stationary Survey @3356' (two minute statistical check & 4 second slug with injection rate at 200 gpm. Start stationary survey at 1:04:25 PM and end at 1:24:25 PM - OK. Repeated stationary survey for 20 minutes, i.e 1:25:20 PM to 1:45:20 PM - OK.

SOLUTIONS, INC.



PRINTED IN U.S.A.
No. 54-100
G RECORDING CHARTS GRAPHIC


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
No. 54-100
RECORDING CHARTS GRAPHIC CONTROLS CORPORATION BUFFALO, NEW YORK



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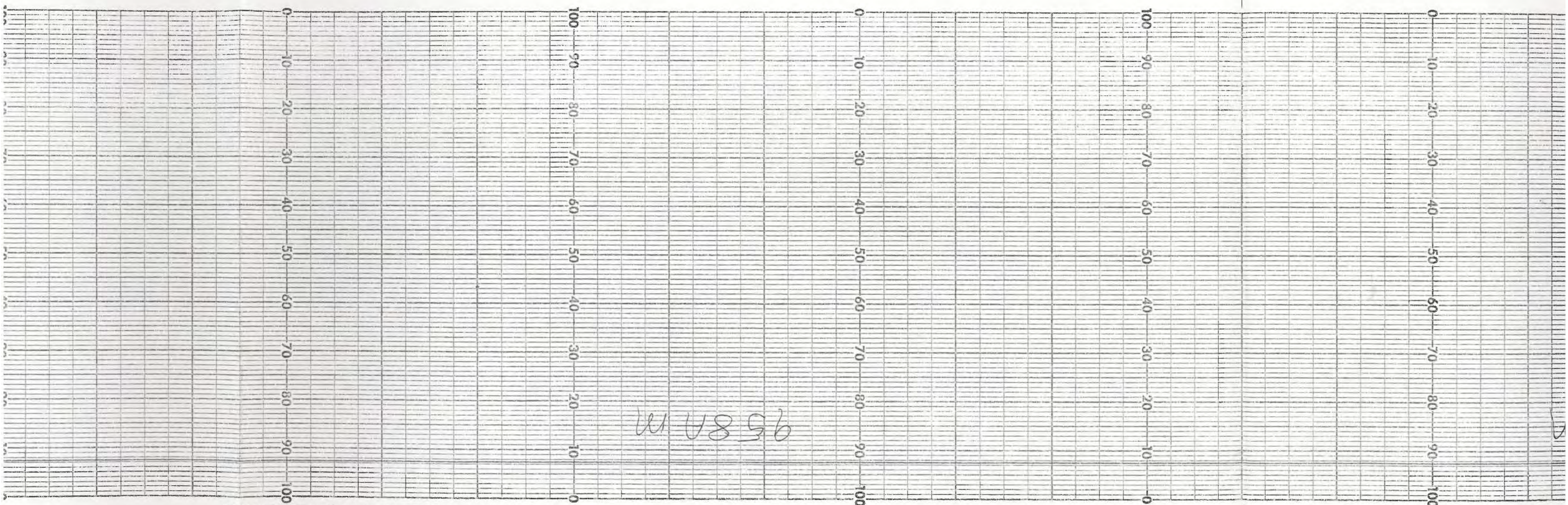
PRINTED IN U.S.A.



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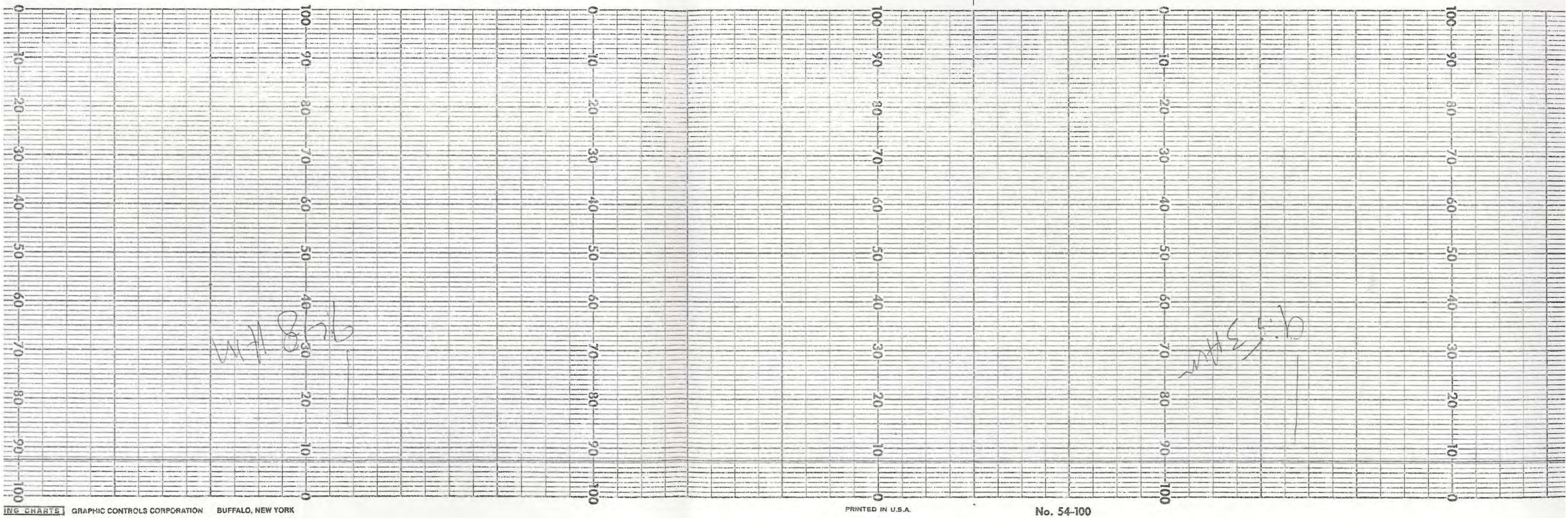
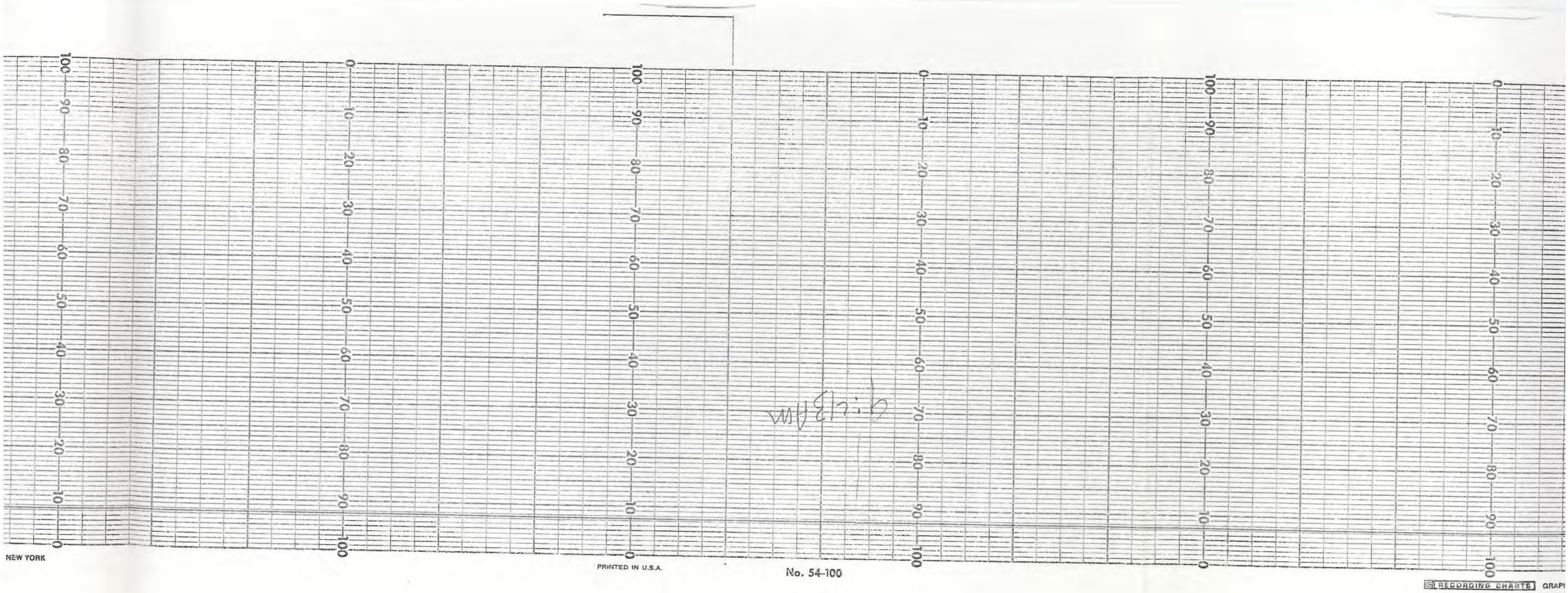
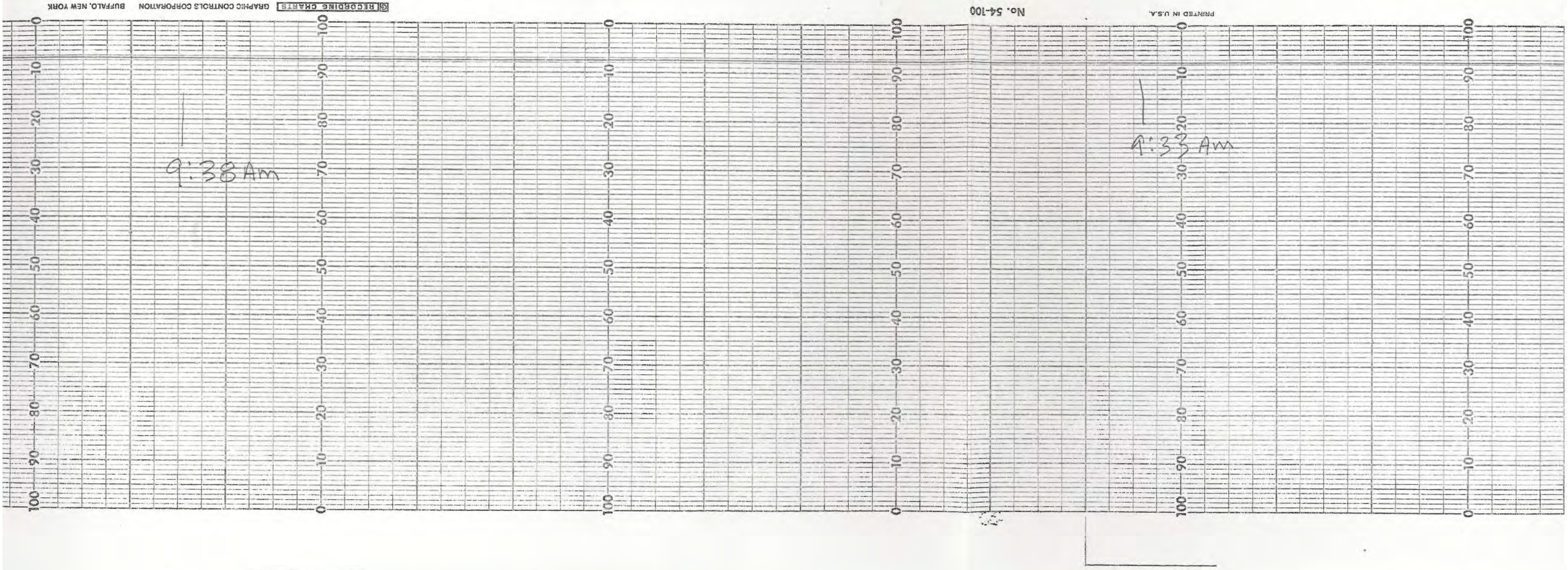


ING CHARTS GRAPHIC CONTROLS CORPORATION BUFFALO, NEW YORK PRINTED IN U.S.A. No. 54-100


NEW YORK
PRINTED IN U.S.A.
No. 54-100
RECORDING CHARTS
GRAPH



PRINTED IN U.S.A. No. 54-100
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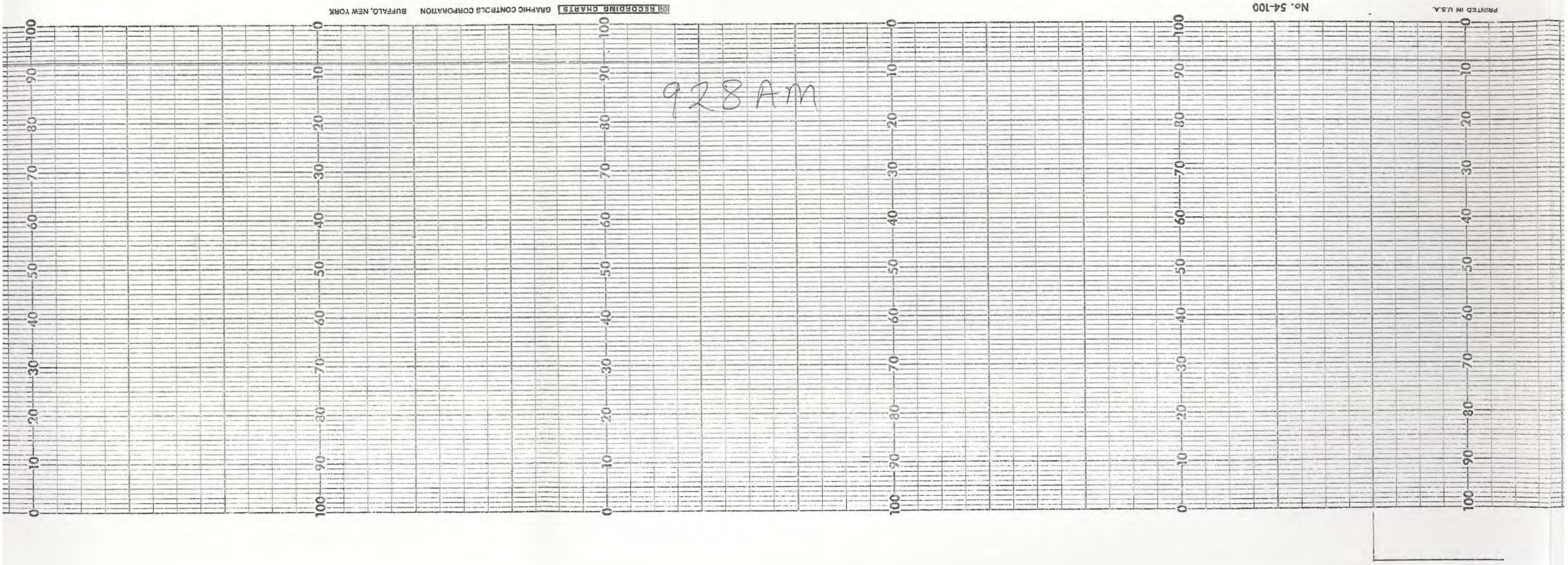
928AM
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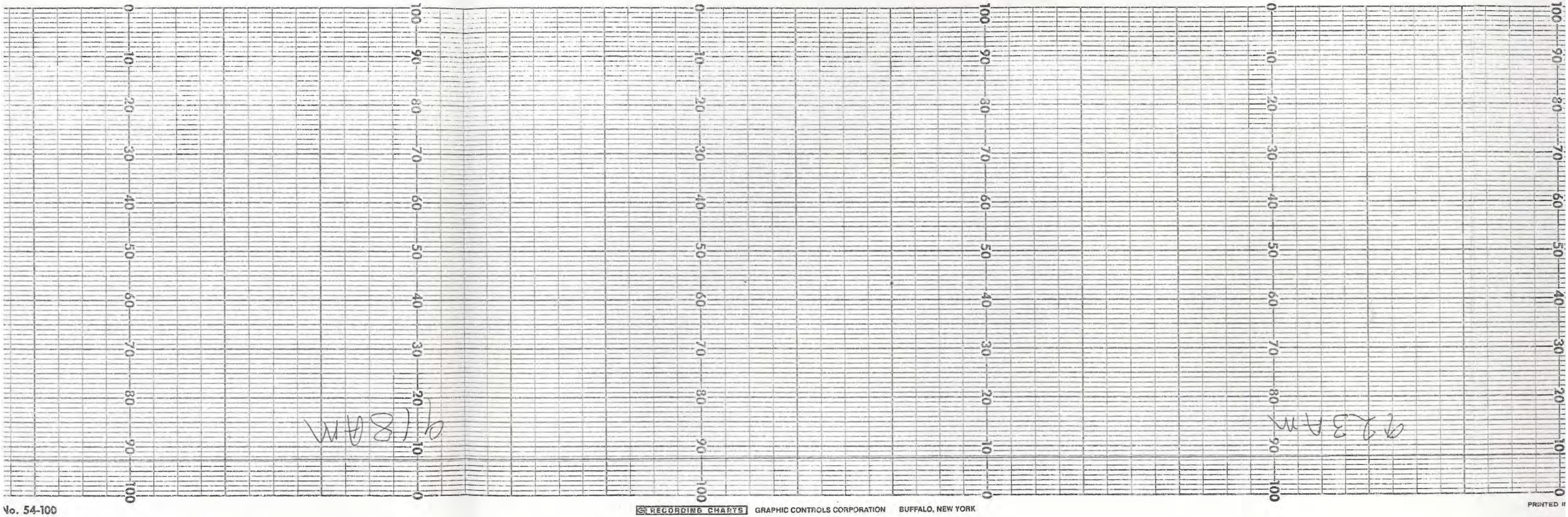
No. 54-100
PRINTED IN U.S.A.



No. 54-100

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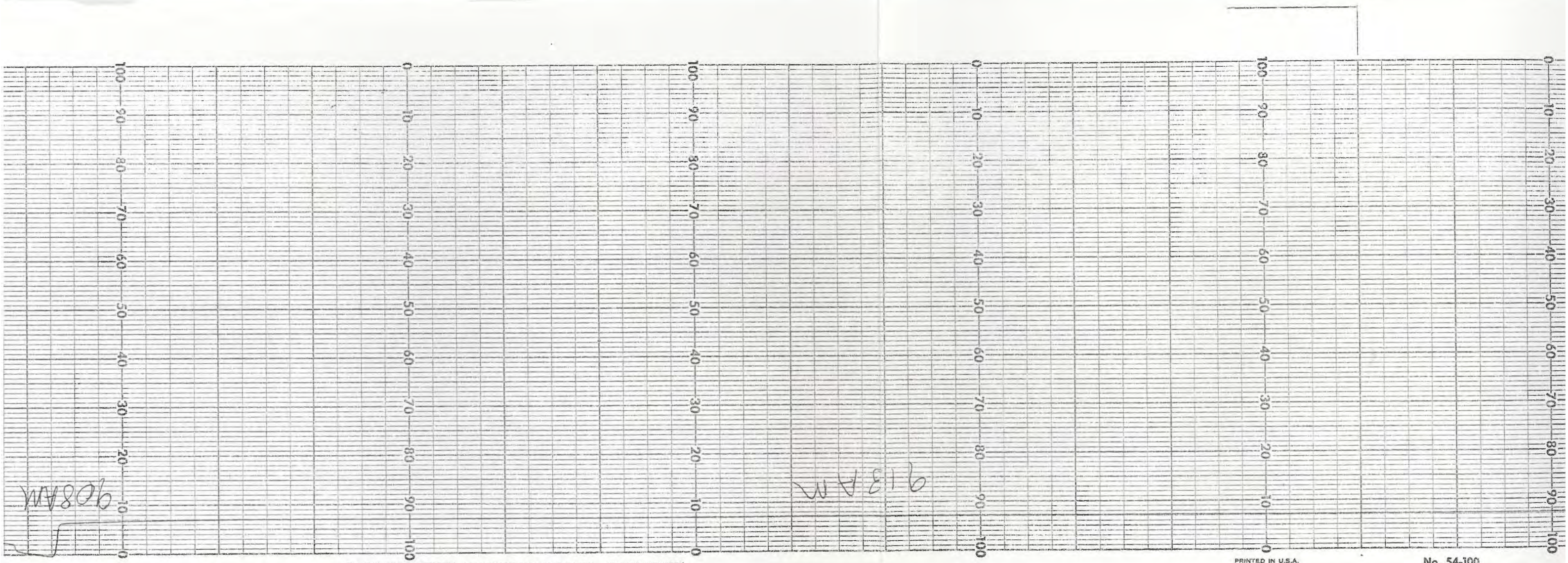
PRINTED IN



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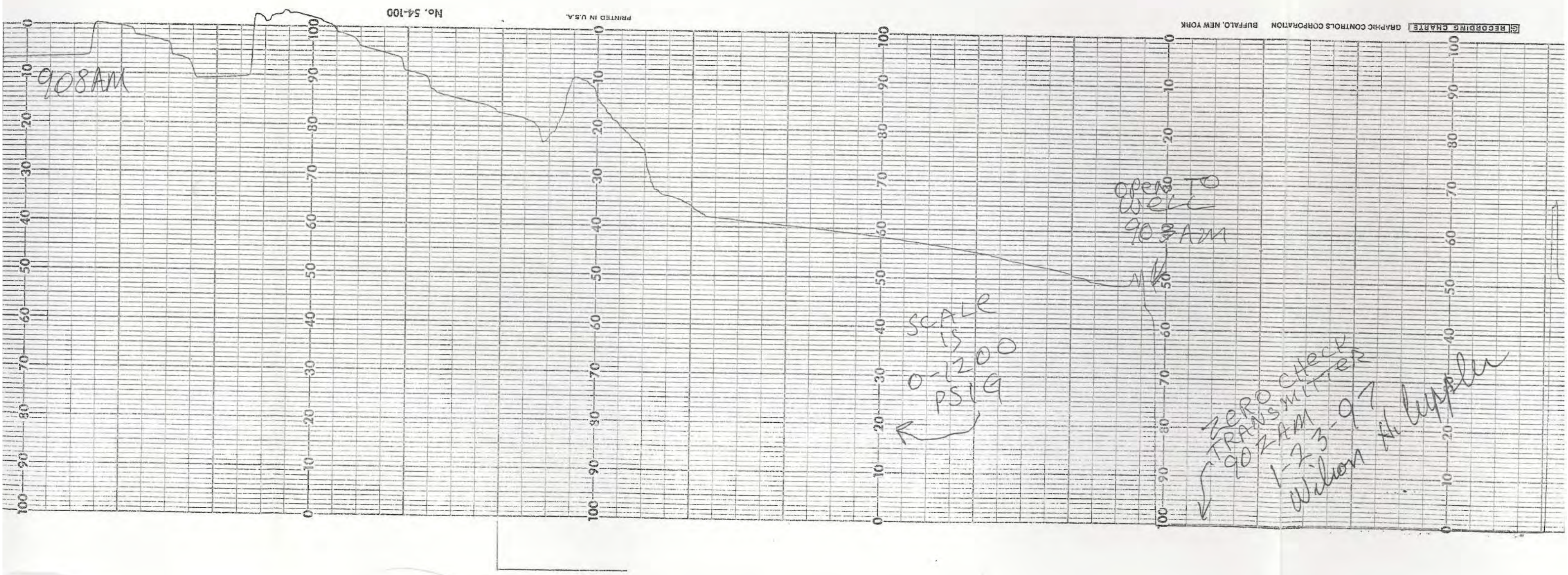
PRINTED IN U.S.A.

No. 54-100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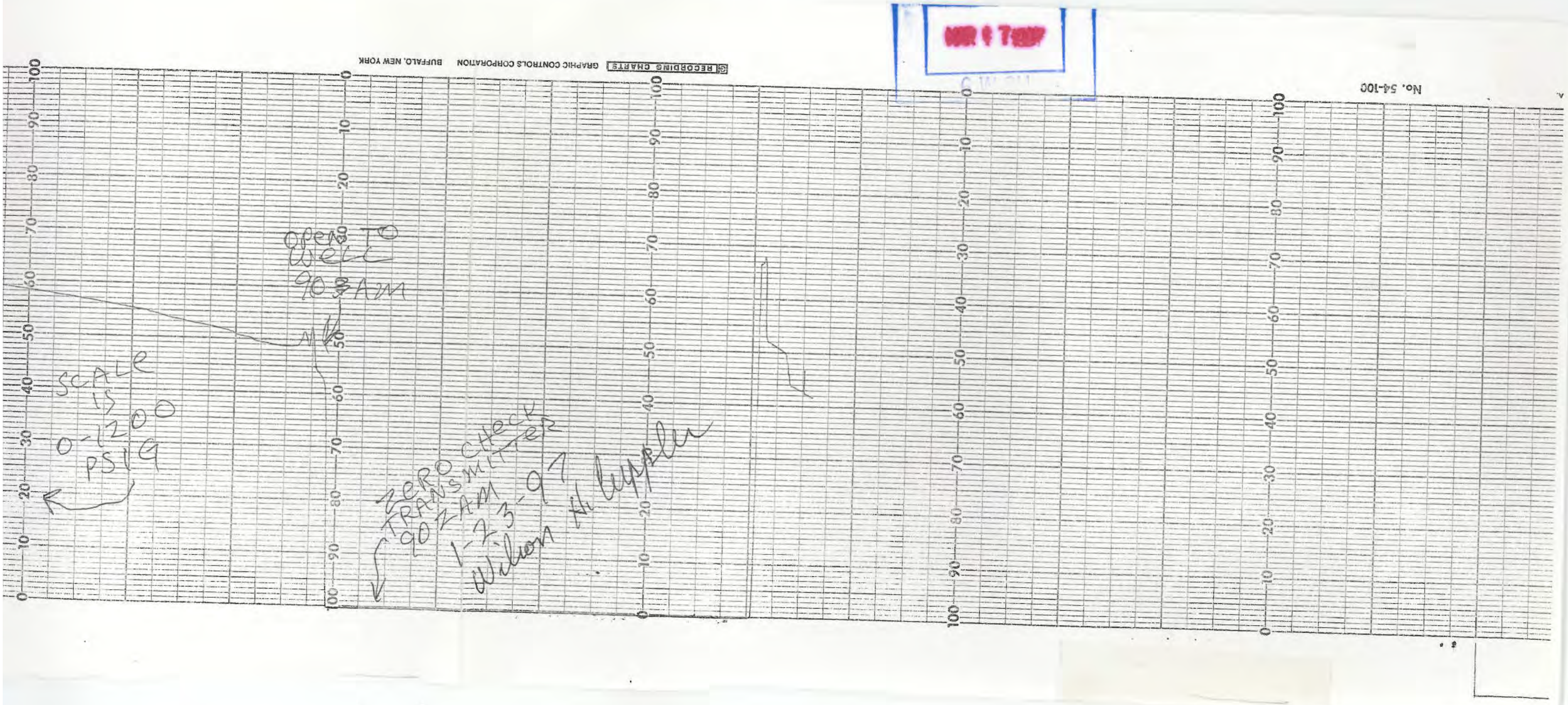
PRINTED IN U.S.A.
No. 54-100
908AM
OPEN TO WELL 903AM
SCALE IS 0-1200 PSIG
ZERO CHECK TRANSMITTER 907AM 1-7-3-97 William H. Cuppler


RECORDING CHARTS
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
No. 54-100
OPEN TO WELL 903AM
SCALE IS 0-1200 PSIG
ZERO CHECK TRANSMITTER 902AM 1-23-97 Wilson H. Lippler

RECEIVED
MAR 1 0 1997
6 W-SU

Gulf Coast Well Analysis

RADIOACTIVE TRACER SURVEY

MECHANICAL INTEGRITY TEST

FILING NO.	COMPANY	HOECHST CELANESE CHEMICAL GROUP, LTD
	WELL	WASTE DISPOSAL WELL # 110 WELL # 1-A
	FIELD	BAY CITY PLANT
	COUNTY	MATAGORDA STATE TEXAS

LOCATION: N/A

SEC TWP RGE

OTHER SERV:
B.H.P.
A.P.T.

PERMANENT DATUM: GROUND LEVEL ELEV: N/A

LOG MEASURED FROM 17.0 FT ABOVE PERM DATUM
DRILLING MEASURED FROM RKB

ELEVATION:
KB. N/A
DF. N/A
GL. N/A

DATE	23-JAN-1997		
RUN NO.	ONE		
DEPTH - DRILLER	3550		
DEPTH - LOGGER	3546		
BOTTOM LOGGED INT	3545		
TOP LOGGED INT	2900		
TYPE FLUID IN HOLE	WATER		
SALINITY PPM CL.	N/A		
DENSITY	N/A		
LEVEL	INJECTING		
MAX TEMP DEG F	N/A		
OPERATING RIG TIME	MAST		
OPERATOR	D. KOONCE		(TNRCC)
WITNESSED BY	MR WES SMITH	(ECO)	MR GREENE

RUN NO.	BORE HOLE RECORD BIT	FROM	TO	CASING RECORD SIZE	WGT.	FROM	TO
				7.625	N/A	SURF.	3550
				5.500	N/A	SURF.	3376

Equipment Data

Run	TRUCK #	TOOL #	INJECT #	ISOTOPE	LIQUID
	P 102	1236	1336	I-131	WS

Calibration Data

Run No.	SENS UPPER	SENS LOWER	T.C. UPPER	T.C. LOW
	200	1000	2	2

Logging Data

Run No.	Depths From	Depths To	Speed Ft/Min	TOOL SPACING 3'	3'	4'
1	3545'	2900'	35	-+----+----+----+----		
				GR CCL	EJEC	GR CABLE
				LO		UP HEAD

RADIOACTIVE TRACER SURVEY INDICATES THAT ALL FLUID IS GOING INTO DISPOSAL INTERVAL AT THIS TIME. NO INDICATION OF FLUID MOVEMENT UP HOLE BEHIND CASING OR PACKER LEAKING.

CORRECTED TO RADIOACTIVE TRACER SURVEY RAN 25-JAN-1995

01/23/1997 RADIOACTIVE TRACER LOG SUMMARY SHEET 1 OF 1

Run	Time		Depth		Rate	TC	Description
1	08:53	09:07	3545	2900	0		BASE LOG BEFORE SURVEY
2	09:09	09:15	3200	2900	0		REPEAT OF BASE LOG
3	09:22	09:27		3310	0		STAT CHECK # 1
4	09:30	09:35		3356	0		STAT CHECK # 2
	11:46		2900		50GPM		EJECT SLUG # 1
5	11:47	11:49	3000	2900	50GPM		PASS 1 PEAK @ 2971 @ 11:48
6	11:50	11:54	3200	2920	50GPM		PASS 2 PEAK @ 3163 @ 11:51
7	11:57	12:02	3460	3100	50GPM		PASS 3 PEAK @ 3400 @ 11:58
8	12:04	12:06	3470	3340	50GPM		PASS 4 PEAK @ 3419 @ 12:05
9	12:08	12:11	3470	3370	50GPM		PASS 5 PEAK @ 3422 @ 12:10
10	12:13	12:15	3460	3370	50GPM		PASS 6 PEAK @ 3425 @ 12:14

ST-250 Rev. 3 00 07/31/89 P3P4 MULTISCAN ON

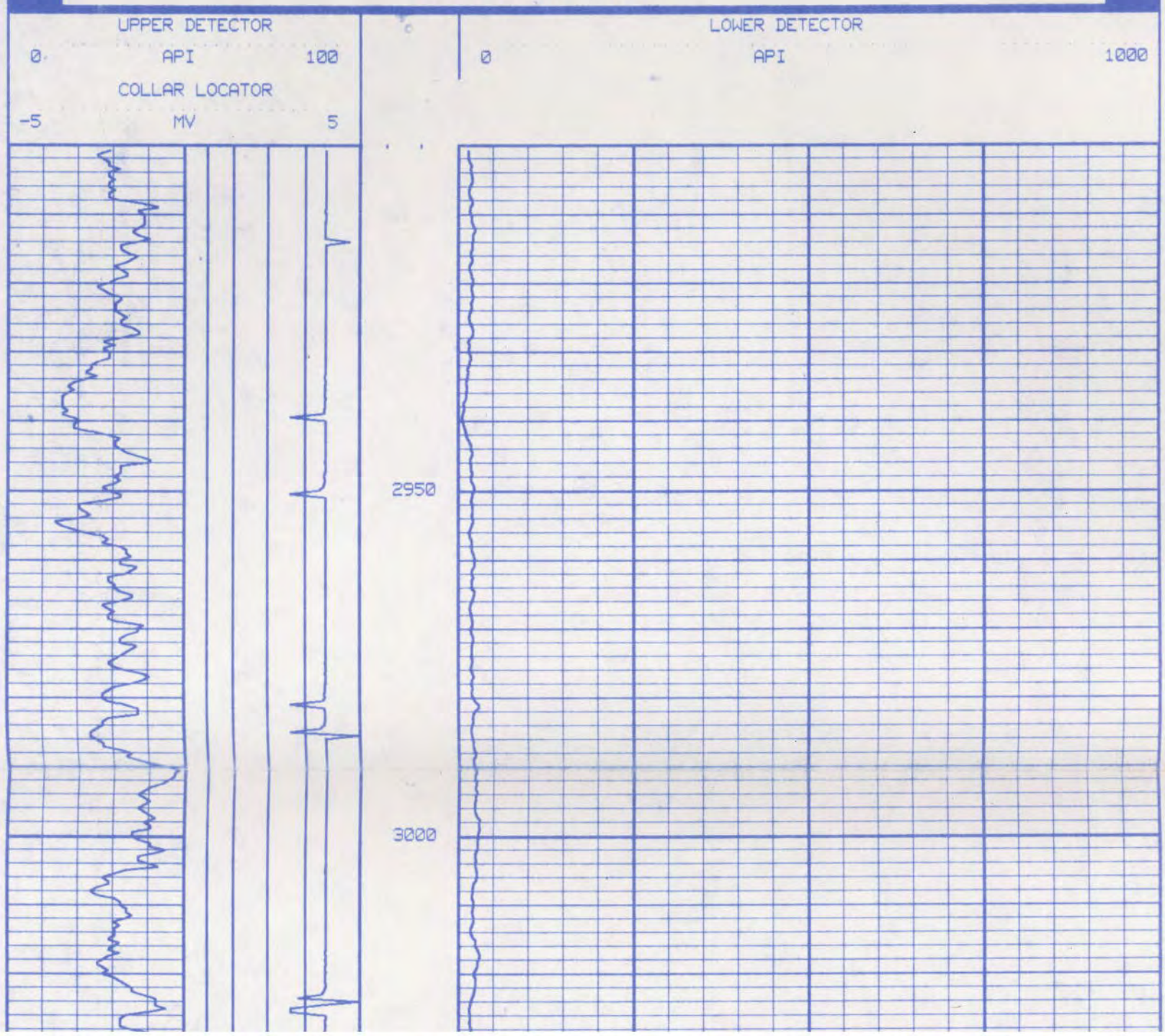
6	11:50	11:54	3200	2920	50GPM		PASS 2 PEAK @ 3163 @ 11:51
7	11:57	12:02	3460	3100	50GPM		PASS 3 PEAK @ 3400 @ 11:58
8	12:04	12:06	3470	3340	50GPM		PASS 4 PEAK @ 3419 @ 12:05
9	12:08	12:11	3470	3370	50GPM		PASS 5 PEAK @ 3422 @ 12:10
10	12:13	12:15	3460	3370	50GPM		PASS 6 PEAK @ 3425 @ 12:14
11	12:18	12:20	3460	3370	50GPM		PASS 7 PEAK @ 3429 @ 12:19
	12:24		2900		50GPM		EJECT SLUG # 2
12	12:24	12:26	3040	2900	50GPM		PASS 1 PEAK @ 2974 @ 12:25
13	12:27	12:31	3200	2900	50GPM		PASS 2 PEAK @ 3152 @ 12:28
14	12:33	12:39	3470	3070	50GPM		PASS 3 PEAK @ 3391 @ 12:35
15	12:43	12:46	3470	3340	50GPM		PASS 4 PEAK @ 3415 @ 12:45
16	12:49	12:50	3470	3370	50GPM		PASS 5 PEAK @ 3416 @ 12:50
17	12:52	12:54	3470	3370	50GPM		PASS 6 PEAK @ 3420 @ 12:53
18	12:57	13:19	3356		200		TIME DRIVE SURVEY # 1
19	13:20	13:42	3356		200		TIME DRIVE SURVEY # 2
20	13:48	14:03	3545	2900	0		BASE LOG AFTER SURVEY

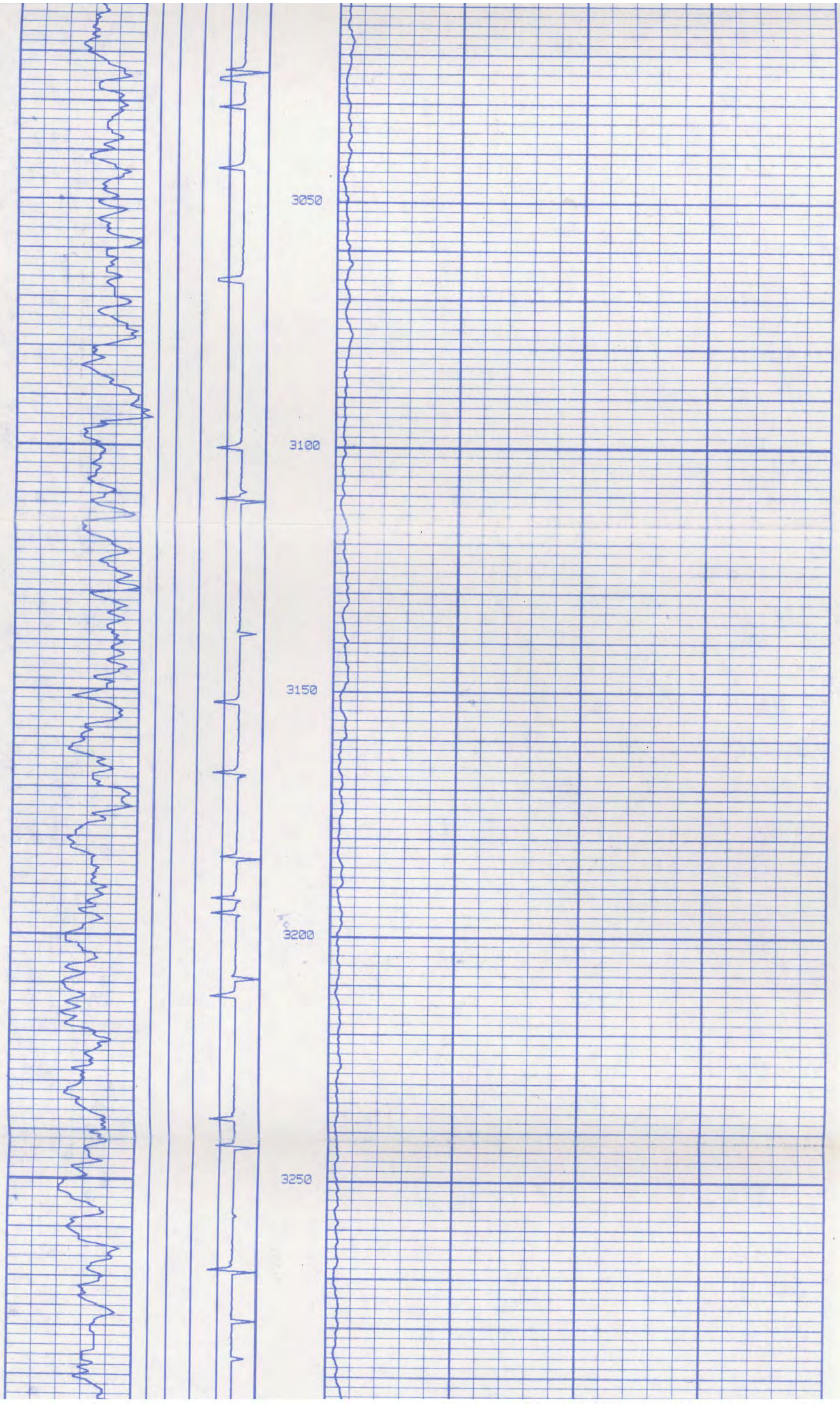
START DEPTH 2900FT DATE: 838 01-2 TIME: 7-97 4 FILE: BASE PLAYBACK PROGRAM

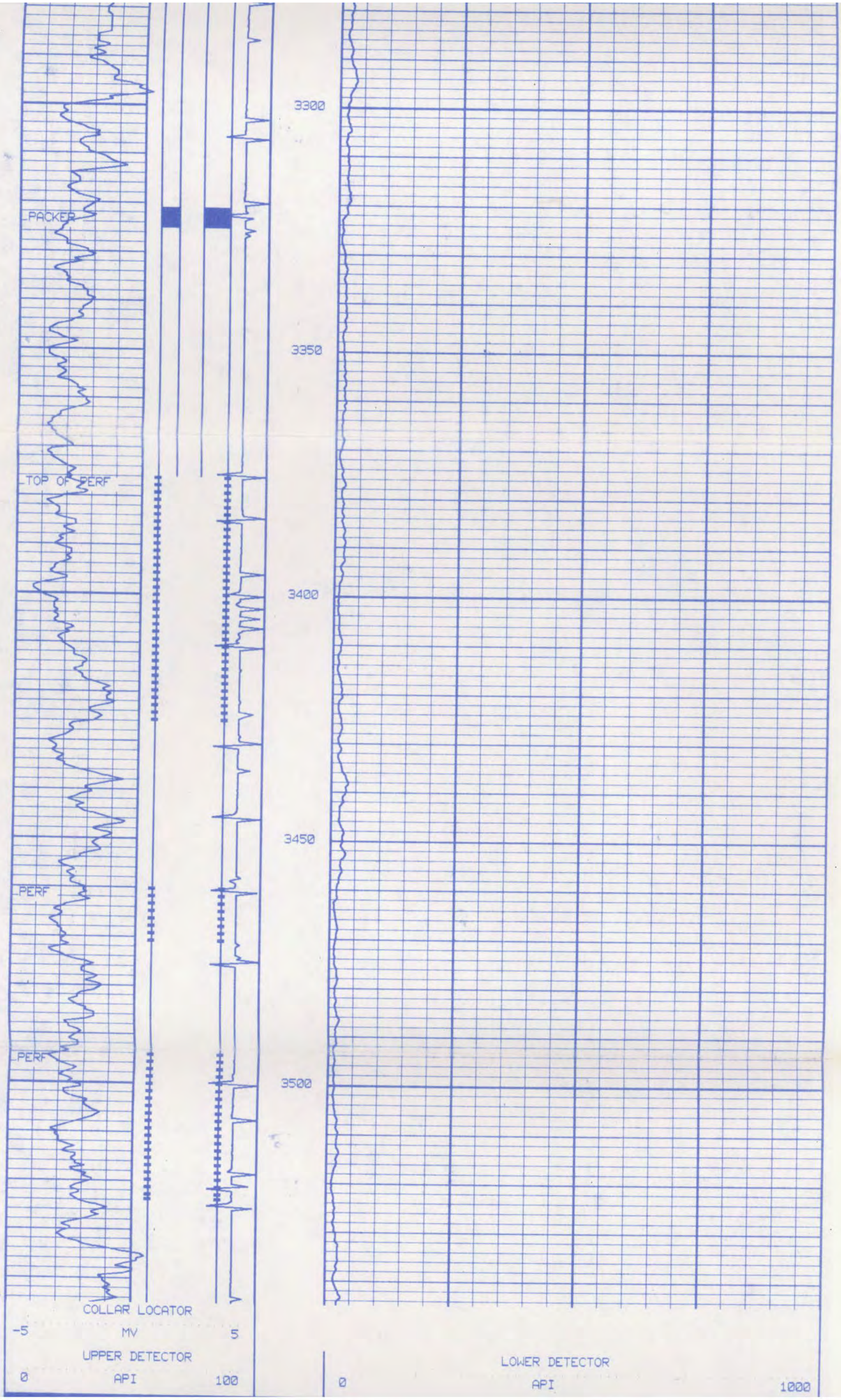
BASE LOG BEFORE SURVEY PUMP RATE 0 GPM

START TIME 08:53 @ 3545

END TIME 09:07 @ 2900




3050
3100
3150
3200
3250


3300
PACKER
3350
TOP OF PERF
3400
3450
PERF
PERF
3500
COLLAR LOCATOR
-5
MV
5
UPPER DETECTOR
0
API
100
LOWER DETECTOR
0
API
1000

COLLAR LOCATOR

-5 MV 5

UPPER DETECTOR

0 API 100

LOWER DETECTOR

0 API 1000

BASE LOG BEFORE SURVEY PUMP RATE 0 GPM

START TIME 08:53 @ 3545

END TIME 09:07 @ 2900

STOP DEPTH 3545FT DATE: 838 01-2 TIME: 7-97 4 FILE: BASE PLAYBACK PROGRAM

START DEPTH 2900FT DATE: 838 01-2 TIME: 7-97 4 FILE: BASE PLAYBACK PROGRAM

REPEAT BASE BEFORE SURVEY PUMP RATE 0 GPM

START TIME 09:09 @ 3200

END TIME 09:15 @ 2900

UPPER DETECTOR

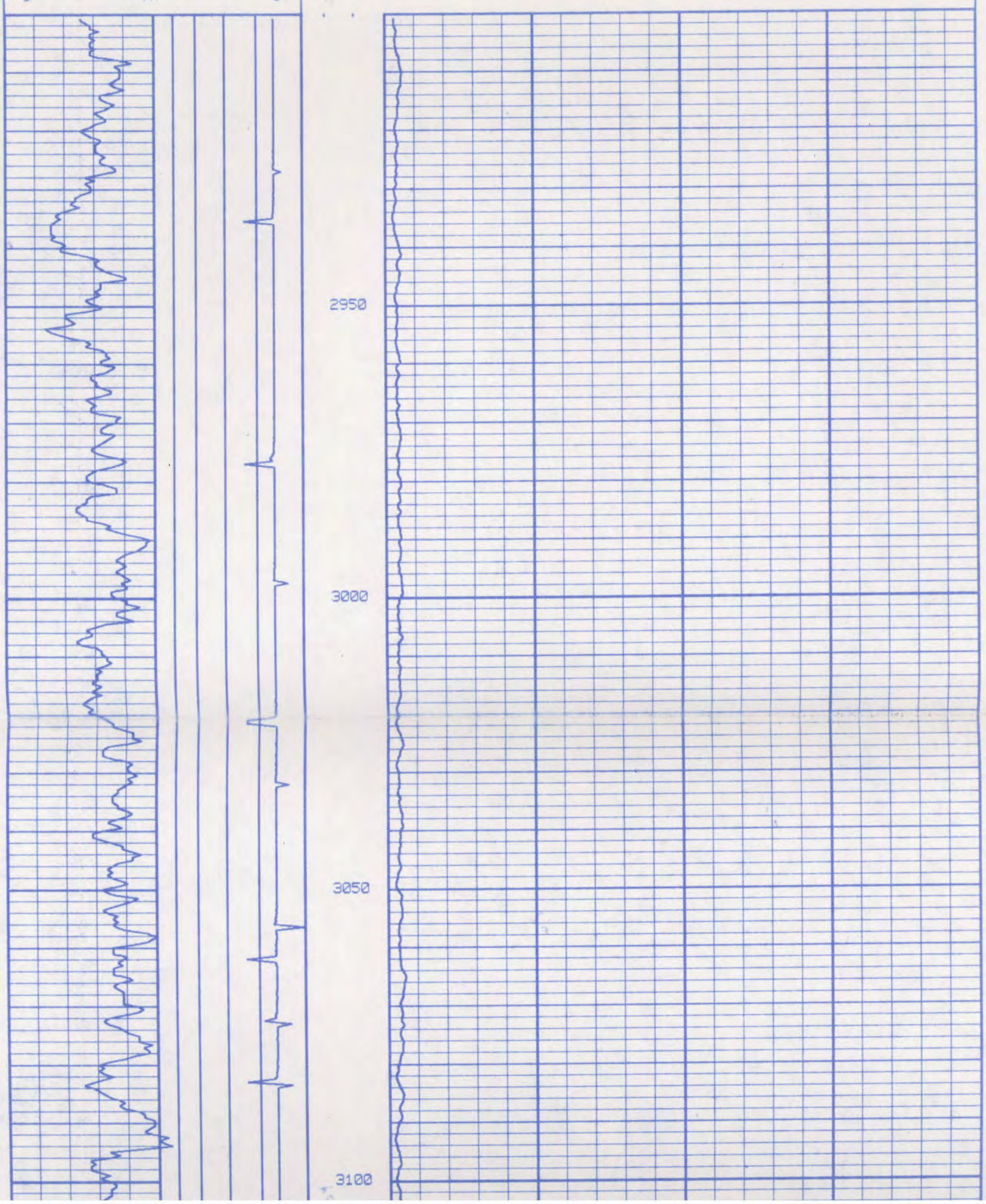
0 API 100

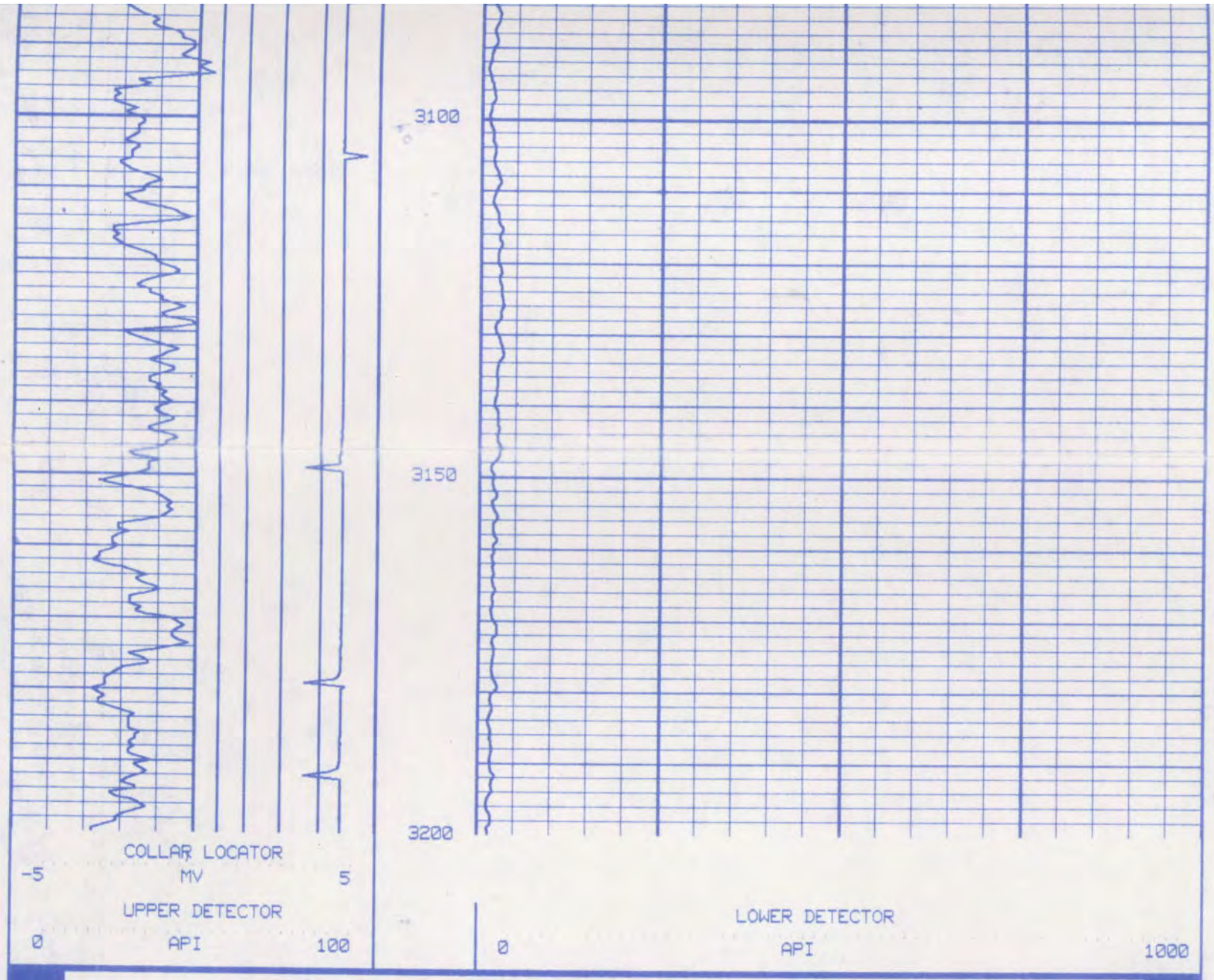
COLLAR LOCATOR

-5 MV 5

LOWER DETECTOR

0 API 1000



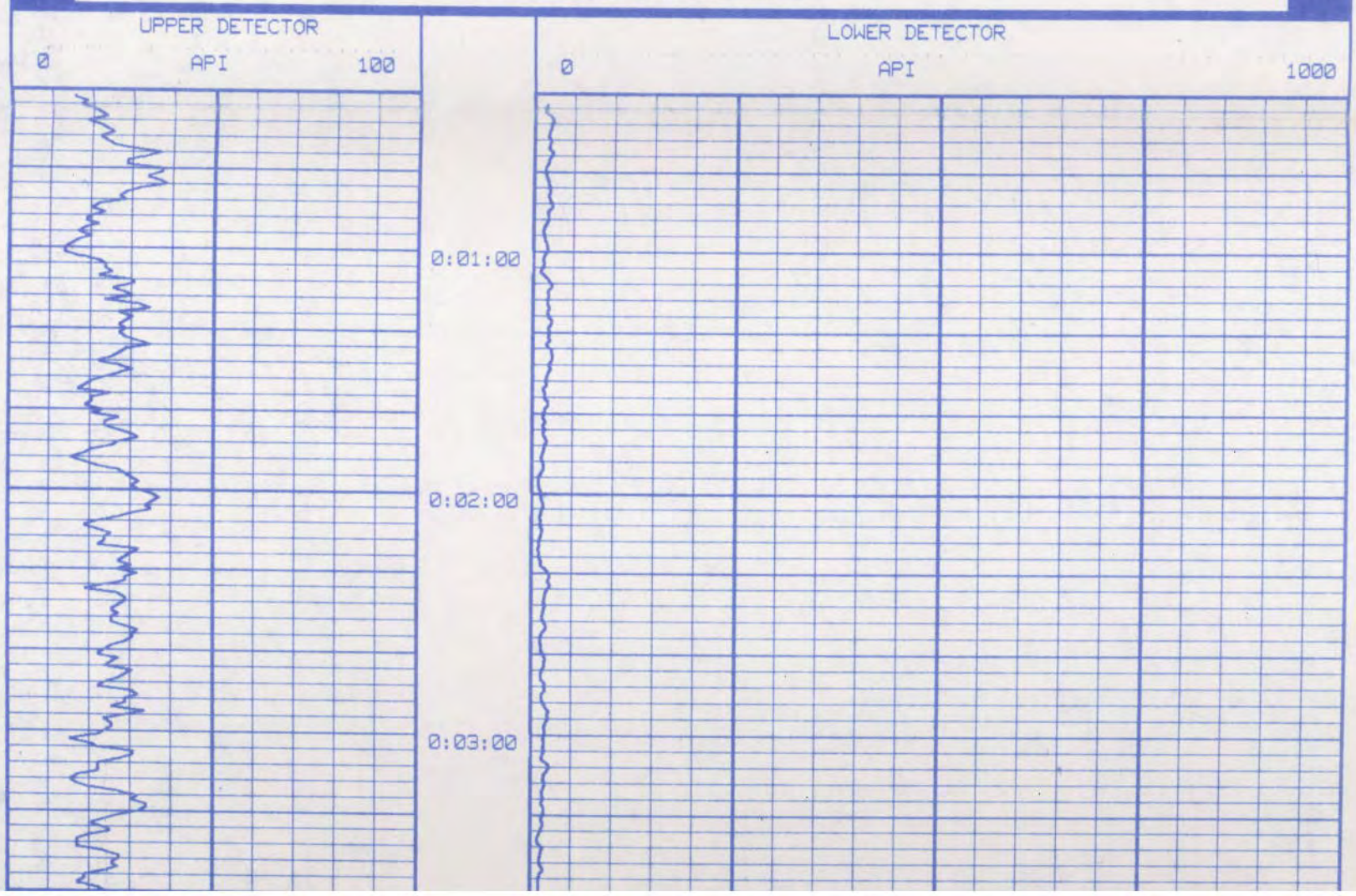


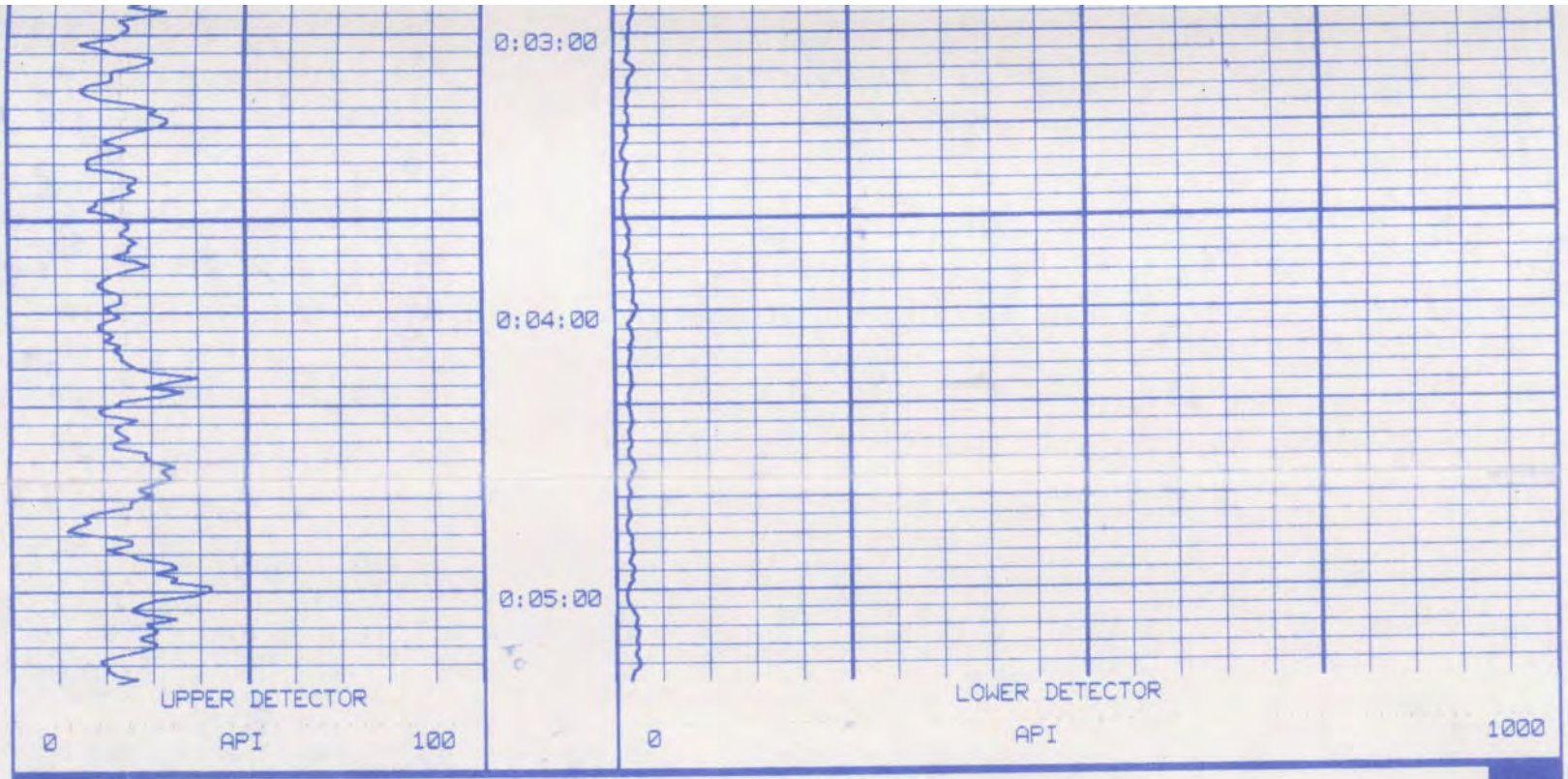
REPEAT BASE BEFORE SURVEY PUMP RATE 0 GPM
START TIME 09:09 @ 3200
END TIME 09:15 @ 2900

STOP DEPTH 3200FT DATE: 838 01-2 TIME: 7-97 4 FILE: BASE PLAYBACK PROGRAM

START DEPTH 0FT DATE: 800 01-2 TIME: 3-97 9 FILE: STAT PLAYBACK PROGRAM

STAT CHECK # 1 PUMP RATE 0 GPM
START TIME 09:22 END TIME 09:27
UPPER GR 3300 LOWER GR 3310



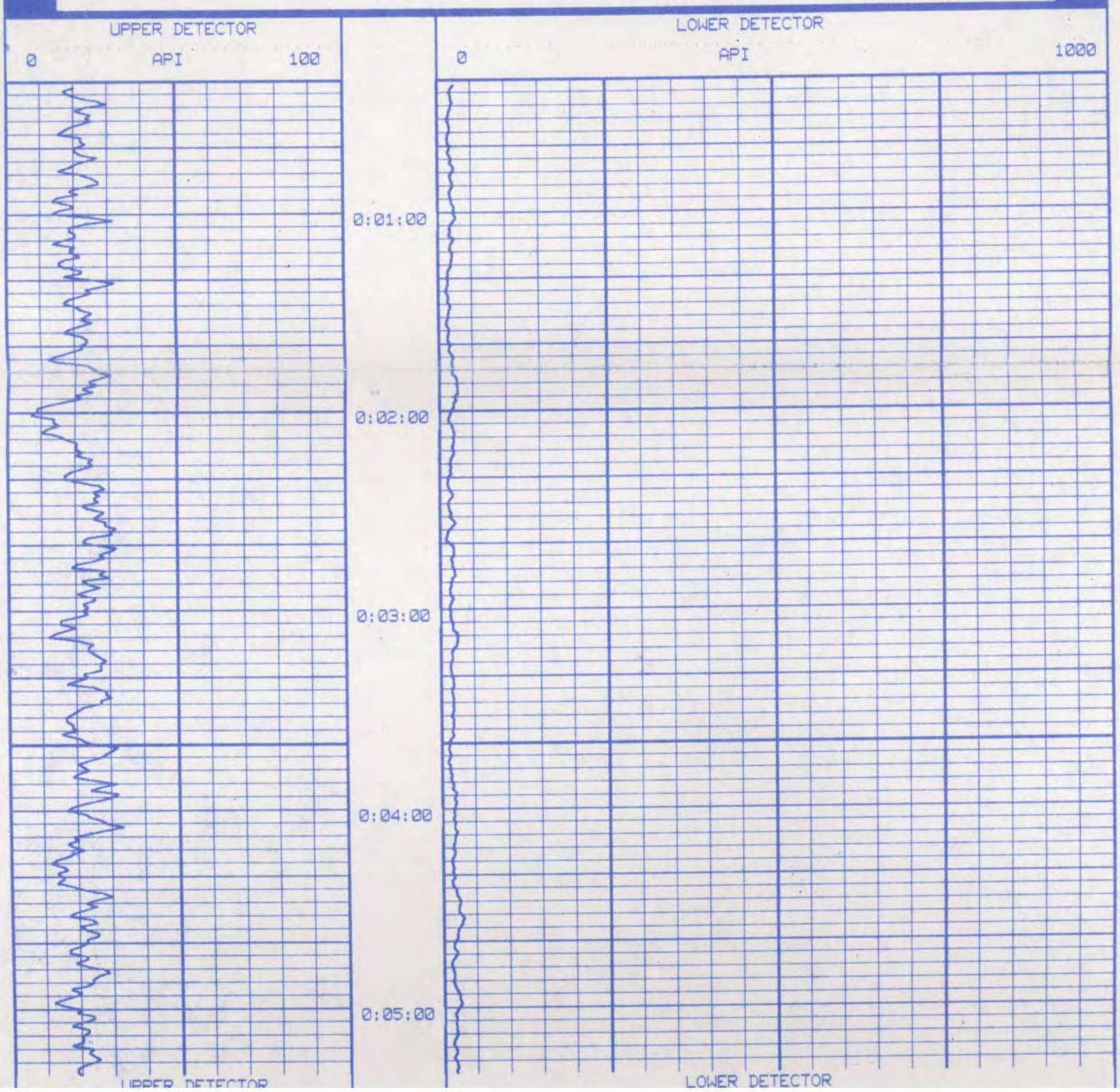


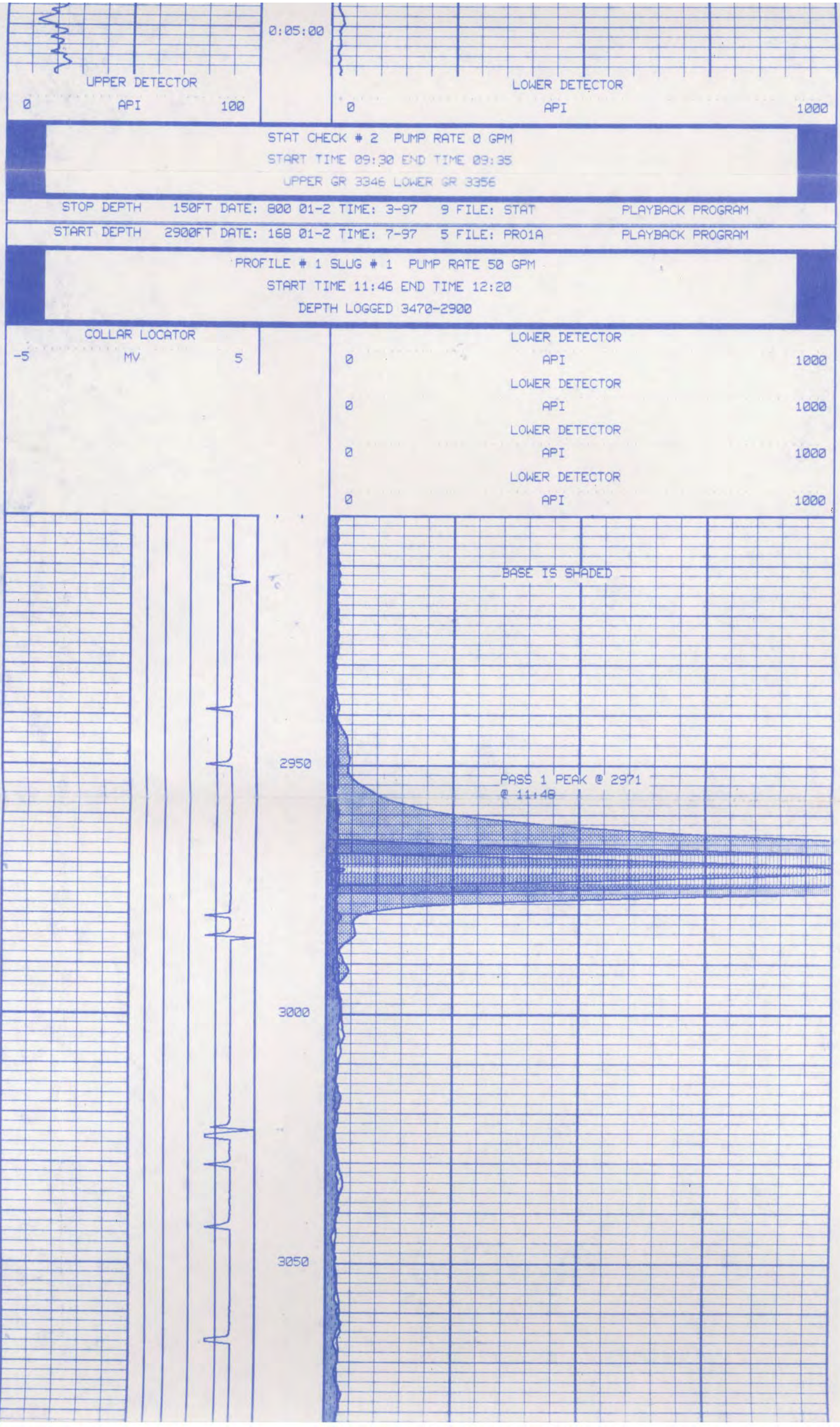
STAT CHECK # 1 PUMP RATE 0 GPM
START TIME 09:22 END TIME 09:27
UPPER GR 3300 LOWER GR 3310

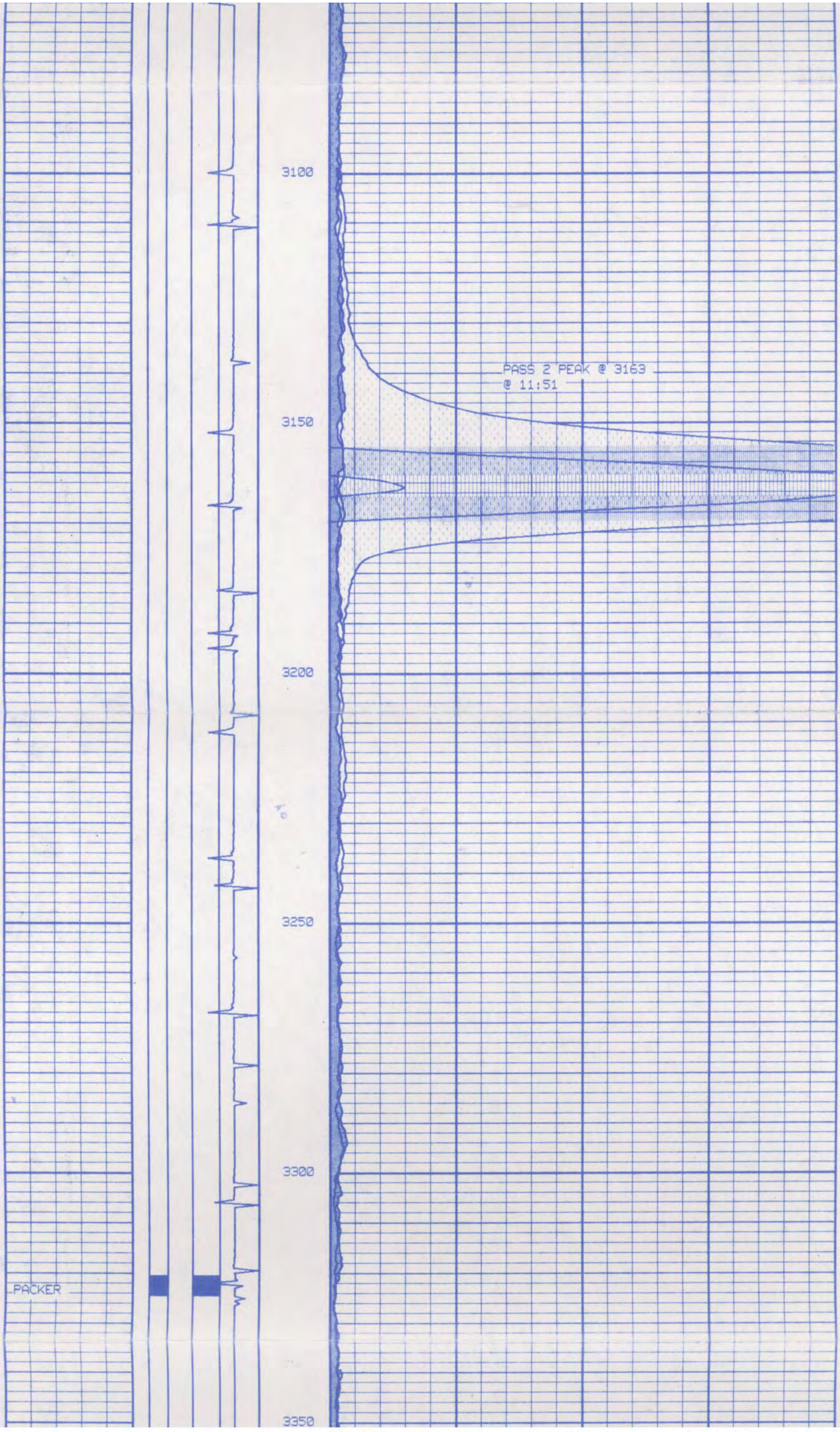
STOP DEPTH 150FT DATE: 800 01-2 TIME: 3-97 9 FILE: STAT PLAYBACK PROGRAM

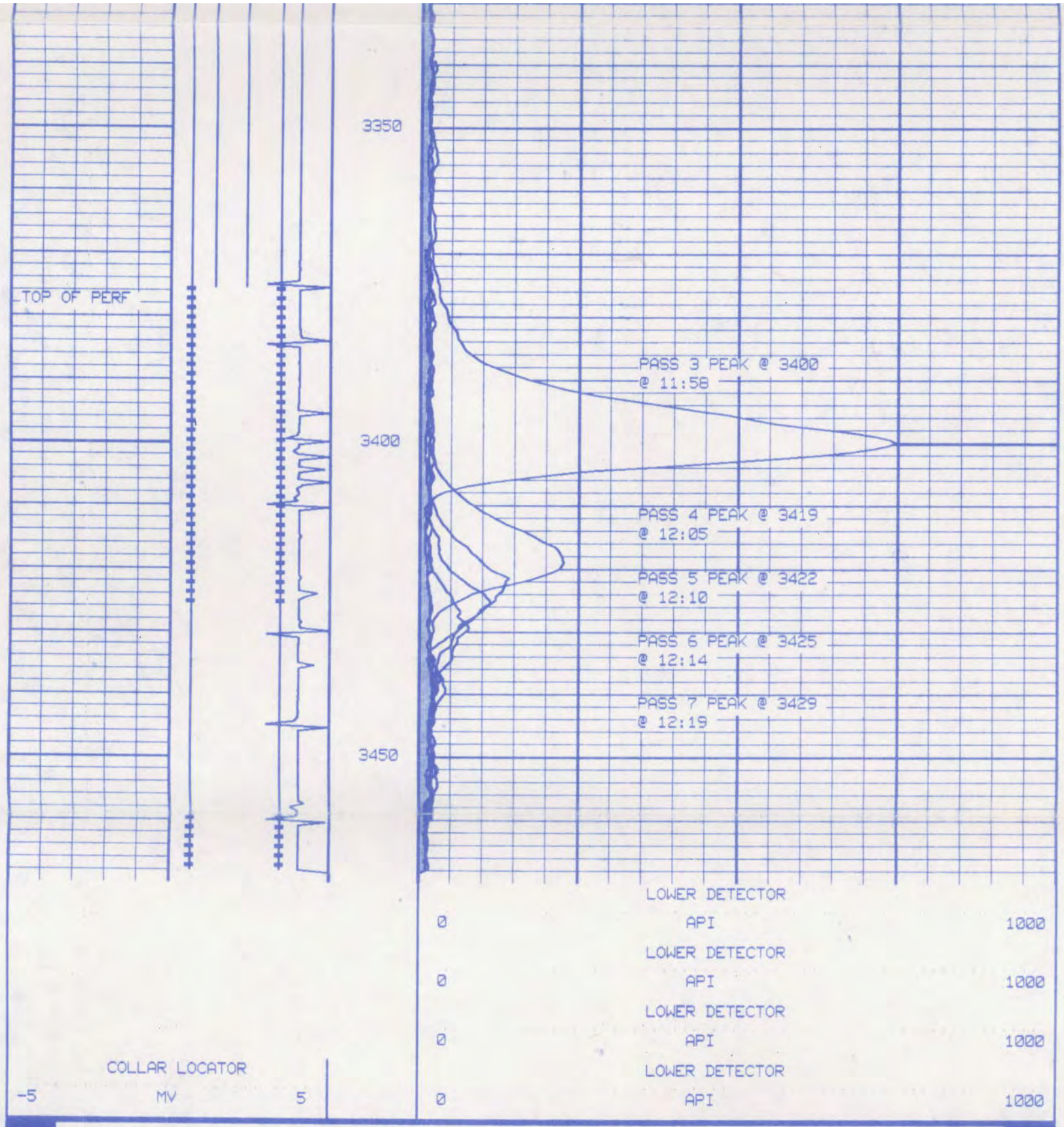
START DEPTH 0FT DATE: 800 01-2 TIME: 3-97 9 FILE: STAT PLAYBACK PROGRAM

STAT CHECK # 2 PUMP RATE 0 GPM
START TIME 09:30 END TIME 09:35
UPPER GR 3346 LOWER GR 3356




0:05:00
UPPER DETECTOR
0 API 100
LOWER DETECTOR
0 API 1000
STAT CHECK # 2 PUMP RATE 0 GPM
START TIME 09:30 END TIME 09:35
UPPER GR 3346 LOWER GR 3356
STOP DEPTH 150FT DATE: 800 01-2 TIME: 3-97 9 FILE: STAT PLAYBACK PROGRAM
START DEPTH 2900FT DATE: 168 01-2 TIME: 7-97 5 FILE: PRO1A PLAYBACK PROGRAM
PROFILE # 1 SLUG # 1 PUMP RATE 50 GPM
START TIME 11:46 END TIME 12:20
DEPTH LOGGED 3470-2900
COLLAR LOCATOR
-5 MV 5
LOWER DETECTOR
0 API 1000
LOWER DETECTOR
0 API 1000
LOWER DETECTOR
0 API 1000
LOWER DETECTOR
0 API 1000
BASE IS SHADED
2950
PASS 1 PEAK @ 2971
@ 11:48
3000
3050


3100
3150
3200
3250
3300
3350
PASS 2 PEAK @ 3163
@ 11:51
PACKER

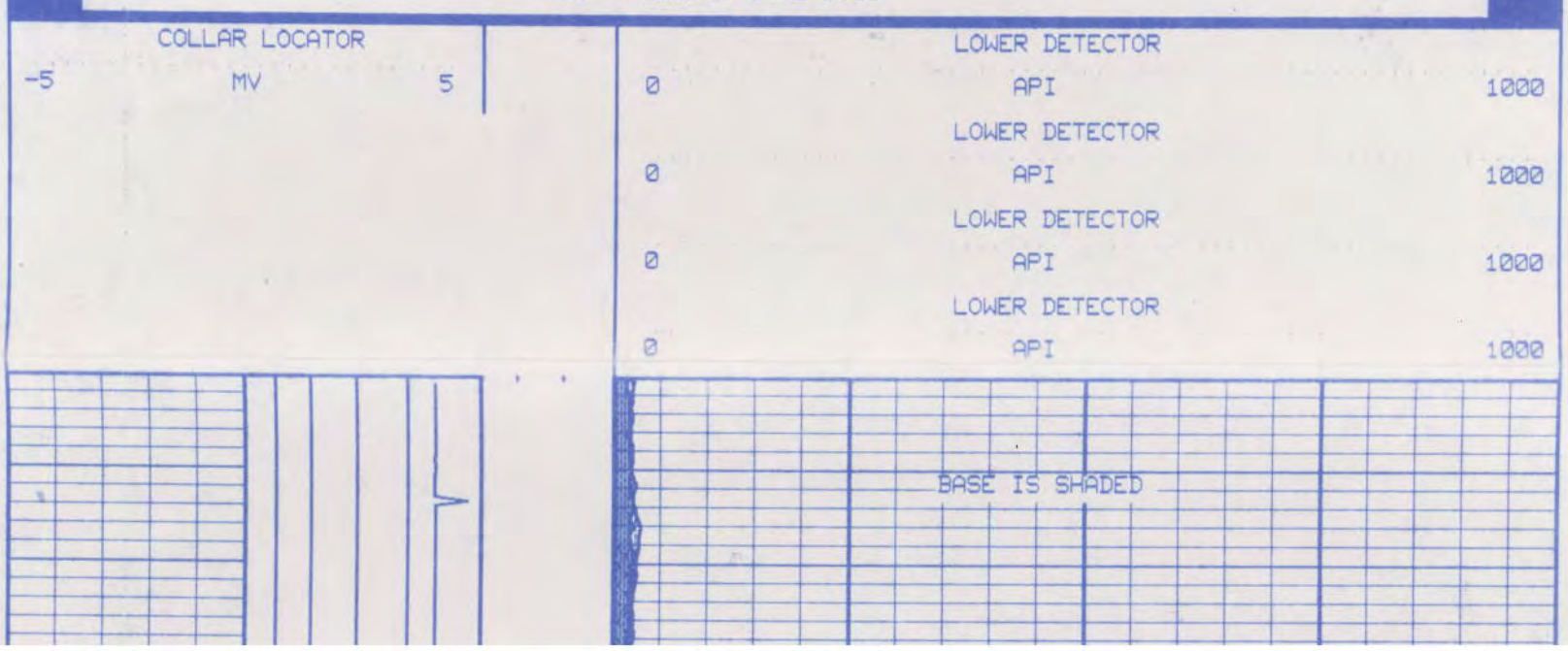


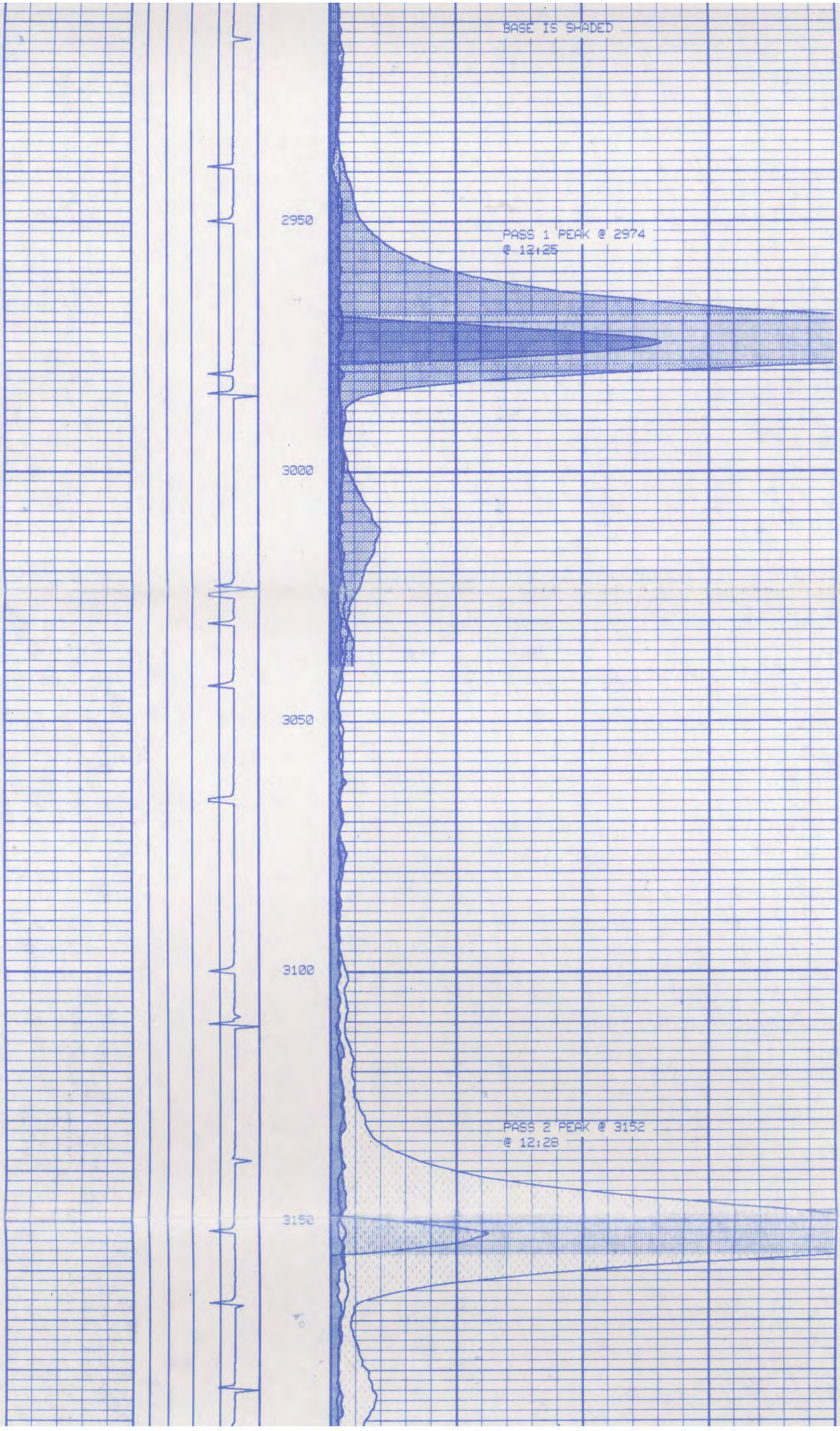
PROFILE # 1 SLUG # 1 PUMP RATE 50 GPM
START TIME 11:46 END TIME 12:20
DEPTH LOGGED 3470-2900

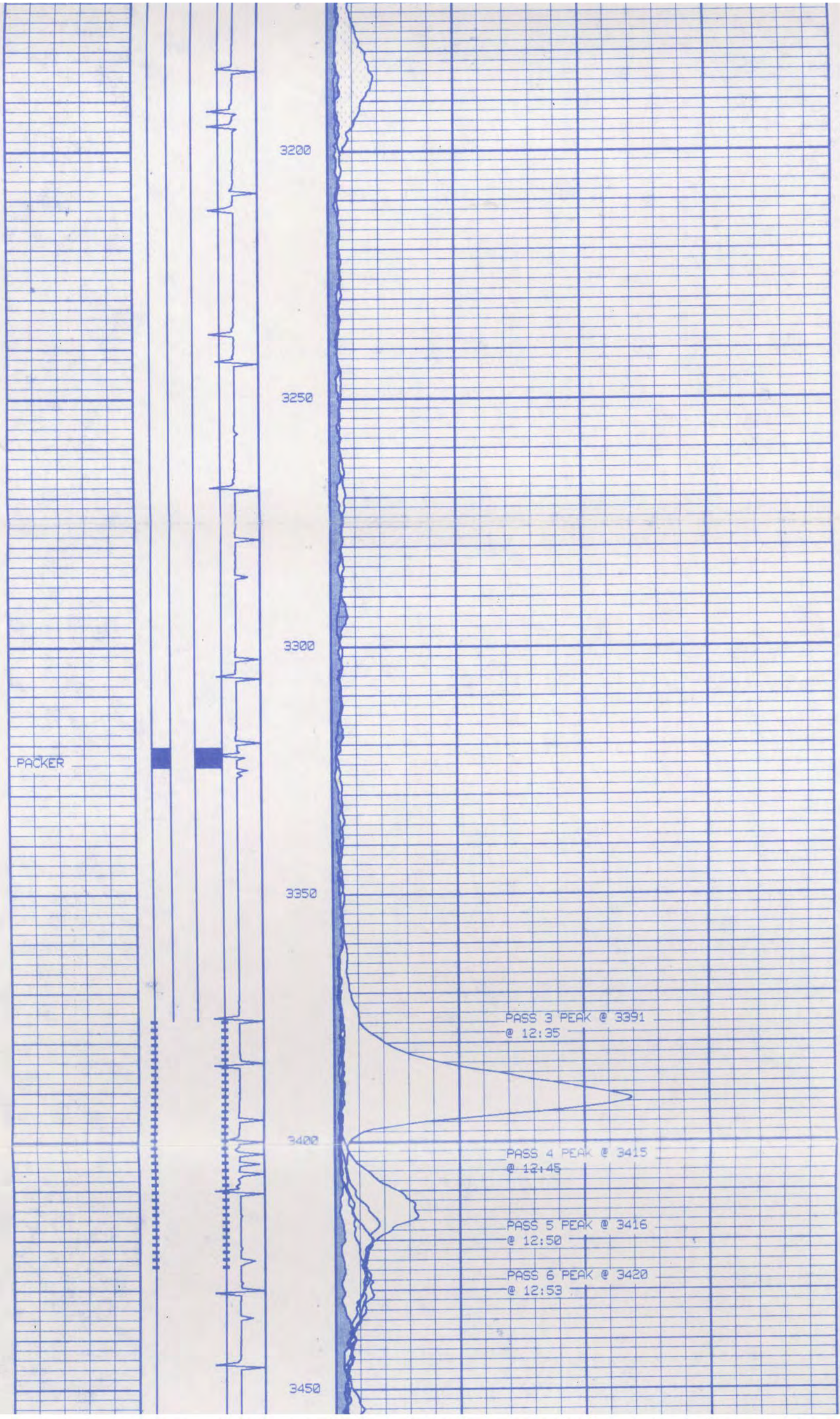
STOP DEPTH 3470FT DATE: 168 01-2 TIME: 7-97 5 FILE: PR01A PLAYBACK PROGRAM

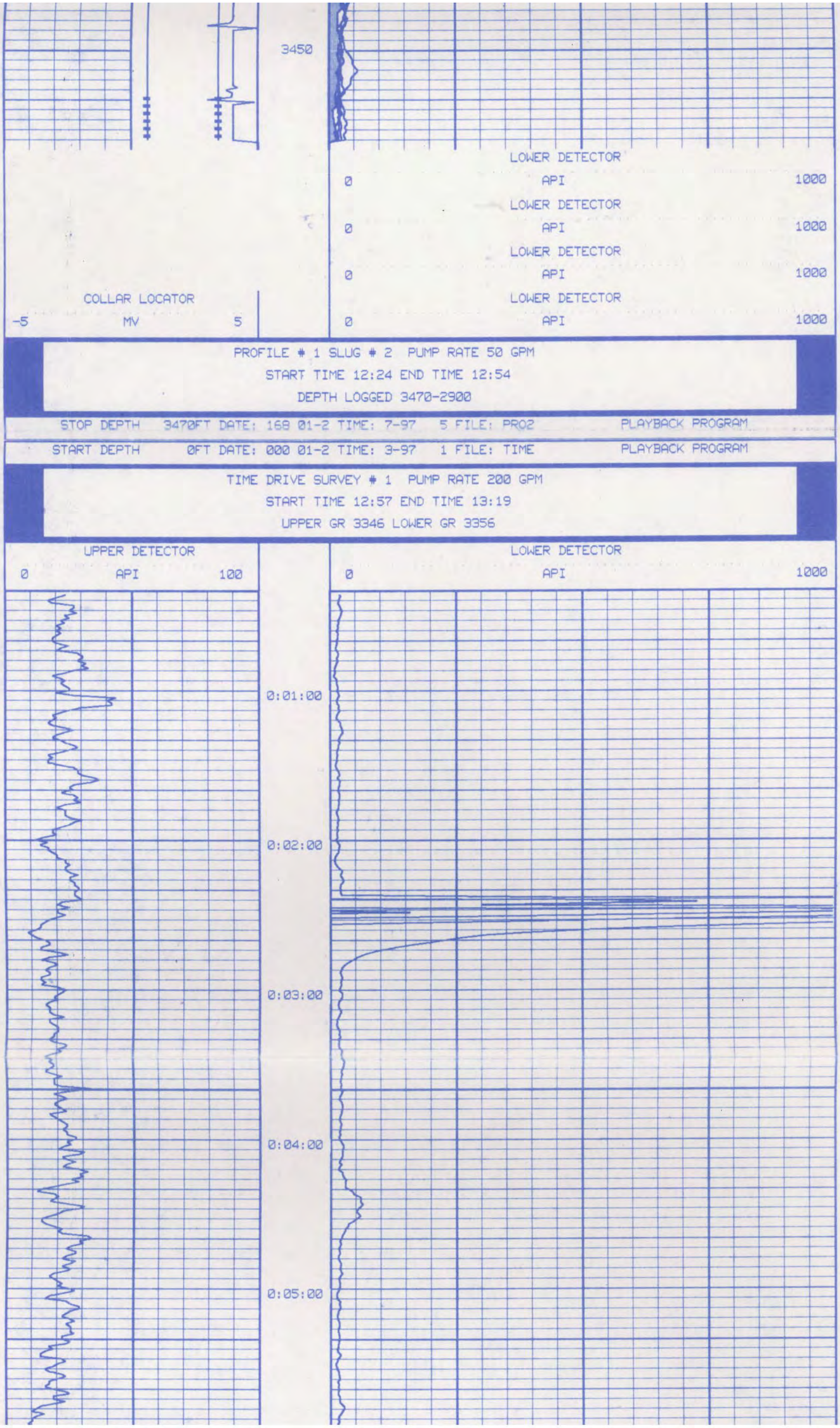
START DEPTH 2900FT DATE: 168 01-2 TIME: 7-97 5 FILE: PR02 PLAYBACK PROGRAM

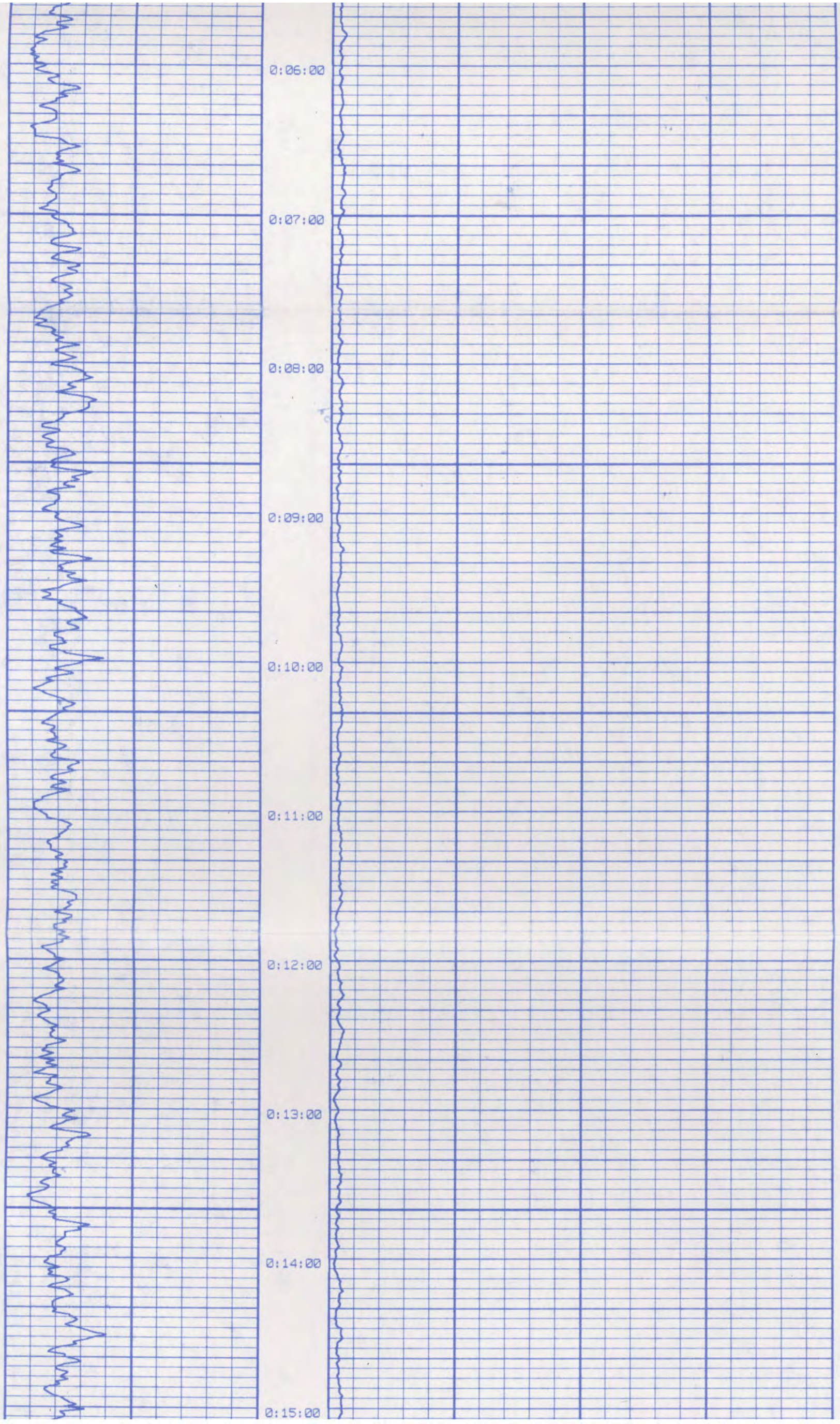
PROFILE # 1 SLUG # 2 PUMP RATE 50 GPM
START TIME 12:24 END TIME 12:54
DEPTH LOGGED 3470-2900

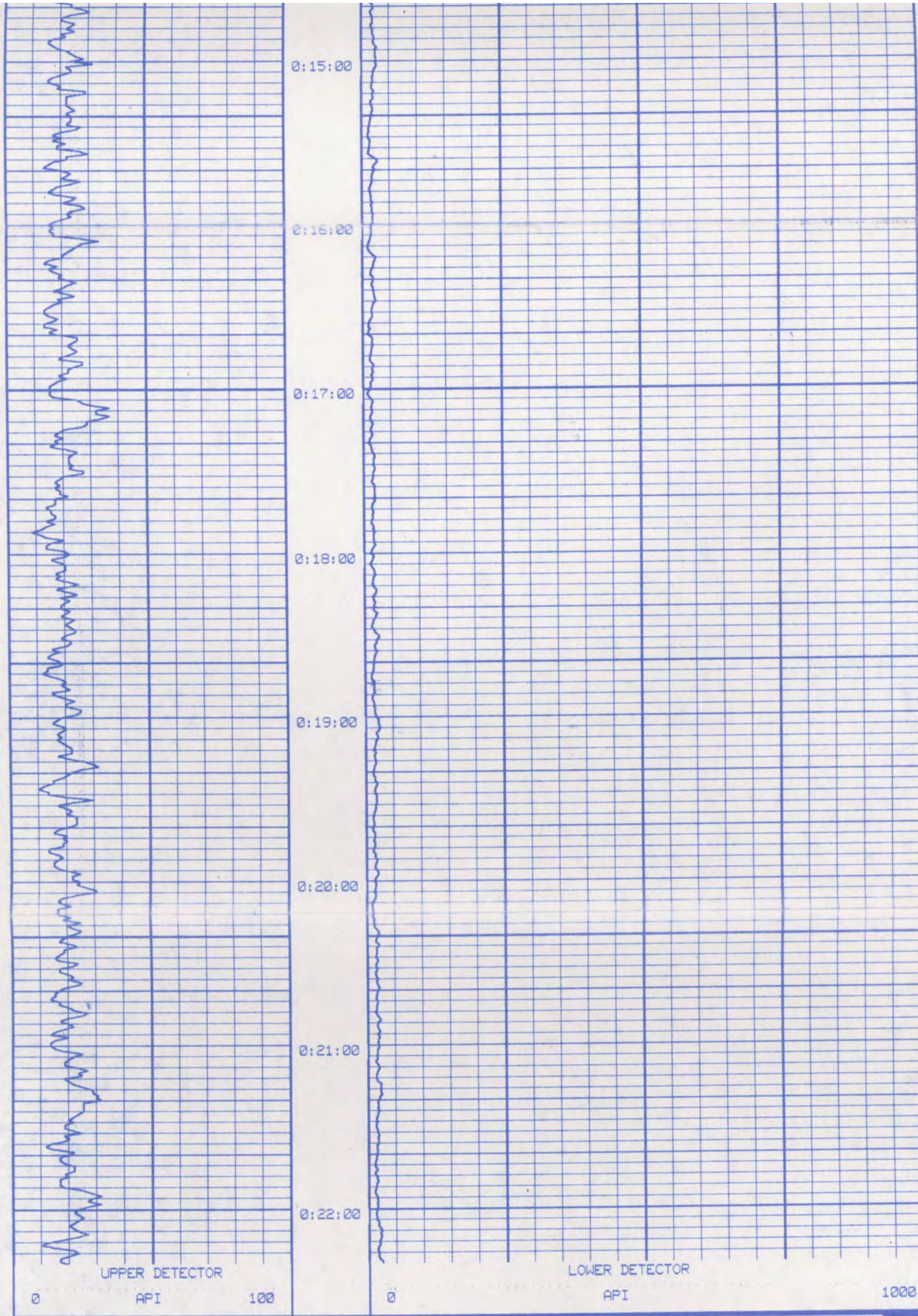



BASE IS SHADED
2950
PASS 1 PEAK @ 2974
@ 12:25
3000
3050
3100
PASS 2 PEAK @ 3152
@ 12:28
3150


3200
3250
3300
PACKER
3350
PASS 3 PEAK @ 3391
@ 12:35
3400
PASS 4 PEAK @ 3415
@ 12:45
PASS 5 PEAK @ 3416
@ 12:50
PASS 6 PEAK @ 3420
@ 12:53
3450


3450
LOWER DETECTOR
0 API 1000
LOWER DETECTOR
0 API 1000
LOWER DETECTOR
0 API 1000
LOWER DETECTOR
0 API 1000
COLLAR LOCATOR
-5 MV 5
PROFILE # 1 SLUG # 2 PUMP RATE 50 GPM
START TIME 12:24 END TIME 12:54
DEPTH LOGGED 3470-2900
STOP DEPTH 3470FT DATE: 168 01-2 TIME: 7-97 5 FILE: PR02 PLAYBACK PROGRAM
START DEPTH 0FT DATE: 000 01-2 TIME: 3-97 1 FILE: TIME PLAYBACK PROGRAM
TIME DRIVE SURVEY # 1 PUMP RATE 200 GPM
START TIME 12:57 END TIME 13:19
UPPER GR 3346 LOWER GR 3356
UPPER DETECTOR
0 API 100
LOWER DETECTOR
0 API 1000
0:01:00
0:02:00
0:03:00
0:04:00
0:05:00


0:06:00
0:07:00
0:08:00
0:09:00
0:10:00
0:11:00
0:12:00
0:13:00
0:14:00
0:15:00



TIME DRIVE SURVEY # 1 PUMP RATE 200 GPM
START TIME 12:57 END TIME 13:19
UPPER GR 3346 LOWER GR 3356

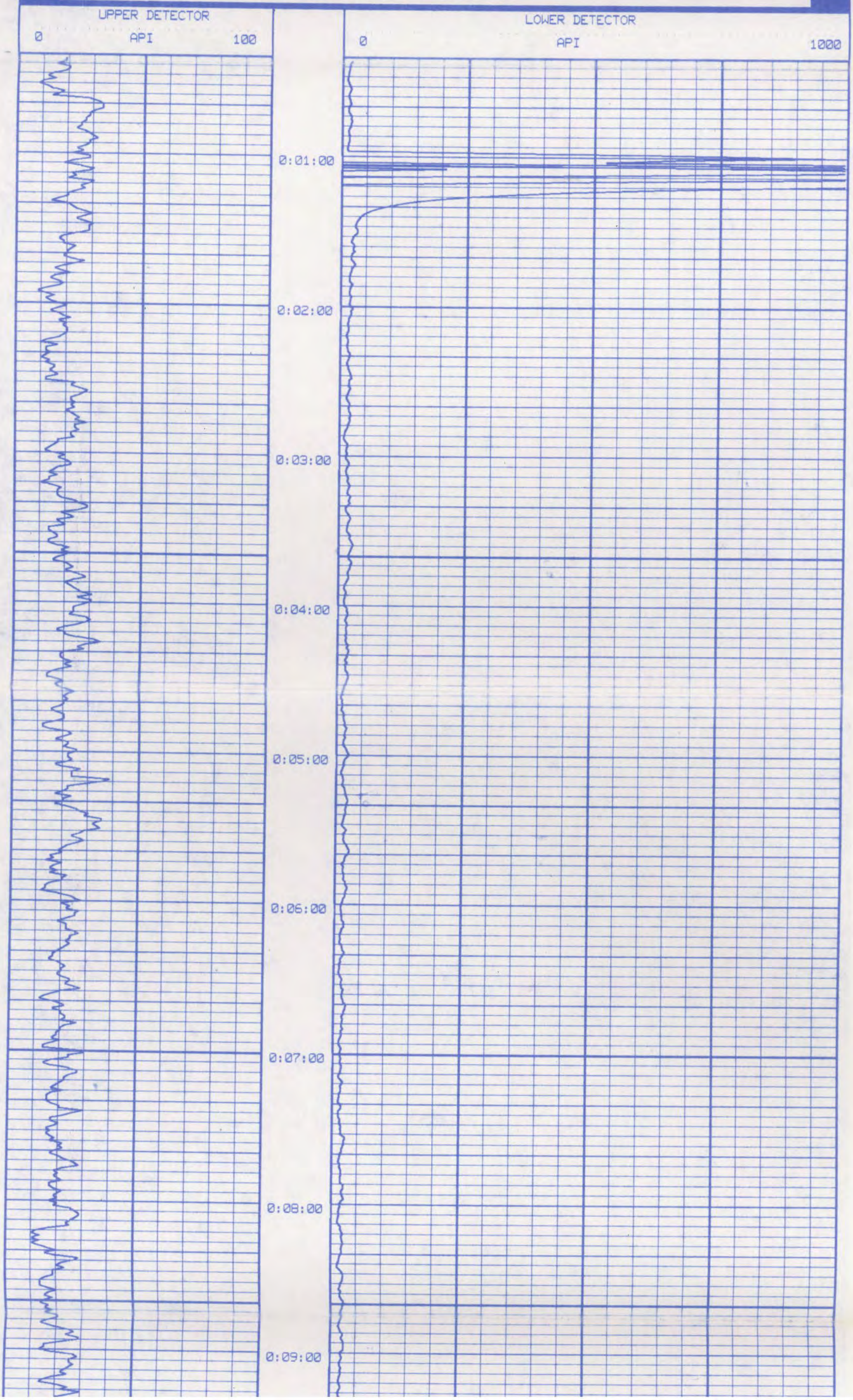
STOP DEPTH 660FT DATE: 000 01-2 TIME: 3-97 1 FILE: TIME PLAYBACK PROGRAM

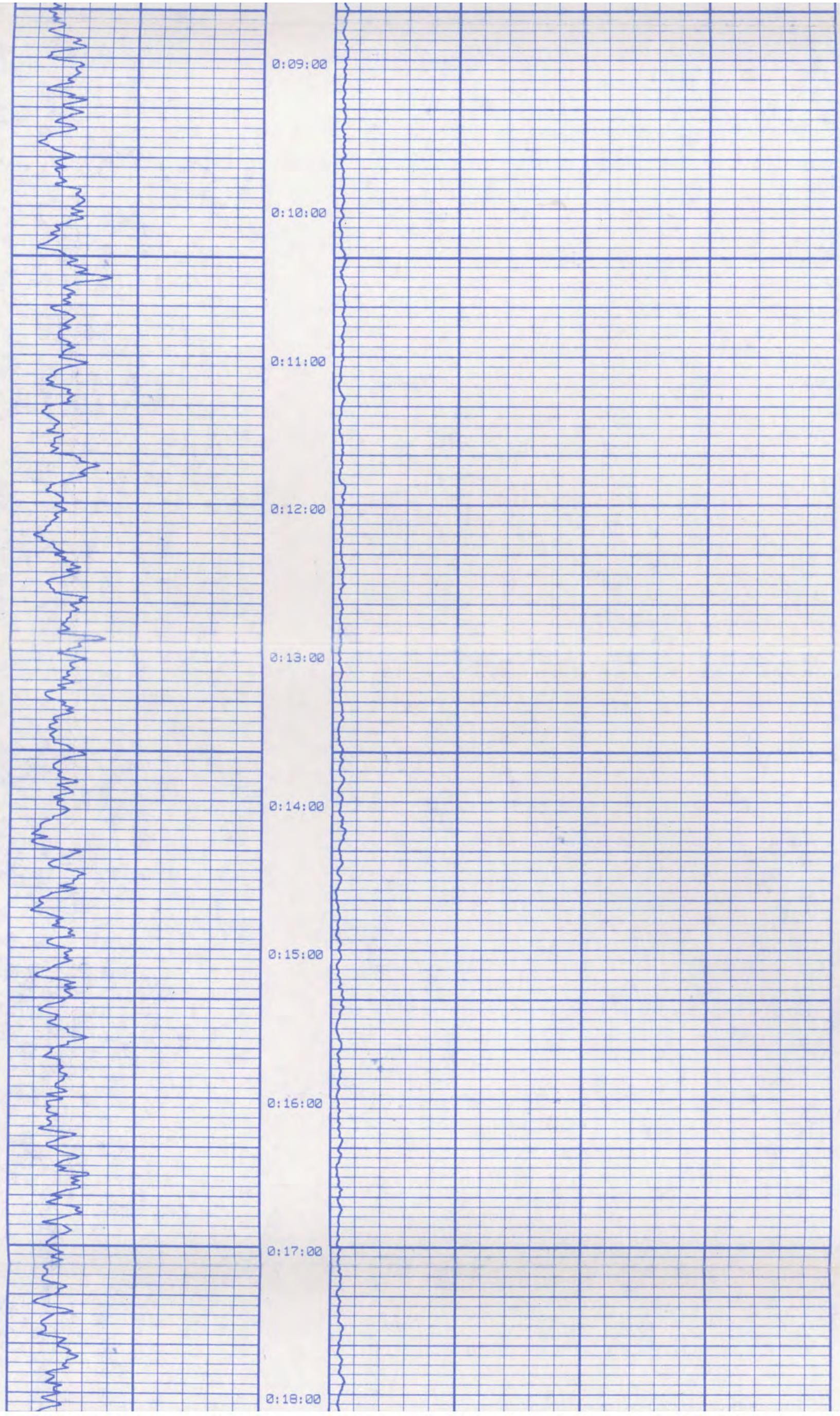
START DEPTH 0FT DATE: 000 01-2 TIME: 3-97 1 FILE: TIME PLAYBACK PROGRAM

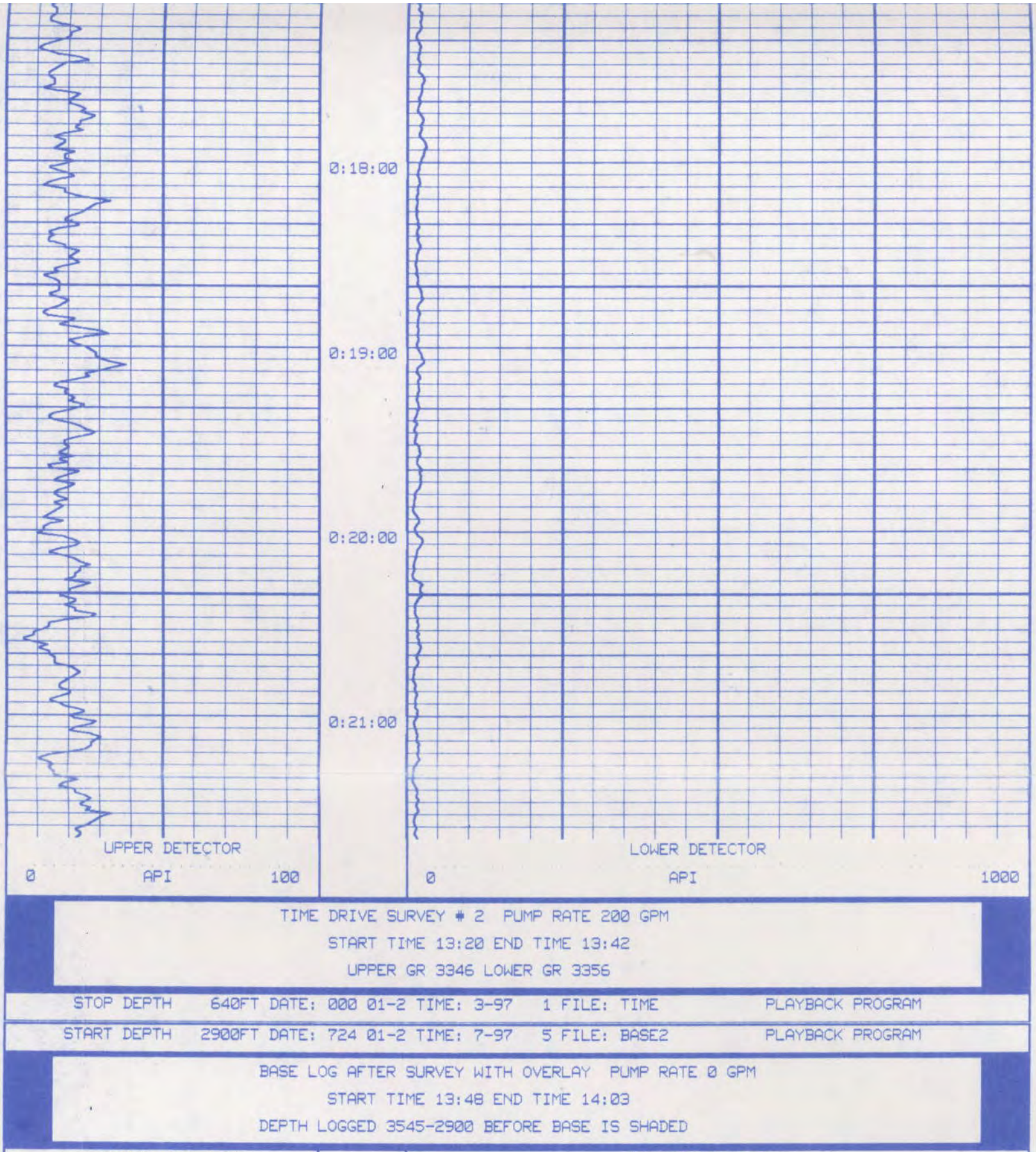
TIME DRIVE SURVEY # 2 PUMP RATE 200 GPM
START TIME 13:20 END TIME 13:42
UPPER GR 3346 LOWER GR 3356

UPPER DETECTOR | LOWER DETECTOR

UPPER GR 3346 LOWER GR 3356




0:09:00
0:10:00
0:11:00
0:12:00
0:13:00
0:14:00
0:15:00
0:16:00
0:17:00
0:18:00

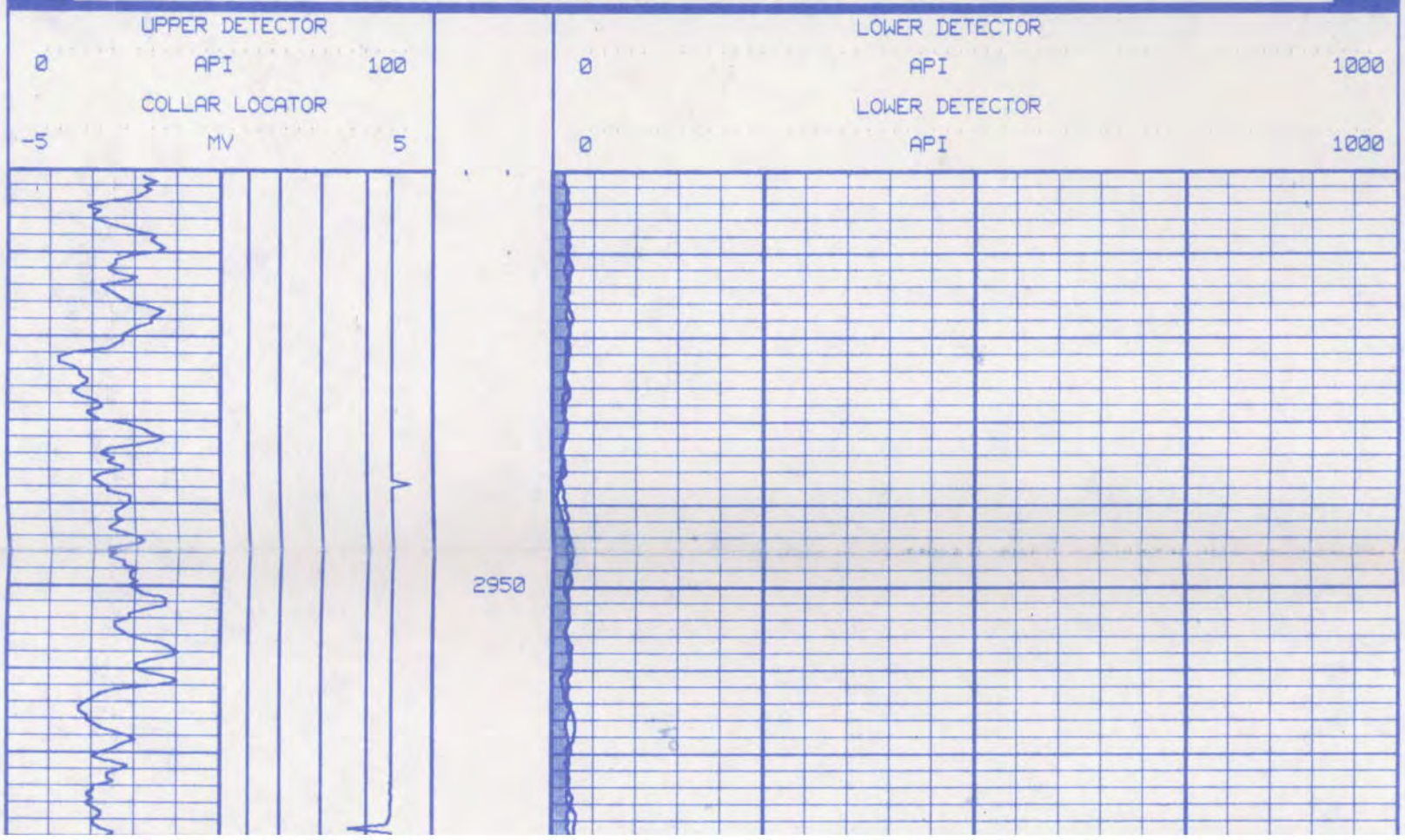


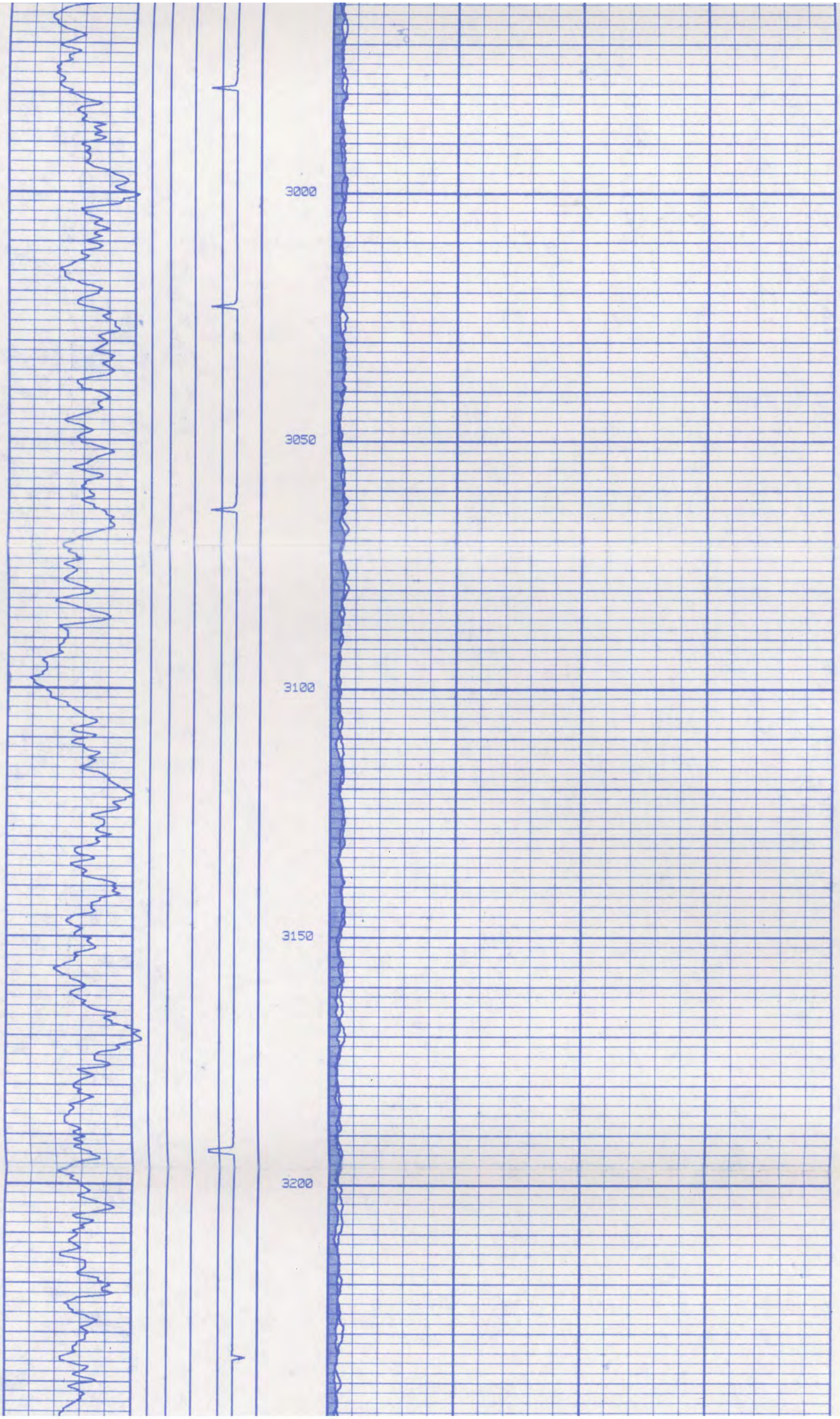
TIME DRIVE SURVEY # 2 PUMP RATE 200 GPM
START TIME 13:20 END TIME 13:42
UPPER GR 3346 LOWER GR 3356

STOP DEPTH 640FT DATE: 000 01-2 TIME: 3-97 1 FILE: TIME PLAYBACK PROGRAM

START DEPTH 2900FT DATE: 724 01-2 TIME: 7-97 5 FILE: BASE2 PLAYBACK PROGRAM

BASE LOG AFTER SURVEY WITH OVERLAY PUMP RATE 0 GPM
START TIME 13:48 END TIME 14:03
DEPTH LOGGED 3545-2900 BEFORE BASE IS SHADED

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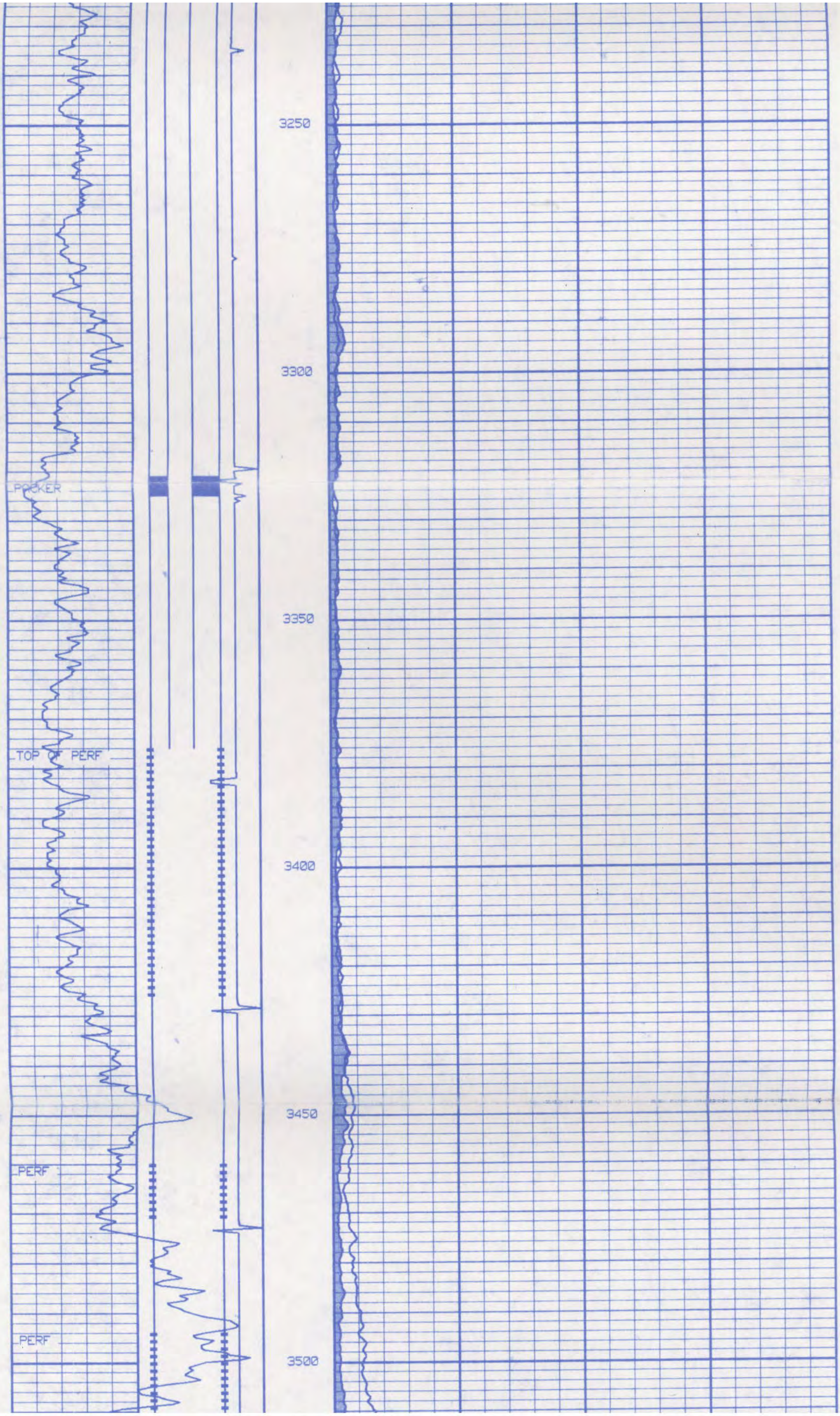
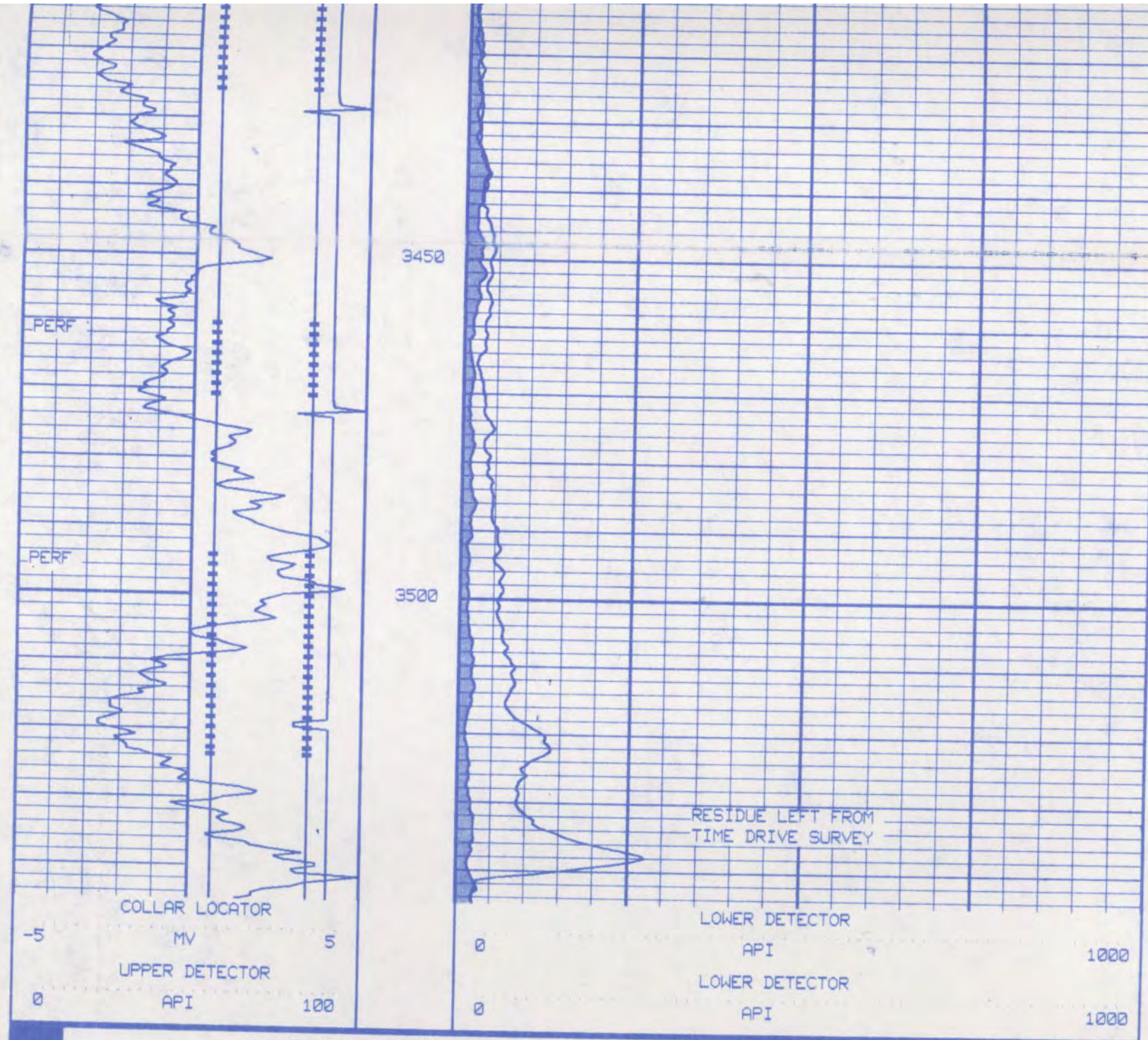
3050
3100
3150
3200


3250
3300
PACKER
3350
TOP OF PERF
3400
3450
PERF
PERF
3500



BASE LOG AFTER SURVEY WITH OVERLAY PUMP RATE 0 GPM

START TIME 13:48 END TIME 14:03

DEPTH LOGGED 3545-2900 BEFORE BASE IS SHADED

STOP DEPTH 3545FT DATE: 724 01-2 TIME: 7-97 5 FILE: BASE2 PLAYBACK PROGRAM

APPENDIX C

CALIBRATION CERTIFICATES

SOLUTIONS

PANEX CALIBRATION CERTIFICATE

Model 1100 Cal. Run # F81

Serial # R2-1207

L.B.# N/A

Cell # M903H

Full Scale 10000 psia 68966 kpa

Temperature range 20 Deg C to 82 Deg C
Temperature range 68 Deg F to 180 Deg F

Date Calibrated 09-21-1996 Location: Sugar Land

C0	C1	C2	C3	C4
0.0	-4275.16	17594	109009	-8590
C5	C51	C52	C53	
-65.7868	.614347	-10.7913	77.2456	
C6	C61	C62	C63	
-82.7826	.122734	41.2384	-799.261	
C7	C71	C72	C73	C74
2.0148	-2.09036	276.111	-4623.7	21.943
C8				
-.001468				
C9				
9				

The above listed equipment was manufactured, assembled, and tested in compliance with Panex engineering specifications and applicable industry standards.
All calibrations are performed in a controlled environment, using instrumentation and methods which assure that the specifications claimed are reliable.

Manny Medina
Certifying Technician

23-SEP-96
Date

Q.A. APPROVED
Certifying QA Inspector

PANEX CORPORATION

TRANSCAT®

CalXpress® Only at TRANSCAT

CALIBRATION LAB

Certificate of Calibration

TRANSCAT will maintain and document the traceability of all its standards to the National Institute of Standards and Technology, NIST (formerly NBS), or the National Research Council, NRC, of Canada, or to other recognized national or international standard bodies, or to measurable conditions created in our laboratory using established physical constants and/or natural physical phenomena, and recognized procedures. The TRANSCAT calibrations system, when applicable, conforms to the requirements of MIL-STD-45662A.

Complete records of work performed are maintained by TRANSCAT and are available for inspection. Laboratory assets used in the performance of this calibration are shown below the certified instrument description.

TEMPERATURE : 70 °F

RELATIVE HUMIDITY OF: 46 %

Customer : HOECHST CELANESE
Manufacturer : EATON CORPORATION
Model Number : UPC5000BACB
Serial Number : A1258
Description : PRESSURE CALIBRATOR
Calibrated : 12/4/96 PO# : 3317400
Date Due : 12/4/97
RA# : 5-L2292-1-1
ID No. : 00008
ITEM RECEIVED WITH OPERATIONAL FAILURE

(Customer Use Only) **NOTES:**

ASSETS	MANUFACTURER	MODEL#	DESCRIPTION	CALIBRATED	DATE DUE
5019	FLUKE	5700A	CALIBRATOR	9/9/96	9/9/97
5020	AMETEK	RK-300	DEAD WEIGHT TESTER	6/15/96	6/15/97
5032	AMETEK	T-150	DEAD WEIGHT TESTER	5/20/96	5/20/97
5061	RUSKA	6222	PRESSURE CALIBRATOR	7/8/96	7/8/97

Calibrated at :

1181 Brittmore Suite 600
Houston, TX 77043, USA
800-828-1470 FAX# 800-395-0543
By: Keith Kucera

E. SUAREZ
LAB MANAGER

F0013R2 1/25/95

TRANSCAT CALIBRATION LAB DATA

CalXpress® Only at TRANSCAT

RA# : 5-L2292-1-1
Description : PRESSURE CALIBRATOR
Customer : HOECHST CELANESE
Calibrated : 12/4/96 Service : P6
Date Due : 12/4/97

Mfg : EATON CORPORATION
Model : UPC5000BACB
Serial : A1258
PO# : 3317400
Customer ID# : 00008
Verification Procedure : D1878R1

INPUT		I/O ACCURACY	LOW / HIGH LIMITS			As Rec'd	As Shipped
RANGE: 400					**psi**		
0.0	psi	±0.05% of Full Scale	-0.2	0.2	psi	OpFail	0.0
80.0	psi	±0.05% of Full Scale	79.8	80.2	psi	OpFail	79.9
160.0	psi	±0.05% of Full Scale	159.8	160.2	psi	OpFail	159.9
200.0	psi	±0.05% of Full Scale	199.8	200.2	psi	OpFail	199.9
320.0	psi	±0.05% of Full Scale	319.8	320.2	psi	OpFail	319.9
400.0	psi	±0.05% of Full Scale	399.8	400.2	psi	OpFail	399.8
RANGE: 1000					**psi**		
0.0	psi	±0.05% of Full Scale	-0.5	0.5	psi	OpFail	0.0
200.0	psi	±0.05% of Full Scale	199.5	200.5	psi	OpFail	200.0
400.0	psi	±0.05% of Full Scale	399.5	400.5	psi	OpFail	399.5
500.0	psi	±0.05% of Full Scale	499.5	500.5	psi	OpFail	499.5
800.0	psi	±0.05% of Full Scale	799.5	800.5	psi	OpFail	799.5
1000.0	psi	±0.05% of Full Scale	999.5	1000.5	psi	OpFail	999.5
RANGE: 2000					**psi**		
0.0	psi	±0.05% of Full Scale	-1.0	1.0	psi	OpFail	0.0
400.0	psi	±0.05% of Full Scale	399.0	401.0	psi	OpFail	399.5
800.0	psi	±0.05% of Full Scale	799.0	801.0	psi	OpFail	799.5
1000.0	psi	±0.05% of Full Scale	999.0	1001.0	psi	OpFail	999.5
1600.0	psi	±0.05% of Full Scale	1599.0	1601.0	psi	OpFail	1599.5
2000.0	psi	±0.05% of Full Scale	1999.0	2001.0	psi	OpFail	1999.5

TRANSCAT CALIBRATION LAB DATA

CalXpress. Only at TRANSCAT

RA# : 5-L2292-1-1

Description : PRESSURE CALIBRATOR

Customer : HOECHST CELANESE

Calibrated : 12/4/96 Service : P6

Date Due : 12/4/97

Mfg : EATON CORPORATION

Model : UPC5000BACB

Serial : A1258

PO# : 3317400

Customer ID# : 00008

Verification Procedure : D1878R1

INPUT		I/O ACCURACY	LOW / HIGH LIMITS			As Rec'd	As Shipped
RANGE: 20	mA						
4.000	mA	±0.05% of Full Scale	3.990	4.010	mA	OpFail	3.998
8.000	mA	±0.05% of Full Scale	7.990	8.010	mA	OpFail	7.996
12.000	mA	±0.05% of Full Scale	11.990	12.010	mA	OpFail	11.994
16.000	mA	±0.05% of Full Scale	15.990	16.010	mA	OpFail	15.993
20.000	mA	±0.05% of Full Scale	19.990	20.010	mA	OpFail	19.991
RANGE: AMBIENT	psi						
ACTUAL	psi	±0.05% of Full Scale	-.2	.2	psi	OpFail	-.2

Remarks: PROCEDURE: MANUFACTURER'S PROCEDURE
REPLACED THE MANAFOLD ASSEMBLY AND ALSO CLEANED THE PLUMBING SYSTEM WHICH WAS SEVERELY CONTAMINATED.
ADJUSTED TO MANUFACTURER'S SPECS AFTER THE UNIT WAS REPAIRED.

Transcat Recall Verification System

CalXpress. Only at TRANSCAT

Please review the information listed below and indicate any changes on the line provided and fill in any missing information. Please fax this information to 1-800-395-0543. This information will be used to update our recall notification files.

Customer :	HOECHST CELANESE	Customer:	
Address1 :	FM 3057	Address:	
Address2 :			
City :	BAY CITY	City:	
State/Prov :	TX	State/Province:	
Zip/P.C.:	77414	Zip/P.C.:	
Contact :	ROLAND SILVAS	Contact:	
Phone :	409-241-4019	Title:	
Fax:		Phone:	
		Fax:	

Person Responsible for Test and Measurement Equipment Specifications:

Name:
Title:
Phone:

Recalibration Contact for this unit if different from above:

Name:
Title:
Phone:

Manu :	EATON CORPORATION	Serial :	A1258
Model :	UPC5000BACB	RA # :	5-L2292-1-1
Description :	PRESSURE CALIBRATOR	ID # :	00008
		PO # :	3317400

As part of our Quality Review and improvement system, we would like you to review our performance on the order and unit listed above and the service you received from Transcat.

	Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree
The information on the certificate is accurate and complete.	5	4	3	2	1
The unit was returned to you clean and in excellent working order.	5	4	3	2	1
The lab performed all the work you expected.	5	4	3	2	1
The turn-around time met your needs.	5	4	3	2	1
Communications with the lab were clear, concise, timely and effective.	5	4	3	2	1

Please identify any other areas that we should be addressing that will further Transcat's relations with you:

Fax: 1-800-395-0543 ATTN: National Lab Manager

APPENDIX D

FALLOFF PLOTS

Section 1, Page 1 - WELL TEST INTERPRETATION
Section 1, Page 2 - SEQUENCE OF EVENTS
Section 2, Page 1 - BOTTOMHOLE PRESSURE AND TEMPERATURE LOG
Section 3, Page 1 - LOG-LOG MATCH
Section 3, Page 2 - SUPERPOSITION
Section 3, Page 3 - PRESSURE HISTORY SIMULATION
Section 3, Page 4 - SUPERPOSITION SIMULATION
Section 3, Page 5 - INPUT DATA - LOG-LOG ANALYSIS
Section 3, Page 6 - INPUT DATA - SUPERPOSITION ANALYSIS

SOLUTIONS, INC.

SOLUTIONS, INC.

Well Test Interpretation

for

Hoechst Celanese Chemical Ltd.

WDW 110 (Well #1-A) - BHP Falloff Test

Bay City, Texas

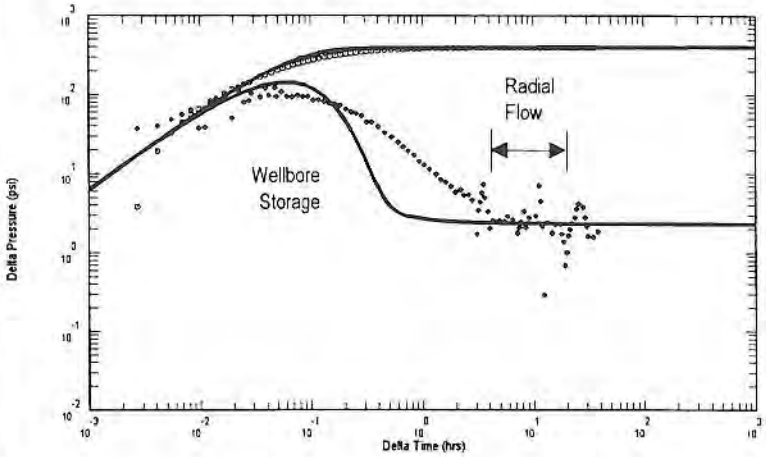
Report Number
970207-001
Test Date
Jan-21-97

Interpretation Results

Model of Behavior	Homogeneous
Permeability (to Waste).....	850 md
Transmissibility	197,535 md-ft/cp
Skin	68
Delta P Skin (psi)	350
Pi (at 3300 ft)	1493 psia
Total Delta P (Pwf - Pi)	(1895 - 1493) = 402
Last SI Pressure (psia)	1498.94
Radius of Investigation	4895 ft
Percent of Delta P Skin	87%

Input Data: Qlast = -7097 bpd, B = 1.006 rbl/stb
rw =0.30, h = 165, u = 0.71, ct = 6.00E-6, phi = 0.33

Figure A - Log-log Plot of Falloff Period



Executive Summary

Test Overview

This report contains the interpretation of a falloff test on the Hoechst Celanese Chemical Co. WDW 110 (Well #1-A). The gauge was placed at a depth of 3300 feet. Flowing pressures were monitored for a short period of time and the well was shut-in at surface for a 38- hour falloff test. The final rate prior to shut-in is 7097 bpd (207 gpm). Section 2 provides a detailed listing of the rate history used in the analysis.

Interpretation Results

Figure A, above, is a log-log plot of the build-up period with the pressure derivative function. The solid line in Figure A is the multi-rate type-curve response generated using a wellbore storage and skin model. There is good agreement between the measured data and model response. Superposition and Pressure History Simulation analysis also provide results consistent with the log-log analysis presented above. Based on the model response radial flow occurs from 4 to 18 hours into the falloff.

Skin Damage

The estimated skin damage (68) represents 87% of the total pressure drop required to inject 7097 bpd (207 gpm) into the formation. The pressure drop due to skin is 350 psi.

Boundaries

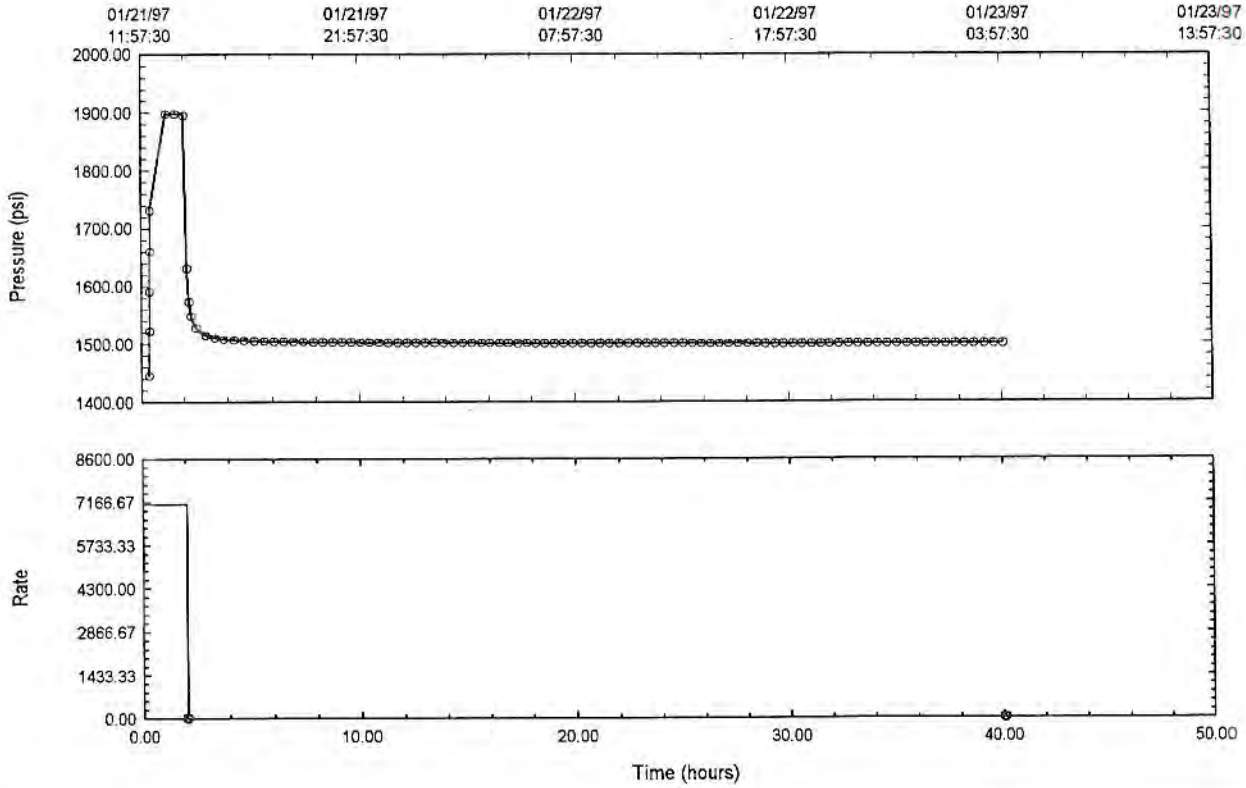
There are no boundaries observed during the falloff period. The calculated radius of investigation based on the total compressibility, mobility (k/u), and porosity, indicated above is 4895 ft at the end of the falloff period.

Report Contents

Section 2 - Sequence of Events; Section 3 - Analysis Plots; Section 4 - Pressure Data; Section 5 - Completion Data; Section 6 - Distribution List

Sequence of Events
Hoechst Celanese Chemical Ltd.
WDW 110 (Well #1-A) -- BHP Falloff Test

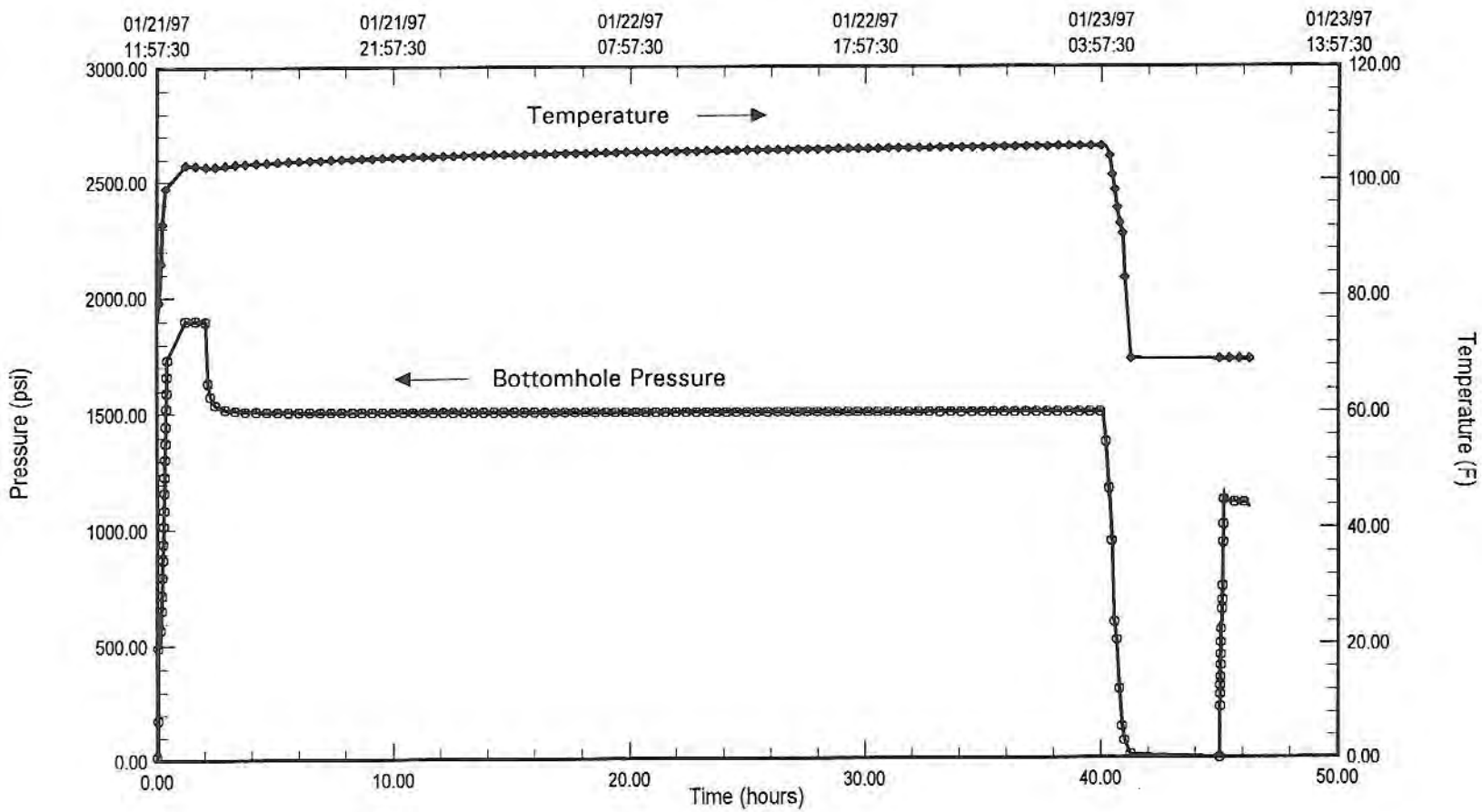
State ..... Texas	***Test Date*** ..... January 21, 1997
City ..... Bay City	***Interpretation Date*** ..... February 7, 1997
Field ..... Bay City Facility	***Report Number*** 970207-001



Label Point / Comments	Date (dd-mm-yy)	Time (hh:mm:ss)	Gauge ET (hours)	BHP (psia)	Rate (bpd)
Production History Used in the Analysis					
	1-Jan-97	6:00:00	-485.958	0.00	-7131
	15-Jan-97	6:00:00	-149.958	0.00	-5486
	21-Jan-97	0:00:00	-11.958	0.00	-7097
Start Falloff	21-Jan-97	14:00:00	2.042	1894.59	0
End of Falloff	23-Jan-97	6:05:00	40.083	1498.94	0

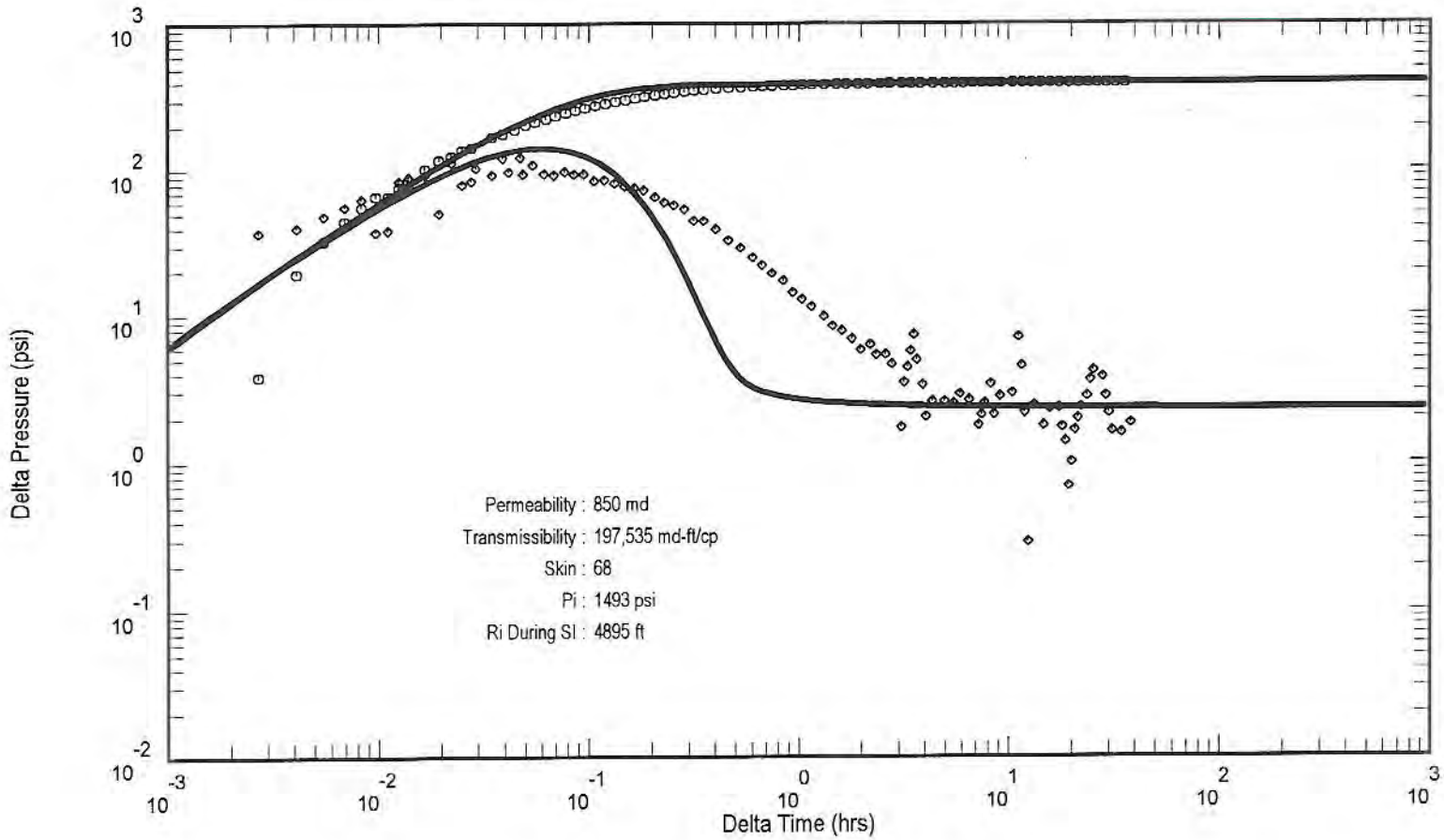
State ..... Texas	**Hoechst Celanese Chemical Ltd.**	***Test Date*** 21-Jan-97
City ..... Bay City	***WDW 110 (Well #1-A)***	***Analysis Date*** 7-Feb-97
Field ..... Bay City Facility	**BHP Falloff Test**	***Report Number*** 970207-001

Bottomhole Pressure and Temperature Log



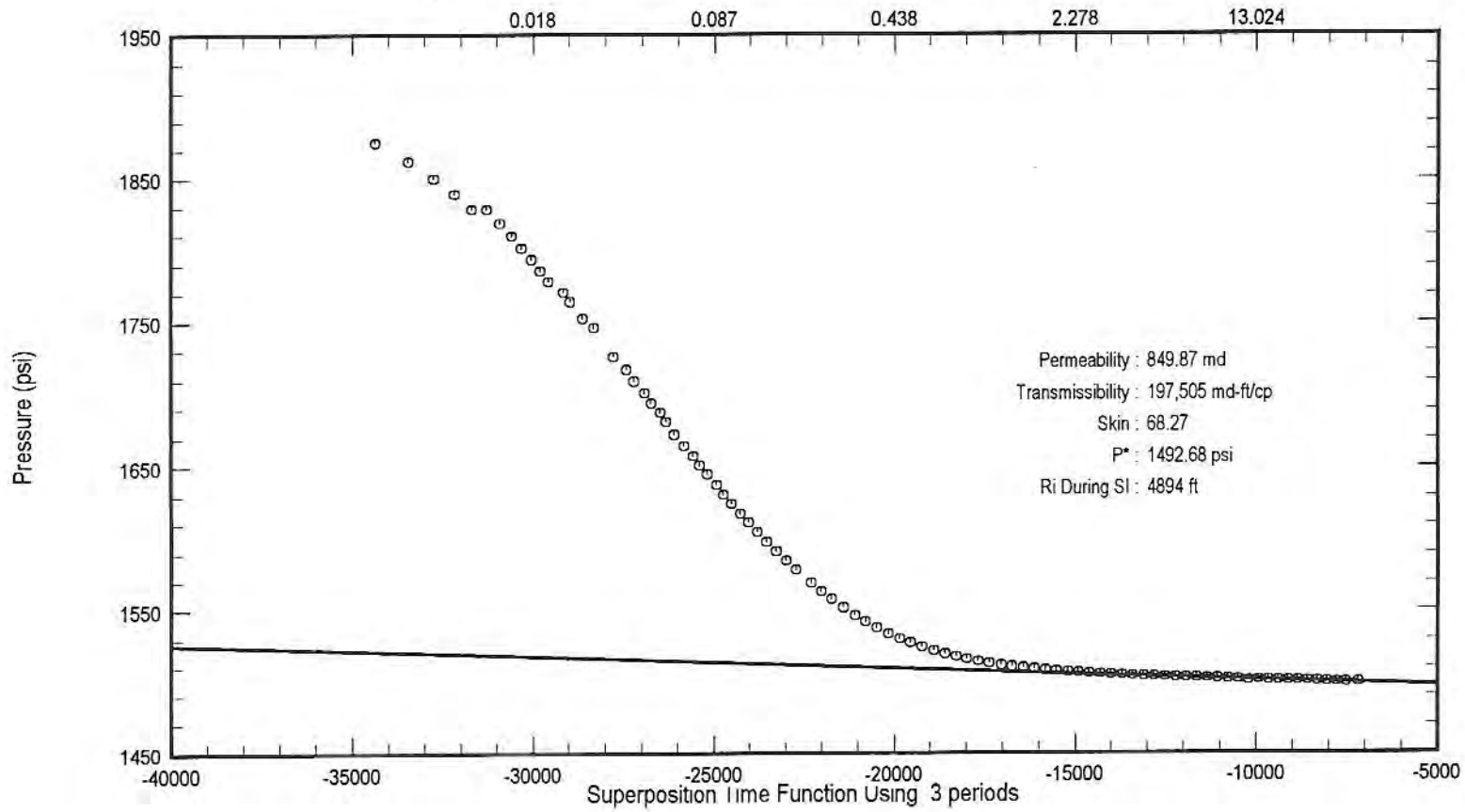
State ..... Texas	**Hoechst Celanese Chemical Ltd.**	***Test Date*** 21-Jan-97
City ..... Bay City	***WDW 110 (Well #1-A)***	***Analysis Date*** 7-Feb-97
Field ..... Bay City Facility	**BHP Falloff Test**	***Report Number*** 970207-001

Log-Log Match



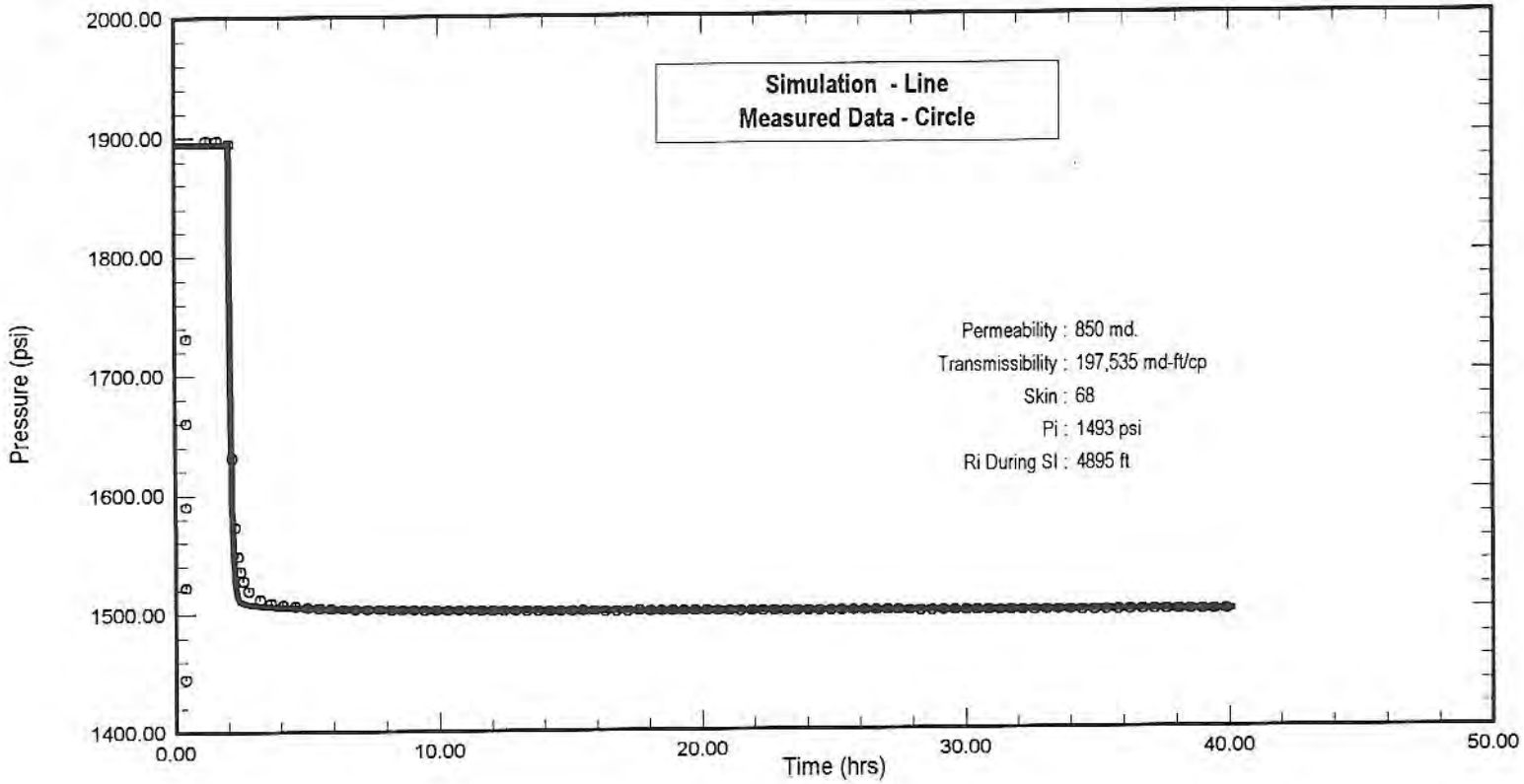
State ..... Texas	**Hoechst Celanese Chemical Ltd.**	***Test Date*** 21-Jan-97
City ..... Bay City	***WDW 110 (Well #1-A)***	***Analysis Date*** 7-Feb-97
Field ..... Bay City Facility	**BHP Falloff Test**	***Report Number*** 970207-001

Superposition Analysis



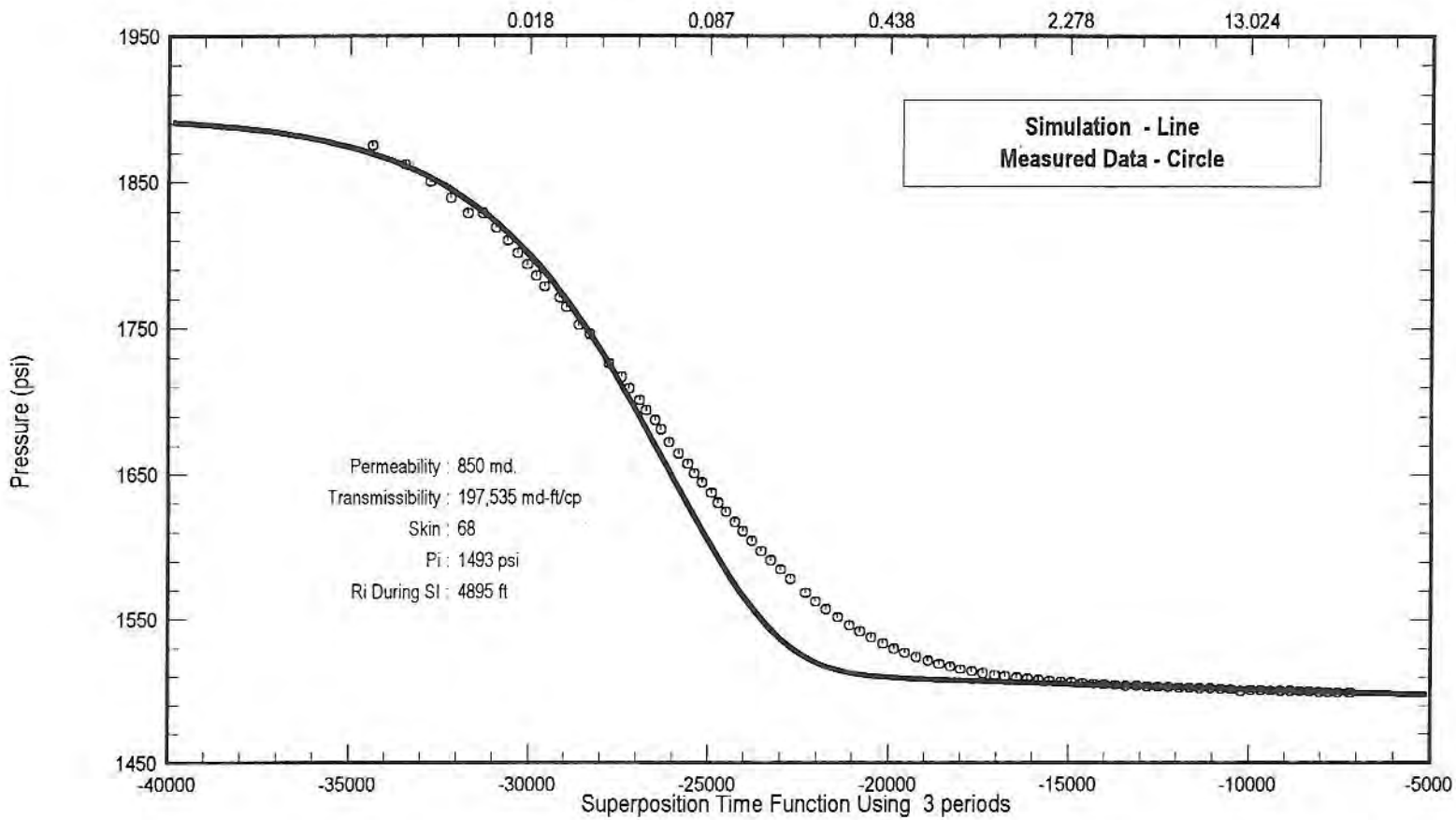
State ..... Texas ***City*** ..... Bay City ***Field*** ..... Bay City Facility	**Hoechst Celanese Chemical Ltd.** ***WDW 110 (Well #1-A)*** **BHP Falloff Test**	***Test Date*** ..... 21-Jan-97 ***Analysis Date*** ..... 7-Feb-97 ***Report Number*** 970207-001

Pressure History Simulation



State ..... Texas	**Hoechst Celanese Chemical Ltd.**	***Test Date*** 21-Jan-97
City ..... Bay City	***WDW 110 (Well #1-A)***	***Analysis Date*** 7-Feb-97
Field ..... Bay City Facility	**BHP Falloff Test**	***Report Number*** 970207-001

Superposition Simulation



State ..... Texas	**Hoechst Celanese Chemical Ltd.**	***Test Date*** 21-Jan-97
City ..... Bay City	***WDW 110 (Well #1-A)***	***Analysis Date*** 7-Feb-97
Field ..... Bay City Facility	**BHP Falloff Test**	***Report Number*** 970207-001

Input Data

Porosity (%) [phi]: 33.0%	*Open Hole Radius (ft) [rw] :* 0.300	*Gauge Depth (ft) :* 3300
Viscosity (cp) [u] : 0.710	*Net Zone Thickness (ft) [h] :* 165	*Top of Perforations :* 3376
FVF (Rbl/Stb) [B] : 1.006	*Rate During Period (mscfd) [qn] :* 0	*Bottom of Perforations :* 3572
Total Compressibility (1/psi) [ct] : 6.000E-06	*ABS(Rate Prior to Period (mscfd)) [qn-1] :* 7097	*BHT (F) :* 105

Log - Log Analysis

Permeability

kh = 141.2 (delta q)(u)(B)(Pd/dp)
kh = 141.2 * (7097) * (0.710) * (1.006) * (1.9590E-1)
kh = 140,220 md-ft
k = 850 md

Wellbore Storage Coefficient

C(1) = 0.000295 (kh) / (u * [TD/CD]/dt)
C(1) = 0.000295 * (140250.00) / (0.710 * 1165.8538)
C(1) = 0.050
CD = 0.8936 C(1) / (phi * ct * h * rw^2)
CD = 0.8936 * 5.0E-2 / (0.33000 * 6.00E-6 * 165 * 0.3^2)
CD = 1519

C(2) 0.046
CphiD = 0.1

Skin

S = 1/2 ln (CDe2s match / CD)
S = 1/2 ln (3.55E+62 / (1519.06))
S = 68

Radius of Investigation

ri = ((k * SI time) / (960 phi u ct))^.5
ri = ((850.00 * 38.04) / (960 * 0.330 * 0.71 * 6.00E-6))^.5
ri = 4895 ft

State ..... Texas	**Hoechst Celanese Chemical Ltd.**	**Test Date** 21-Jan-97
City ..... Bay City	***WDW 110 (Well #1-A)***	**Analysis Date** 7-Feb-97
Field ..... Bay City Facility	**BHP Falloff Test**	**Report Number** 970207-001

Input Data

Porosity (%) [phi]:	33.0%	*Open Hole Radius (ft) [rw] :*	0.3	*Gauge Depth (ft) :*	3300
Viscosity (cp) [u] :	0.710	*Net Zone Thickness (ft) [h] :*	165	*Top of Perforations :*	3376
FVF (Rbl/Stb) [B] :	1.006	*Rate During Period (mscfd) [qn] :*	0	*Bottom of Perforations :*	3572
Total Compressibility (1/psi) [ct] :	6.000E-06	*ABS(Rate Prior to Period (mscfd)) [qn-1] :*	7097	*BHT (F) :*	105

Superposition Analysis

Permeability

kh = 162.6 (u) (B) / m'
kh = 162.6 * (0.710) * (1.006) / (0.00082836)
kh = 140,203 md-ft
k = 849.72 md

Skin

S = 1.1513((P1hr - Pwf)/ (m' delta q) - log(k / (phi u ct rw^2)) + 3.227)
S = 1.1513((387.4 / (.00082836 * 7097) - log(849.870 / (0.330 * 0.710 * 6.00E-06 * 0.3^2)) + 3.227)
S = 68.27

Radial Flow Line Parameters (Superposition Plot)

Start Radial Flow Line (hrs) :	4.175	*RSqr :*	0.987
End Radial Flow Line (hrs) :	18.625	*Number of Points :*	44
tart Radial Flow Line (SF) :	18.625	*P* (psi) :*	1492.68
End Radial Flow Line (SF) :	-13213.27		
Superposition Slope :	-8.2836E-04		
Horner Slope (psi/log-cycle) :	-5.877923		

APPENDIX E

FALLOFF DATA & FLOW RATE DATA

SOLUTIONS, INC.

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
0.0000	14.85	75.50	1.35	1.3667	1897.76	102.90	-40.56
0.0167	14.80	75.50	1.35	1.3833	1897.71	102.90	-40.42
0.0194	14.82	75.50	1.35	1.4000	1897.77	102.90	-40.10
0.0222	14.82	75.50	1.35	1.4167	1897.80	102.90	-0.40
0.0250	14.82	75.60	1.35	1.4333	1897.73	102.90	-0.40
0.0278	14.85	75.60	1.35	1.4500	1897.88	102.80	-0.40
0.0306	14.83	75.60	1.35	1.4667	1898.03	102.80	-0.40
0.0333	14.80	75.60	1.35	1.4833	1898.14	102.80	-0.40
0.0361	14.82	75.60	1.35	1.5000	1897.92	102.80	-0.40
0.0389	15.20	75.60	1.35	1.5167	1897.80	102.80	-0.40
0.0417	33.14	75.60	1.35	1.5333	1897.78	102.80	-0.40
0.0444	175.76	75.60	1.35	1.5500	1897.64	102.80	-0.40
0.0472	490.04	75.80	1.35	1.5667	1897.76	102.80	-0.40
0.0500	489.71	75.80	1.35	1.5833	1897.83	102.80	-0.40
0.0528	489.63	76.00	1.35	1.6000	1897.86	102.80	-0.40
0.0556	489.13	76.20	1.35	1.6167	1897.86	102.80	-0.40
0.0583	488.99	76.40	1.35	1.6333	1897.87	102.80	-0.40
0.0611	489.08	76.50	1.35	1.6500	1897.96	102.80	-0.40
0.0639	488.99	76.70	1.35	1.6667	1897.91	102.80	-0.40
0.0667	489.03	76.90	1.35	1.6833	1898.01	102.80	-0.40
0.0694	489.14	77.10	1.35	1.7000	1897.76	102.80	-0.40
0.0722	489.46	77.20	1.35	1.7167	1897.82	102.80	-0.40
0.0750	489.57	77.40	1.35	1.7333	1897.95	102.80	-0.40
0.0778	489.74	77.60	1.35	1.7500	1898.15	102.70	-0.40
0.0806	489.47	77.80	1.35	1.7667	1898.11	102.70	-0.40
0.0833	489.94	78.00	1.35	1.7833	1898.06	102.70	496.14
0.0861	490.05	78.10	1.35	1.8000	1897.88	102.70	494.27
0.0889	489.64	78.30	1.35	1.8167	1897.95	102.70	494.83
0.0917	489.73	78.60	1.35	1.8333	1898.04	102.70	495.33
0.0944	489.86	78.80	1.35	1.8500	1898.15	102.70	494.97
0.0972	490.23	79.00	1.35	1.8667	1898.13	102.70	494.90
0.1000	490.22	79.10	1.35	1.8833	1898.17	102.70	494.60
0.1028	490.12	79.30	1.35	1.9000	1898.10	102.70	494.73
0.1083	490.63	79.70	1.35	1.9167	1898.11	102.70	495.34
0.1111	492.38	79.90	1.35	1.9333	1898.18	102.70	496.05
0.1194	498.72	80.50	1.35	1.9514	1898.19	102.60	496.09
0.1222	501.06	80.80	1.35	1.9528	1898.26	102.60	496.73
0.1250	507.02	81.10	1.35	1.9542	1898.26	102.60	496.29
0.1278	512.98	81.50	1.35	1.9556	1898.25	102.60	496.23
0.1306	518.77	81.80	1.35	1.9569	1898.25	102.60	495.71
0.1333	521.84	82.00	1.35	1.9583	1898.25	102.60	495.65
0.1500	570.18	84.00	1.35	1.9597	1898.17	102.60	495.65
0.1667	599.87	85.90	1.35	1.9611	1898.17	102.60	495.82
0.1833	655.32	87.90	1.35	1.9625	1898.17	102.60	495.83
0.2000	720.02	89.50	1.35	1.9639	1898.17	102.60	496.05
0.2167	797.04	91.20	1.35	1.9653	1898.17	102.60	494.29
0.2333	872.95	92.70	1.35	1.9667	1892.61	102.60	494.29
0.2500	940.46	93.90	1.35	1.9681	1889.87	102.60	489.76
0.2667	1016.80	95.00	1.35	1.9694	1889.27	102.60	488.65
0.2833	1084.97	95.90	1.35	1.9708	1889.27	102.60	488.43
0.3000	1161.99	96.90	1.35	1.9722	1889.27	102.60	489.17
0.3167	1230.15	97.60	1.35	1.9736	1889.71	102.60	489.15
0.3333	1307.07	98.30	1.35	1.9750	1890.22	102.60	489.15
0.3500	1375.23	98.80	1.35	1.9764	1890.88	102.60	489.20
0.3667	1445.13	99.30	1.35	1.9778	1891.51	102.60	489.97
0.3833	1521.86	99.80	1.35	1.9792	1891.98	102.60	490.23
0.4000	1590.48	100.20	1.35	1.9806	1891.98	102.60	490.96
0.4167	1660.11	100.50	1.35	1.9819	1892.48	102.60	491.23
0.4333	1731.29	100.80	1.35	1.9833	1893.00	102.60	491.23
1.2000	1897.72	102.90	1.35	1.9847	1893.50	102.60	491.42
1.2167	1897.65	102.90	1.35	1.9861	1893.94	102.60	491.99
1.2333	1897.65	102.90	1.35	1.9875	1894.46	102.60	492.65
1.2500	1897.64	102.90	1.35	1.9889	1894.46	102.60	492.17
1.2667	1897.71	102.90	1.35	1.9903	1894.81	102.60	492.33
1.2833	1897.74	102.90	1.35	1.9917	1895.20	102.60	492.33
1.3000	1897.77	102.90	-34.00	1.9931	1895.33	102.60	492.97
1.3167	1897.80	102.90	-40.68	1.9986	1895.97	102.60	494.70
1.3333	1897.79	102.90	-40.94	2.0000	1896.19	102.60	494.01
1.3500	1897.80	102.90	-40.67	2.0014	1896.19	102.60	494.06

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
2.0028	1896.23	102.60	494.47	2.1014	1672.63	102.60	251.02
2.0042	1896.23	102.60	493.82	2.1028	1672.63	102.60	248.17
2.0056	1896.30	102.60	493.84	2.1042	1669.93	102.60	245.49
2.0069	1896.30	102.60	493.84	2.1056	1667.34	102.60	245.49
2.0083	1896.31	102.60	493.83	2.1069	1664.80	102.60	242.96
2.0097	1896.27	102.60	493.17	2.1083	1662.37	102.60	240.49
2.0111	1896.25	102.60	493.39	2.1097	1659.93	102.60	238.19
2.0125	1896.25	102.60	492.74	2.1111	1659.93	102.60	235.87
2.0139	1896.04	102.60	492.68	2.1125	1657.66	102.60	233.53
2.0153	1895.93	102.60	492.68	2.1139	1655.38	102.60	233.53
2.0167	1895.71	102.60	493.14	2.1153	1653.14	102.60	231.42
2.0181	1895.68	102.60	492.24	2.1167	1651.06	102.60	229.43
2.0194	1895.46	102.60	492.19	2.1181	1648.84	102.60	227.36
2.0208	1895.46	102.60	491.70	2.1194	1648.84	102.60	225.32
2.0222	1895.36	102.60	491.49	2.1208	1646.80	102.60	223.41
2.0236	1895.26	102.60	491.49	2.1222	1644.87	102.60	221.63
2.0250	1895.16	102.60	492.11	2.1236	1642.92	102.60	221.63
2.0264	1895.09	102.60	491.01	2.1250	1640.97	102.60	219.66
2.0278	1895.01	102.60	491.20	2.1264	1639.14	102.60	217.94
2.0292	1895.01	102.60	491.18	2.1278	1639.14	102.60	216.16
2.0306	1894.97	102.60	492.03	2.1292	1637.45	102.60	214.46
2.0319	1894.84	102.60	492.03	2.1306	1635.64	102.60	212.71
2.0333	1894.76	102.60	490.95	2.1319	1633.99	102.60	212.71
2.0347	1894.75	102.60	490.95	2.1333	1632.27	102.60	210.99
2.0361	1894.62	102.60	490.94	2.1347	1630.61	102.60	209.34
2.0375	1894.62	102.60	490.73	2.1361	1629.08	102.60	207.72
2.0389	1894.61	102.60	490.90	2.1375	1629.08	102.60	206.15
2.0403	1894.61	102.60	490.90	2.1389	1627.21	102.60	204.47
2.0417	1894.59	102.60	491.44	2.1403	1625.84	102.60	204.47
2.0431	1890.79	102.60	416.70	2.1417	1624.34	102.60	202.92
2.0444	1890.79	102.60	471.16	2.1431	1622.77	102.60	201.51
2.0458	1875.36	102.60	464.03	2.1444	1622.77	102.60	199.89
2.0472	1862.17	102.60	466.66	2.1458	1621.43	102.50	198.42
2.0486	1850.24	102.60	466.66	2.1472	1620.07	102.60	197.08
2.0500	1839.24	102.60	424.81	2.1486	1618.59	102.60	197.08
2.0514	1828.67	102.60	424.75	2.1500	1617.41	102.50	195.62
2.0528	1828.67	102.60	398.39	2.1542	1614.82	102.50	191.74
2.0542	1818.77	102.60	388.57	2.1556	1613.48	102.60	190.48
2.0556	1809.88	102.60	380.93	2.1569	1612.29	102.50	190.48
2.0569	1801.38	102.60	380.93	2.1583	1611.14	102.60	189.23
2.0583	1793.55	102.60	373.10	2.1597	1609.95	102.50	188.06
2.0597	1785.81	102.60	365.34	2.1611	1608.70	102.60	186.83
2.0611	1778.64	102.60	357.80	2.1625	1608.70	102.60	185.65
2.0625	1778.64	102.60	350.95	2.1639	1607.53	102.60	184.53
2.0639	1771.05	102.60	343.65	2.1653	1606.46	102.60	184.53
2.0653	1764.55	102.60	343.65	2.1667	1605.42	102.60	183.44
2.0667	1758.45	102.60	337.34	2.1681	1604.39	102.50	182.28
2.0681	1752.58	102.60	331.25	2.1694	1603.37	102.50	181.28
2.0694	1752.58	102.60	325.54	2.1708	1603.37	102.50	180.22
2.0708	1746.26	102.60	319.63	2.1722	1602.21	102.60	179.21
2.0722	1740.95	102.60	319.63	2.1736	1601.29	102.50	178.29
2.0764	1726.21	102.60	304.75	2.1750	1600.28	102.50	178.29
2.0778	1726.21	102.60	300.22	2.1764	1599.31	102.50	177.34
2.0792	1721.62	102.60	295.84	2.1778	1598.35	102.50	176.33
2.0806	1717.28	102.60	295.84	2.1792	1597.35	102.50	175.48
2.0819	1713.18	102.60	291.67	2.1806	1597.35	102.50	174.64
2.0833	1709.23	102.60	287.65	2.1819	1596.34	102.50	174.64
2.0847	1705.28	102.60	283.78	2.1833	1595.46	102.50	173.63
2.0861	1705.28	102.60	280.04	2.1847	1594.52	102.50	172.77
2.0875	1701.22	102.60	276.03	2.1861	1593.64	102.50	171.82
2.0889	1697.61	102.60	276.03	2.1875	1593.64	102.50	170.96
2.0903	1694.19	102.60	272.63	2.1889	1592.79	102.50	170.14
2.0917	1690.82	102.60	269.24	2.1903	1591.82	102.50	170.14
2.0931	1690.82	102.60	265.92	2.1917	1591.03	102.50	169.19
2.0944	1687.65	102.60	263.62	2.1931	1590.15	102.50	168.41
2.0958	1684.43	102.60	261.01	2.1944	1589.35	102.50	167.64
2.0972	1681.34	102.60	261.01	2.1958	1589.35	102.50	166.72
2.0986	1678.37	102.60	257.56	2.1972	1588.55	102.50	166.00
2.1000	1675.47	102.60	254.08	2.1986	1587.73	102.50	166.00

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia
2.2000	1587.00	102.50	165.27
2.2014	1586.19	102.50	164.45
2.2028	1585.40	102.50	163.70
2.2042	1585.40	102.50	162.84
2.2056	1584.67	102.50	162.11
2.2069	1583.75	102.50	162.11
2.2083	1583.11	102.50	161.25
2.2097	1582.40	102.50	160.56
2.2111	1581.71	102.50	159.82
2.2125	1581.71	102.50	159.23
2.2139	1581.00	102.50	158.45
2.2153	1580.31	102.50	158.45
2.2167	1579.53	102.50	157.82
2.2181	1579.02	102.50	157.19
2.2194	1579.02	102.50	156.54
2.2208	1578.19	102.50	155.88
2.2222	1577.59	102.50	155.88
2.2236	1576.95	102.50	155.25
2.2250	1576.28	102.50	154.67
2.2264	1575.65	102.50	154.02
2.2278	1575.65	102.50	153.43
2.2319	1573.89	102.50	152.19
2.2333	1573.21	102.50	151.54
2.2347	1572.73	102.50	150.99
2.2361	1572.73	102.50	150.33
2.2472	1568.86	102.50	146.47
2.2500	1567.87	102.50	145.97
2.2528	1566.84	102.50	144.88
2.2556	1566.35	102.50	143.88
2.2583	1565.32	102.50	143.40
2.2611	1564.86	102.50	142.35
2.2639	1563.92	102.50	141.75
2.2667	1562.90	102.50	140.82
2.2694	1562.52	102.50	139.76
2.2722	1561.60	102.50	139.50
2.2750	1561.23	102.50	138.43
2.2778	1560.34	102.50	137.47
2.2806	1559.44	102.50	137.24
2.2833	1559.10	102.50	136.27
2.2861	1558.24	102.50	135.41
2.2889	1557.46	102.50	135.14
2.2917	1557.07	102.50	134.29
2.2944	1556.20	102.50	133.74
2.2972	1555.48	102.50	133.08
2.3000	1555.13	102.50	132.30
2.3028	1554.39	102.50	131.78
2.3056	1553.74	102.50	131.10
2.3083	1553.35	102.50	130.39
2.3111	1552.70	102.50	130.19
2.3139	1552.01	102.50	129.51
2.3167	1551.70	102.50	128.86
2.3194	1551.01	102.50	128.61
2.3222	1550.77	102.50	127.90
2.3250	1550.03	102.50	127.67
2.3278	1549.48	102.50	126.99
2.3306	1549.06	102.60	126.34
2.3333	1548.41	102.60	125.92
2.3361	1547.86	102.60	125.46
2.3389	1547.63	102.60	124.99
2.3417	1547.08	102.50	124.74
2.3444	1546.83	102.50	124.27
2.3472	1546.21	102.60	124.04
2.3500	1545.65	102.60	123.59
2.3528	1545.52	102.60	123.08
2.3556	1544.91	102.60	122.65
2.3583	1544.62	102.60	122.17
2.3611	1544.21	102.60	121.79
2.3639	1543.71	102.60	121.57
2.3667	1543.62	102.60	121.10
2.3722	1542.53	102.60	120.49
2.3750	1542.46	102.60	120.01
2.3778	1541.94	102.60	119.83
2.3806	1541.45	102.60	119.39
2.3833	1541.21	102.60	118.90
2.3861	1540.87	102.60	118.70
2.3889	1540.42	102.60	118.27
2.3917	1540.19	102.60	117.84
2.3944	1539.72	102.60	117.61
2.3972	1539.59	102.60	117.18
2.4000	1539.25	102.60	116.73
2.4028	1538.76	102.60	116.56
2.4056	1538.69	102.60	116.13
2.4083	1538.32	102.60	115.91
2.4139	1537.69	102.60	115.31
2.4167	1537.34	102.60	115.15
2.4194	1537.11	102.60	114.82
2.4222	1536.75	102.60	114.66
2.4250	1536.55	102.60	114.31
2.4278	1536.27	102.60	114.08
2.4306	1536.02	102.60	114.00
2.4333	1535.69	102.60	113.62
2.4361	1535.48	102.60	113.26
2.4389	1535.16	102.60	113.10
2.4417	1534.94	102.60	112.86
2.4444	1534.82	102.60	112.67
2.4472	1534.44	102.60	112.43
2.4500	1534.19	102.60	112.16
2.4528	1533.87	102.60	111.97
2.4556	1533.50	102.60	111.64
2.4583	1533.43	102.60	111.32
2.4611	1533.12	102.60	111.18
2.4639	1533.00	102.60	110.95
2.4667	1532.72	102.60	110.76
2.4694	1532.37	102.60	110.45
2.4722	1532.27	102.60	110.14
2.4750	1531.99	102.60	109.96
2.4778	1531.75	102.60	109.70
2.4806	1531.52	102.60	109.39
2.4833	1531.35	102.60	109.25
2.4861	1531.08	102.60	109.03
2.4889	1530.99	102.60	108.79
2.4917	1530.71	102.60	108.61
2.4944	1530.51	102.60	108.46
2.4972	1530.30	102.60	108.27
2.5000	1529.93	102.60	107.96
2.5028	1529.93	102.60	107.75
2.5056	1529.63	102.60	107.62
2.5083	1529.46	102.60	107.34
2.5111	1529.26	102.60	107.08
2.5139	1529.12	102.60	106.93
2.5167	1528.88	102.60	106.81
2.5194	1528.66	102.60	106.66
2.5222	1528.54	102.60	106.51
2.5278	1528.19	102.60	106.25
2.5306	1528.09	102.60	106.05
2.5333	1527.85	102.60	105.81
2.5361	1527.72	102.60	105.64
2.5389	1527.65	102.60	105.52
2.5417	1527.43	102.60	105.28
2.5444	1527.22	102.60	105.14
2.5472	1527.12	102.60	104.99
2.5500	1526.88	102.70	104.81
2.5528	1526.64	102.70	104.62
2.5556	1526.60	102.60	104.53
2.5583	1526.43	102.70	104.49
2.5611	1526.25	102.70	104.36
2.5639	1526.13	102.70	104.23
2.5667	1525.98	102.70	104.09

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
2.5694	1525.76	102.70	103.98	3.0250	1513.35	102.90	91.48
2.5722	1525.72	102.70	103.80	3.0333	1513.26	102.90	91.44
2.5750	1525.55	102.70	103.61	3.0417	1513.16	102.90	91.18
2.5806	1525.22	102.70	103.33	3.0500	1513.05	102.90	90.94
2.5833	1525.12	102.70	103.14	3.0583	1512.85	102.90	90.84
2.5861	1525.01	102.70	103.07	3.0667	1512.75	102.90	90.68
2.5889	1524.86	102.70	102.83	3.0750	1512.70	102.90	90.65
2.5917	1524.78	102.70	102.58	3.0833	1512.62	102.90	90.66
2.5944	1524.61	102.70	102.52	3.0917	1512.53	102.90	90.69
2.5972	1524.39	102.70	102.33	3.1000	1512.47	102.90	90.60
2.6000	1524.30	102.70	102.21	3.1083	1512.30	102.90	90.48
2.6028	1524.17	102.70	102.14	3.1167	1512.19	102.90	90.43
2.6056	1524.09	102.70	102.02	3.1250	1512.09	102.90	90.29
2.6083	1523.97	102.70	101.91	3.1333	1511.99	102.90	90.25
2.6111	1523.75	102.70	101.85	3.1417	1511.93	102.90	90.21
2.6139	1523.72	102.70	101.78	3.1500	1511.87	102.90	90.20
2.6167	1523.48	102.70	101.71	3.1583	1511.74	102.90	90.12
2.6194	1523.35	102.70	101.58	3.1667	1511.69	102.90	90.05
2.6222	1523.35	102.70	101.47	3.1750	1511.60	102.90	90.02
2.6250	1523.12	102.70	101.39	3.1833	1511.53	102.90	90.00
2.6278	1523.03	102.70	101.21	3.1917	1511.41	102.90	89.98
2.6306	1523.02	102.70	101.05	3.2000	1511.40	103.00	89.78
2.6333	1522.88	102.70	100.87	3.2083	1511.23	103.00	89.49
2.6417	1522.53	102.70	100.47	3.2167	1511.20	102.90	89.36
2.6500	1522.26	102.70	100.12	3.2250	1511.12	103.00	89.19
2.6583	1521.89	102.70	99.83	3.2333	1511.04	102.90	89.00
2.6667	1521.55	102.70	99.44	3.2417	1511.01	103.00	88.96
2.6750	1521.22	102.70	99.25	3.2500	1510.96	103.00	88.82
2.6833	1520.89	102.70	98.92	3.2583	1510.88	103.00	88.76
2.6917	1520.59	102.70	98.55	3.2667	1510.74	103.00	88.75
2.7000	1520.22	102.70	98.28	3.2750	1510.71	103.00	88.71
2.7083	1520.08	102.70	97.99	3.2833	1510.64	103.00	88.67
2.7167	1519.84	102.70	97.75	3.2917	1510.62	103.00	88.61
2.7250	1519.55	102.70	97.57	3.3000	1510.50	103.00	88.60
2.7333	1519.25	102.70	97.33	3.3083	1510.47	103.00	88.53
2.7417	1519.05	102.70	97.14	3.3167	1510.40	103.00	88.42
2.7500	1518.77	102.70	96.95	3.3250	1510.32	103.00	88.32
2.7583	1518.61	102.70	96.70	3.3333	1510.31	103.00	88.28
2.7667	1518.39	102.70	96.45	3.3417	1510.24	103.00	88.25
2.7750	1518.21	102.80	96.27	3.3500	1510.11	103.00	88.29
2.7833	1517.90	102.80	96.16	3.3583	1510.08	103.00	88.40
2.7917	1517.70	102.80	95.87	3.3667	1510.00	103.00	88.46
2.8000	1517.51	102.80	95.84	3.3750	1509.96	103.00	88.42
2.8083	1517.32	102.80	95.70	3.3833	1509.94	103.00	88.35
2.8167	1517.13	102.80	95.43	3.3917	1509.89	103.00	88.27
2.8250	1516.91	102.80	95.23	3.4000	1509.76	103.00	88.24
2.8333	1516.71	102.80	95.13	3.4083	1509.74	103.00	88.30
2.8417	1516.50	102.80	95.00	3.4167	1509.69	103.00	88.33
2.8500	1516.42	102.80	94.78	3.4250	1509.61	103.00	88.31
2.8583	1516.24	102.80	94.45	3.4333	1509.54	103.00	88.31
2.8667	1516.00	102.80	94.30	3.4417	1509.53	103.00	88.41
2.8750	1515.84	102.80	94.09	3.4500	1509.43	103.00	88.41
2.8833	1515.58	102.80	93.95	3.4583	1509.44	103.00	88.26
2.8917	1515.46	102.80	93.80	3.4667	1509.34	103.00	88.09
2.9000	1515.34	102.80	93.62	3.4750	1509.32	103.00	88.02
2.9083	1515.18	102.80	93.38	3.4833	1509.29	103.00	87.87
2.9167	1515.03	102.80	93.17	3.4917	1509.19	103.10	87.85
2.9250	1514.87	102.80	92.98	3.5000	1509.18	103.00	87.94
2.9333	1514.74	102.80	92.86	3.5083	1509.09	103.10	87.78
2.9417	1514.51	102.80	92.72	3.5167	1509.07	103.10	87.76
2.9500	1514.41	102.80	92.59	3.5250	1509.03	103.10	87.87
2.9583	1514.28	102.80	92.40	3.5333	1508.99	103.10	87.92
2.9667	1514.18	102.80	92.20	3.5417	1508.90	103.10	87.87
2.9750	1514.05	102.80	92.12	3.5500	1508.87	103.10	87.66
2.9833	1513.96	102.80	92.07	3.5583	1508.84	103.10	87.50
2.9917	1513.82	102.90	92.00	3.5667	1508.78	103.10	87.10
3.0000	1513.70	102.80	91.76	3.5750	1508.81	103.10	86.90
3.0083	1513.56	102.90	91.61	3.5833	1508.75	103.10	86.76
3.0167	1513.35	102.90	91.55	3.5917	1508.71	103.10	86.61

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
3.6000	1508.64	103.10	86.43	4.7333	1505.38	103.30	83.66
3.6083	1508.58	103.10	86.29	4.7500	1505.39	103.40	83.72
3.6167	1508.52	103.10	86.25	4.7667	1505.38	103.40	83.76
3.6333	1508.47	103.10	86.30	4.7833	1505.31	103.40	83.77
3.6500	1508.36	103.10	86.15	4.8000	1505.22	103.40	83.74
3.6667	1508.30	103.10	85.94	4.8167	1505.22	103.40	83.80
3.6833	1508.25	103.10	85.89	4.8333	1505.20	103.40	83.74
3.7000	1508.15	103.10	85.89	4.8500	1505.18	103.40	83.62
3.7167	1508.10	103.10	85.86	4.8667	1505.14	103.40	83.45
3.7333	1507.99	103.10	85.86	4.8833	1505.13	103.40	83.40
3.7500	1507.94	103.10	85.81	4.9000	1505.12	103.40	83.41
3.7667	1507.85	103.10	85.83	4.9167	1505.13	103.40	83.48
3.7833	1507.83	103.10	86.08	4.9333	1505.11	103.40	83.46
3.8000	1507.79	103.10	86.10	4.9500	1505.09	103.40	83.42
3.8167	1507.70	103.10	86.84	4.9667	1505.04	103.40	83.44
3.8333	1507.67	103.10	87.04	4.9833	1504.99	103.40	83.47
3.8500	1507.61	103.10	86.61	5.0000	1504.92	103.40	83.45
3.8667	1507.54	103.20	86.04	5.0167	1504.93	103.40	83.38
3.8833	1507.42	103.10	85.69	5.0333	1504.87	103.40	83.32
3.9000	1507.35	103.20	85.50	5.0500	1504.84	103.40	83.33
3.9167	1507.34	103.20	85.41	5.0667	1504.88	103.40	83.30
3.9333	1507.21	103.20	85.36	5.0833	1504.81	103.40	83.31
3.9500	1507.23	103.20	85.38	5.1000	1504.84	103.40	83.24
3.9667	1507.20	103.20	85.68	5.1167	1504.83	103.40	83.07
3.9833	1507.16	103.20	85.81	5.1333	1504.81	103.40	83.06
4.0000	1507.05	103.20	85.60	5.1500	1504.72	103.40	82.96
4.0167	1507.01	103.20	85.45	5.1667	1504.73	103.40	82.89
4.0333	1506.97	103.20	85.52	5.1833	1504.72	103.40	82.88
4.0500	1506.94	103.20	85.41	5.2000	1504.71	103.40	82.85
4.0667	1506.88	103.20	85.32	5.2167	1504.71	103.40	82.79
4.0833	1506.90	103.20	85.19	5.2333	1504.68	103.50	82.75
4.1000	1506.79	103.20	85.21	5.2500	1504.65	103.50	82.73
4.1167	1506.78	103.20	85.01	5.2667	1504.55	103.40	82.72
4.1333	1506.69	103.20	84.64	5.2833	1504.58	103.50	82.71
4.1500	1506.63	103.20	84.63	5.3000	1504.50	103.50	82.75
4.1667	1506.60	103.20	84.58	5.3167	1505.41	103.50	83.68
4.1833	1506.51	103.20	84.49	5.3333	1504.96	103.50	83.30
4.2000	1506.48	103.20	84.47	5.3500	1504.73	103.50	83.15
4.2167	1506.48	103.20	84.43	5.3667	1504.63	103.50	82.97
4.2333	1506.43	103.20	84.51	5.3833	1504.59	103.50	82.90
4.2500	1506.39	103.20	84.50	5.4000	1504.48	103.50	82.72
4.2667	1506.33	103.30	84.50	5.4167	1504.43	103.50	82.60
4.2833	1506.24	103.30	84.51	5.4333	1504.36	103.50	82.54
4.3000	1506.27	103.20	84.44	5.4500	1504.31	103.50	82.47
4.3167	1506.26	103.30	84.33	5.4667	1504.30	103.50	82.44
4.3333	1506.16	103.30	84.30	5.4833	1504.27	103.50	82.39
4.3500	1506.13	103.30	84.34	5.5000	1504.29	103.50	82.43
4.3667	1506.12	103.30	84.32	5.5167	1504.29	103.50	82.42
4.3833	1506.06	103.30	84.23	5.5333	1504.20	103.50	82.41
4.4000	1506.00	103.30	84.28	5.5500	1504.31	103.50	82.38
4.4167	1505.98	103.30	84.30	5.5667	1504.31	103.50	82.36
4.4333	1505.99	103.30	84.36	5.5833	1504.27	103.50	82.34
4.4500	1505.94	103.30	84.31	5.6000	1504.21	103.50	82.30
4.4667	1505.92	103.30	84.32	5.6167	1504.23	103.50	82.28
4.4833	1505.81	103.30	84.26	5.6333	1504.24	103.50	82.14
4.5000	1505.80	103.30	84.27	5.6500	1504.18	103.50	82.00
4.5167	1505.82	103.30	84.28	5.6667	1504.15	103.50	81.75
4.5333	1505.71	103.30	84.33	5.6833	1504.11	103.50	81.69
4.5500	1505.73	103.30	84.31	5.7000	1504.12	103.50	81.54
4.5667	1505.68	103.30	84.21	5.7167	1504.06	103.60	81.46
4.5833	1505.67	103.30	84.27	5.7333	1504.02	103.50	81.38
4.6000	1505.65	103.30	84.22	5.7500	1504.00	103.60	81.26
4.6167	1505.55	103.30	83.99	5.7667	1503.95	103.60	81.23
4.6333	1505.56	103.30	83.85	5.7833	1503.94	103.60	81.16
4.6500	1505.50	103.30	83.81	5.8000	1503.92	103.60	81.09
4.6667	1505.46	103.30	83.76	5.8167	1503.89	103.60	81.11
4.6833	1505.44	103.30	83.72	5.8333	1503.79	103.60	81.14
4.7000	1505.45	103.30	83.62	5.8500	1503.77	103.60	81.22
4.7167	1505.43	103.30	83.60	5.8667	1503.77	103.60	81.39

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia
5.8833	1503.86	103.60	81.51
5.9000	1503.76	103.60	81.47
5.9167	1503.75	103.60	81.51
5.9333	1503.74	103.60	82.01
5.9500	1503.71	103.60	82.10
5.9667	1503.62	103.60	81.74
5.9833	1503.73	103.60	81.55
6.0000	1503.69	103.60	81.42
6.0167	1503.68	103.60	81.41
6.0333	1503.69	103.60	81.47
6.0500	1503.70	103.60	81.52
6.0667	1503.69	103.60	81.54
6.0833	1503.64	103.60	81.44
6.1000	1503.66	103.60	81.36
6.1167	1503.67	103.60	81.32
6.1333	1503.67	103.60	81.26
6.1500	1503.66	103.60	81.24
6.1667	1503.64	103.60	81.24
6.1833	1503.63	103.60	81.28
6.2000	1503.56	103.60	81.29
6.2167	1503.68	103.60	81.36
6.2333	1503.60	103.60	81.35
6.2500	1503.63	103.60	81.35
6.2667	1503.68	103.60	81.39
6.2833	1503.61	103.60	81.43
6.3000	1503.60	103.60	81.43
6.3167	1503.56	103.60	81.44
6.3333	1503.57	103.70	81.52
6.3500	1503.60	103.70	81.56
6.3667	1503.59	103.70	81.63
6.3833	1503.56	103.70	81.67
6.4000	1503.54	103.70	81.63
6.4167	1503.51	103.70	81.64
6.4333	1503.46	103.70	81.63
6.4500	1503.53	103.70	81.67
6.4667	1503.51	103.70	81.81
6.4833	1503.48	103.70	81.79
6.5000	1503.45	103.70	81.75
6.5167	1503.46	103.70	81.63
6.5333	1503.50	103.70	81.61
6.5500	1503.48	103.70	81.61
6.5667	1503.47	103.70	81.56
6.5833	1503.49	103.70	81.55
6.6000	1503.45	103.70	81.55
6.6167	1503.40	103.70	81.55
6.6333	1503.38	103.70	81.56
6.6500	1503.40	103.70	81.52
6.6667	1503.39	103.70	81.48
6.6833	1503.38	103.70	81.48
6.7000	1503.37	103.70	81.44
6.7167	1503.39	103.70	81.41
6.7333	1503.36	103.70	81.38
6.7500	1503.41	103.70	81.42
6.7667	1503.32	103.70	81.40
6.7833	1503.32	103.70	81.39
6.8000	1503.33	103.70	81.42
6.8167	1503.33	103.70	81.45
6.8333	1503.31	103.70	81.38
6.8500	1503.32	103.70	81.33
6.8667	1503.31	103.70	81.26
6.8833	1503.34	103.70	81.23
6.9000	1503.28	103.70	81.27
6.9167	1503.28	103.70	81.38
6.9333	1503.26	103.70	81.41
6.9500	1503.28	103.70	81.38
6.9667	1503.27	103.70	81.44
6.9833	1503.24	103.70	81.41
7.0000	1503.20	103.70	81.41
7.0167	1503.26	103.70	81.37
7.0333	1503.25	103.80	81.37
7.0667	1503.26	103.80	81.38
7.0833	1503.27	103.80	81.39
7.1000	1503.21	103.80	81.39
7.1167	1503.23	103.80	81.35
7.1333	1503.17	103.80	81.32
7.1500	1503.17	103.80	81.26
7.1667	1503.15	103.80	81.27
7.1833	1503.12	103.80	81.27
7.2000	1503.14	103.80	81.26
7.2167	1503.13	103.80	81.27
7.2333	1503.04	103.80	81.27
7.2500	1503.08	103.80	81.28
7.2667	1503.12	103.80	81.33
7.2833	1503.06	103.80	81.35
7.3000	1503.08	103.80	81.29
7.3167	1503.07	103.80	81.29
7.3333	1503.07	103.80	81.28
7.3500	1503.04	103.80	81.28
7.3667	1503.04	103.80	81.36
7.3833	1503.07	103.80	81.36
7.4000	1503.06	103.80	81.36
7.4167	1503.04	103.80	81.37
7.4333	1503.02	103.80	81.33
7.4500	1503.03	103.80	81.35
7.4667	1503.02	103.80	81.34
7.4833	1503.02	103.80	81.40
7.5000	1502.99	103.80	81.47
7.5167	1502.97	103.80	81.50
7.5333	1502.96	103.80	81.52
7.5500	1502.95	103.80	81.49
7.5667	1502.95	103.80	81.44
7.5833	1502.95	103.80	81.48
7.6000	1502.90	103.80	81.37
7.6167	1502.90	103.80	81.29
7.6333	1502.91	103.80	81.25
7.6500	1502.88	103.80	81.28
7.6667	1502.93	103.80	81.29
7.6833	1502.90	103.90	81.30
7.7000	1502.93	103.90	81.30
7.7167	1502.87	103.90	81.25
7.7333	1502.89	103.90	81.21
7.7500	1502.89	103.90	81.27
7.7667	1502.87	103.90	81.36
7.7833	1502.88	103.90	81.35
7.8000	1502.87	103.90	81.39
7.8167	1502.82	103.90	81.46
7.8333	1502.84	103.90	81.46
7.8500	1502.81	103.90	81.49
7.8667	1502.83	103.90	81.42
7.8833	1502.84	103.90	81.38
7.9000	1502.85	103.90	81.39
7.9167	1502.79	103.90	81.37
7.9333	1502.79	103.90	81.37
7.9500	1502.80	103.90	81.30
7.9667	1502.79	103.90	81.26
7.9833	1502.80	103.90	81.19
8.0000	1502.79	103.90	81.17
8.0167	1502.76	103.90	81.20
8.0333	1502.75	103.90	81.17
8.0500	1502.73	103.90	81.17
8.0667	1502.72	103.90	81.18
8.0833	1502.72	103.90	81.18
8.1000	1502.73	103.90	81.22
8.1167	1502.75	103.90	81.36
8.1333	1502.70	103.90	81.43
8.1500	1502.77	103.90	81.42
8.1667	1502.71	103.90	81.37
8.1833	1502.72	103.90	81.37

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
8.2000	1502.67	103.90	81.31	9.3500	1502.20	104.10	80.41
8.2167	1502.68	103.90	81.28	9.3667	1502.22	104.10	80.40
8.2333	1502.67	103.90	81.28	9.3833	1502.18	104.10	80.39
8.2500	1502.67	103.90	81.34	9.4000	1502.16	104.10	80.34
8.2667	1502.65	103.90	81.35	9.4167	1502.17	104.10	80.29
8.2833	1502.63	103.90	81.34	9.4333	1502.17	104.10	80.29
8.3000	1502.66	103.90	81.29	9.4500	1502.18	104.10	80.35
8.3167	1502.62	103.90	81.29	9.4667	1502.19	104.10	80.37
8.3333	1502.62	103.90	81.25	9.4833	1502.19	104.10	80.40
8.3500	1502.62	103.90	81.21	9.5000	1502.14	104.10	80.42
8.3667	1502.63	103.90	81.21	9.5167	1502.14	104.10	80.43
8.3833	1502.61	103.90	81.20	9.5333	1502.12	104.10	80.43
8.4000	1502.65	104.00	81.16	9.5500	1502.15	104.10	80.47
8.4167	1502.63	104.00	81.13	9.5667	1502.12	104.10	80.61
8.4333	1502.65	104.00	81.17	9.5833	1502.89	104.10	81.41
8.4500	1502.66	104.00	81.23	9.6000	1502.60	104.10	81.30
8.4667	1502.62	104.00	81.21	9.6167	1502.69	104.10	81.39
8.4833	1502.59	104.00	81.25	9.6333	1502.61	104.10	81.36
8.5000	1502.60	104.00	81.30	9.6500	1502.56	104.10	81.28
8.5167	1502.54	104.00	81.32	9.6667	1502.52	104.10	81.22
8.5333	1502.53	104.00	81.32	9.6833	1502.40	104.10	81.12
8.5500	1502.59	104.00	81.29	9.7000	1502.40	104.10	81.05
8.5667	1502.49	104.00	81.30	9.7167	1502.30	104.10	81.00
8.5833	1502.51	104.00	81.28	9.7333	1502.30	104.10	80.93
8.6000	1502.49	104.00	81.23	9.7500	1502.24	104.10	80.88
8.6167	1502.53	104.00	81.25	9.7667	1502.25	104.10	80.77
8.6333	1502.49	104.00	81.30	9.7833	1502.21	104.10	80.79
8.6500	1502.50	104.00	81.35	9.8000	1502.20	104.10	80.80
8.6667	1502.50	104.00	81.34	9.8167	1502.18	104.10	80.78
8.6833	1502.55	104.00	81.34	9.8333	1502.21	104.10	80.75
8.7000	1502.48	104.00	81.35	9.8500	1502.16	104.10	80.79
8.7167	1502.48	104.00	81.32	9.8667	1502.16	104.10	80.80
8.7333	1502.48	104.00	81.31	9.8833	1502.15	104.10	80.87
8.7500	1502.47	104.00	81.26	9.9000	1502.13	104.10	80.86
8.7667	1502.46	104.00	81.22	9.9167	1502.14	104.10	80.85
8.7833	1502.47	104.00	81.14	9.9333	1502.13	104.10	80.83
8.8000	1502.45	104.00	81.16	9.9500	1502.10	104.20	80.84
8.8167	1502.45	104.00	81.13	9.9667	1502.12	104.20	80.85
8.8333	1502.46	104.00	81.09	9.9833	1502.08	104.20	80.85
8.8500	1502.45	104.00	81.13	10.0000	1502.09	104.20	80.82
8.8667	1502.44	104.00	81.17	10.0167	1502.04	104.20	80.84
8.8833	1502.44	104.00	81.21	10.0333	1502.00	104.20	80.80
8.9000	1502.40	104.00	81.24	10.0500	1502.04	104.20	80.78
8.9167	1502.41	104.00	81.25	10.0667	1502.03	104.20	80.72
8.9333	1502.43	104.00	81.26	10.0833	1502.02	104.20	80.68
8.9500	1502.41	104.00	81.25	10.1000	1502.00	104.20	80.65
8.9667	1502.42	104.00	81.24	10.1167	1502.03	104.20	80.65
8.9833	1502.40	104.00	81.20	10.1333	1502.02	104.20	80.69
9.0000	1502.40	104.00	81.20	10.1500	1502.04	104.20	80.66
9.0167	1502.38	104.00	81.08	10.1667	1502.01	104.20	80.61
9.0333	1502.38	104.00	81.02	10.1833	1502.01	104.20	80.57
9.0500	1502.37	104.00	80.91	10.2000	1501.99	104.20	80.50
9.0667	1502.40	104.00	80.88	10.2167	1502.00	104.20	80.49
9.0833	1502.41	104.00	80.88	10.2333	1502.00	104.20	80.49
9.1000	1502.32	104.00	80.90	10.2500	1501.97	104.20	80.51
9.1167	1502.37	104.00	80.86	10.2667	1501.98	104.20	80.60
9.1333	1502.35	104.00	80.78	10.2833	1501.99	104.20	80.67
9.1500	1502.36	104.00	80.79	10.3000	1502.01	104.20	80.66
9.1667	1502.38	104.00	80.79	10.3167	1502.00	104.20	80.67
9.1833	1502.38	104.00	80.90	10.3333	1502.02	104.20	80.66
9.2000	1502.34	104.10	80.89	10.3500	1501.99	104.20	80.65
9.2167	1502.29	104.00	80.73	10.3667	1502.00	104.20	80.55
9.2333	1502.32	104.10	80.71	10.3833	1502.00	104.20	80.53
9.2500	1502.29	104.10	80.71	10.4000	1502.01	104.20	80.53
9.2667	1502.28	104.10	80.72	10.4167	1501.90	104.20	80.58
9.2833	1502.28	104.10	80.67	10.4333	1501.92	104.20	80.59
9.3000	1502.23	104.10	80.56	10.4500	1501.95	104.20	80.56
9.3167	1502.24	104.10	80.52	10.4667	1501.91	104.20	80.55
9.3333	1502.22	104.10	80.43	10.4833	1501.99	104.20	80.52

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
10.5000	1501.92	104.20	80.50	11.6500	1501.70	104.30	80.27
10.5167	1501.97	104.20	80.48	11.6667	1501.69	104.30	80.28
10.5333	1501.91	104.20	80.50	11.6833	1501.68	104.30	80.22
10.5500	1501.96	104.20	80.48	11.7000	1501.68	104.40	80.20
10.5667	1501.92	104.20	80.48	11.7167	1501.67	104.40	80.20
10.5833	1501.91	104.20	80.47	11.7333	1501.66	104.30	80.13
10.6000	1502.00	104.20	80.48	11.7500	1501.66	104.40	80.11
10.6167	1501.91	104.20	80.49	11.7667	1501.72	104.40	80.08
10.6333	1501.87	104.20	80.48	11.7833	1501.57	104.40	80.11
10.6500	1501.95	104.20	80.48	11.8000	1501.57	104.40	80.08
10.6667	1501.88	104.20	80.48	11.8167	1501.61	104.40	80.12
10.6833	1501.87	104.20	80.51	11.8333	1501.62	104.40	80.09
10.7000	1501.90	104.20	80.54	11.8500	1501.61	104.40	80.11
10.7167	1501.90	104.20	80.59	11.8667	1501.60	104.40	80.11
10.7333	1501.92	104.20	80.60	11.8833	1501.61	104.40	80.17
10.7500	1501.91	104.20	80.59	11.9000	1501.61	104.40	80.16
10.7667	1501.92	104.20	80.55	11.9167	1501.61	104.40	80.12
10.7833	1501.93	104.30	80.54	11.9333	1501.60	104.40	80.12
10.8000	1501.93	104.20	80.52	11.9500	1501.61	104.40	80.08
10.8167	1501.87	104.30	80.50	11.9667	1501.60	104.40	80.03
10.8333	1501.88	104.30	80.51	11.9833	1501.57	104.40	80.04
10.8500	1501.87	104.30	80.51	12.0000	1501.59	104.40	80.09
10.8667	1501.87	104.30	80.48	12.0167	1501.59	104.40	80.10
10.8833	1501.87	104.30	80.47	12.0333	1501.57	104.40	80.13
10.9000	1501.87	104.30	80.46	12.0500	1501.57	104.40	80.14
10.9167	1501.82	104.30	80.45	12.0667	1501.57	104.40	80.12
10.9333	1501.83	104.30	80.43	12.0833	1501.56	104.40	80.13
10.9500	1501.81	104.30	80.46	12.1000	1501.58	104.40	80.15
10.9667	1501.81	104.30	80.37	12.1167	1501.57	104.40	80.14
10.9833	1502.00	104.30	80.60	12.1333	1501.57	104.40	80.13
11.0000	1502.06	104.30	80.67	12.1500	1501.56	104.40	80.15
11.0167	1502.10	104.30	80.66	12.1667	1501.55	104.40	80.11
11.0333	1502.06	104.30	80.66	12.1833	1501.55	104.40	80.13
11.0500	1502.01	104.30	80.58	12.2000	1501.54	104.40	80.10
11.0667	1501.97	104.30	80.55	12.2167	1501.52	104.40	80.10
11.0833	1501.99	104.30	80.53	12.2333	1501.53	104.40	80.08
11.1000	1501.93	104.30	80.52	12.2500	1501.52	104.40	80.10
11.1167	1501.94	104.30	80.49	12.2667	1501.52	104.40	80.04
11.1333	1501.91	104.30	80.48	12.2833	1501.52	104.40	80.03
11.1500	1501.87	104.30	80.42	12.3000	1501.52	104.40	80.10
11.1667	1501.83	104.30	80.43	12.3167	1501.51	104.40	80.03
11.1833	1501.82	104.30	80.43	12.3333	1501.52	104.40	79.97
11.2000	1501.81	104.30	80.40	12.3500	1501.52	104.40	79.96
11.2167	1501.87	104.30	80.35	12.3667	1501.50	104.40	79.96
11.2333	1501.82	104.30	80.37	12.3833	1501.51	104.40	79.99
11.2500	1501.79	104.30	80.39	12.4000	1501.49	104.40	79.94
11.2667	1501.80	104.30	80.38	12.4167	1501.47	104.40	79.95
11.2833	1501.75	104.30	80.40	12.4333	1501.49	104.40	79.93
11.3000	1501.76	104.30	80.40	12.4500	1501.47	104.40	79.95
11.3167	1501.74	104.30	80.39	12.4667	1501.47	104.40	79.96
11.3333	1501.77	104.30	80.39	12.4833	1501.47	104.40	79.92
11.3500	1501.76	104.30	80.39	12.5000	1501.46	104.40	79.93
11.3667	1501.74	104.30	80.38	12.5167	1501.48	104.40	79.96
11.3833	1501.74	104.30	80.36	12.5333	1501.45	104.40	79.95
11.4000	1501.75	104.30	80.32	12.5500	1501.45	104.40	79.97
11.4167	1501.72	104.30	80.34	12.5667	1501.46	104.40	79.98
11.4333	1501.72	104.30	80.36	12.5833	1501.42	104.40	79.96
11.4500	1501.73	104.30	80.32	12.6000	1501.46	104.40	79.94
11.4667	1501.73	104.30	80.32	12.6167	1501.39	104.40	79.91
11.4833	1501.72	104.30	80.29	12.6333	1501.43	104.40	79.90
11.5000	1501.77	104.30	80.27	12.6500	1501.41	104.40	79.91
11.5167	1501.68	104.30	80.26	12.6667	1501.39	104.40	79.92
11.5333	1501.71	104.30	80.21	12.6833	1501.42	104.40	79.89
11.5500	1501.67	104.30	80.20	12.7000	1501.40	104.40	79.89
11.5667	1501.69	104.30	80.24	12.7167	1501.39	104.40	79.89
11.5833	1501.69	104.30	80.24	12.7333	1501.40	104.40	79.90
11.6000	1501.72	104.30	80.25	12.7500	1501.30	104.40	79.88
11.6167	1501.70	104.30	80.29	12.7667	1501.39	104.50	79.85
11.6333	1501.71	104.40	80.30	12.7833	1501.39	104.40	79.93

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
12.8000	1501.30	104.40	79.92	13.9500	1501.16	104.50	79.57
12.8167	1501.37	104.50	79.90	13.9667	1501.11	104.60	79.54
12.8333	1501.40	104.50	79.93	13.9833	1501.14	104.60	79.55
12.8500	1501.33	104.50	79.93	14.0000	1501.13	104.60	79.48
12.8667	1501.39	104.50	79.91	14.0167	1500.47	104.60	78.89
12.8833	1501.34	104.50	79.93	14.0333	1500.63	104.60	78.95
12.9000	1501.40	104.50	79.94	14.0500	1500.78	104.60	79.22
12.9167	1501.35	104.50	79.86	14.0667	1500.84	104.60	79.34
12.9333	1501.36	104.50	79.82	14.0833	1500.89	104.60	79.42
12.9500	1501.37	104.50	79.81	14.1000	1500.92	104.60	79.43
12.9667	1501.34	104.50	79.78	14.1167	1500.93	104.60	79.44
12.9833	1501.34	104.50	79.78	14.1333	1500.96	104.60	79.49
13.0000	1501.33	104.50	79.80	14.1500	1500.98	104.60	79.49
13.0167	1501.38	104.50	79.81	14.1667	1501.01	104.60	79.50
13.0333	1501.32	104.50	79.85	14.1833	1501.01	104.60	79.51
13.0500	1501.38	104.50	79.81	14.2000	1501.03	104.60	79.54
13.0667	1501.32	104.50	79.72	14.2167	1501.05	104.60	79.50
13.0833	1501.37	104.50	79.69	14.2333	1501.06	104.60	79.57
13.1000	1501.31	104.50	79.70	14.2500	1501.00	104.60	79.58
13.1167	1501.27	104.50	79.73	14.2667	1501.06	104.60	79.62
13.1333	1501.26	104.50	79.72	14.2833	1501.03	104.60	79.60
13.1500	1501.27	104.50	79.70	14.3000	1501.04	104.60	79.55
13.1667	1501.26	104.50	79.63	14.3167	1501.06	104.60	79.52
13.1833	1501.31	104.50	79.69	14.3333	1501.03	104.60	79.52
13.2000	1501.26	104.50	79.71	14.3500	1501.07	104.60	79.54
13.2167	1501.25	104.50	79.75	14.3667	1501.02	104.60	79.56
13.2333	1501.27	104.50	79.76	14.3833	1501.04	104.60	79.55
13.2500	1501.26	104.50	79.71	14.4000	1501.02	104.60	79.53
13.2667	1501.25	104.50	79.68	14.4167	1501.05	104.60	79.52
13.2833	1501.25	104.50	79.69	14.4333	1501.03	104.60	79.53
13.3000	1501.25	104.50	79.68	14.4500	1501.05	104.60	79.52
13.3167	1501.25	104.50	79.65	14.4667	1501.09	104.60	79.55
13.3333	1501.26	104.50	79.64	14.4833	1501.01	104.60	79.54
13.3500	1501.23	104.50	79.65	14.5000	1501.00	104.60	79.51
13.3667	1501.30	104.50	79.68	14.5167	1501.04	104.60	79.53
13.3833	1501.25	104.50	79.69	14.5333	1501.05	104.60	79.53
13.4000	1501.31	104.50	79.69	14.5500	1501.01	104.60	79.49
13.4167	1501.21	104.50	79.70	14.5667	1500.97	104.60	79.51
13.4333	1501.28	104.50	79.68	14.5833	1501.00	104.60	79.53
13.4500	1501.21	104.50	79.70	14.6000	1501.03	104.60	79.55
13.4667	1501.23	104.50	79.70	14.6167	1501.04	104.60	79.56
13.4833	1501.22	104.50	79.69	14.6333	1501.05	104.60	79.62
13.5000	1501.21	104.50	79.68	14.6500	1501.01	104.60	79.63
13.5167	1501.20	104.50	79.64	14.6667	1501.04	104.60	79.66
13.5333	1501.21	104.50	79.67	14.6833	1501.04	104.60	79.66
13.5500	1501.19	104.50	79.66	14.7000	1501.01	104.60	79.69
13.5667	1501.18	104.50	79.68	14.7167	1501.00	104.60	79.71
13.5833	1501.18	104.50	79.62	14.7333	1501.01	104.60	79.72
13.6000	1501.17	104.50	79.63	14.7500	1500.98	104.60	79.72
13.6167	1501.20	104.50	79.65	14.7667	1501.00	104.60	79.69
13.6333	1501.20	104.50	79.70	14.7833	1501.00	104.60	79.70
13.6500	1501.21	104.50	79.72	14.8000	1500.98	104.60	79.71
13.6667	1501.19	104.50	79.72	14.8167	1501.00	104.60	79.69
13.6833	1501.19	104.50	79.64	14.8333	1501.00	104.60	79.67
13.7000	1501.15	104.50	79.68	14.8500	1501.01	104.60	79.64
13.7167	1501.19	104.50	79.64	14.8667	1501.00	104.60	79.63
13.7333	1501.18	104.50	79.66	14.8833	1501.00	104.60	79.63
13.7500	1501.17	104.50	79.65	14.9000	1501.04	104.60	79.64
13.7667	1501.16	104.50	79.64	14.9167	1501.01	104.60	79.65
13.7833	1501.15	104.50	79.67	14.9333	1501.00	104.60	79.63
13.8000	1501.13	104.50	79.63	14.9500	1501.00	104.60	79.61
13.8167	1501.16	104.50	79.62	14.9667	1501.00	104.60	79.63
13.8333	1501.14	104.50	79.64	14.9833	1500.96	104.60	79.65
13.8500	1501.15	104.50	79.63	15.0000	1501.00	104.60	79.64
13.8667	1501.17	104.50	79.64	15.0167	1500.99	104.60	79.65
13.8833	1501.17	104.50	79.60	15.0333	1500.96	104.60	79.64
13.9000	1501.12	104.50	79.59	15.0500	1501.02	104.60	79.65
13.9167	1501.13	104.50	79.56	15.0667	1500.97	104.60	79.66
13.9333	1501.18	104.50	79.59	15.0833	1501.01	104.60	79.68

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
15.1000	1500.99	104.60	79.69	16.2500	1500.81	104.70	79.19
15.1167	1500.95	104.60	79.69	16.2667	1500.79	104.70	79.20
15.1333	1501.00	104.60	79.68	16.2833	1500.81	104.70	79.17
15.1500	1500.93	104.60	79.67	16.3000	1500.77	104.70	79.14
15.1667	1500.93	104.60	79.67	16.3167	1500.81	104.70	79.29
15.1833	1500.96	104.60	79.63	16.3333	1500.79	104.70	79.30
15.2000	1500.94	104.60	79.60	16.3500	1500.78	104.70	79.29
15.2167	1500.94	104.60	79.58	16.3667	1500.76	104.70	79.30
15.2333	1500.92	104.60	79.57	16.3833	1500.75	104.70	79.25
15.2500	1500.89	104.60	79.56	16.4000	1500.69	104.70	79.15
15.2667	1500.94	104.60	79.57	16.4167	1500.75	104.70	79.13
15.2833	1500.93	104.60	79.57	16.4333	1500.76	104.70	79.10
15.3000	1500.89	104.60	79.54	16.4500	1500.69	104.70	79.12
15.3167	1500.92	104.60	79.57	16.4667	1500.72	104.70	79.16
15.3333	1500.90	104.60	79.59	16.4833	1500.70	104.70	79.11
15.3500	1500.93	104.60	79.59	16.5000	1500.71	104.70	79.08
15.3667	1500.94	104.60	79.58	16.5167	1500.70	104.70	79.07
15.3833	1500.92	104.60	79.58	16.5333	1500.67	104.70	79.14
15.4000	1500.92	104.60	79.58	16.5500	1500.73	104.70	79.22
15.4167	1500.92	104.60	79.57	16.5667	1500.75	104.70	79.23
15.4333	1500.91	104.60	79.58	16.5833	1500.70	104.70	79.21
15.4500	1500.94	104.60	79.60	16.6000	1500.67	104.70	79.29
15.4667	1500.93	104.60	79.62	16.6167	1500.74	104.70	79.28
15.4833	1500.90	104.60	79.63	16.6333	1500.67	104.70	79.25
15.5000	1500.89	104.60	79.64	16.6500	1500.72	104.70	79.27
15.5167	1500.82	104.70	79.64	16.6667	1500.71	104.70	79.23
15.5333	1500.88	104.60	79.62	16.6833	1500.71	104.70	79.19
15.5500	1500.86	104.60	79.63	16.7000	1500.71	104.70	79.00
15.5667	1500.88	104.70	79.59	16.7167	1500.72	104.70	78.78
15.5833	1500.88	104.70	79.54	16.7333	1500.70	104.70	78.68
15.6000	1500.86	104.70	79.50	16.7500	1500.69	104.70	78.73
15.6167	1500.86	104.70	79.51	16.7667	1500.70	104.70	78.88
15.6333	1500.88	104.70	79.49	16.7833	1500.67	104.70	78.95
15.6500	1500.89	104.70	79.49	16.8000	1500.71	104.70	79.00
15.6667	1500.86	104.70	79.48	16.8167	1500.68	104.70	79.06
15.6833	1500.90	104.70	79.51	16.8333	1500.69	104.70	79.17
15.7000	1500.89	104.70	79.50	16.8500	1500.69	104.70	79.22
15.7167	1500.89	104.70	79.52	16.8667	1500.67	104.80	79.23
15.7333	1500.90	104.70	79.51	16.8833	1500.69	104.80	79.23
15.7500	1500.85	104.70	79.54	16.9000	1500.66	104.80	79.19
15.7667	1500.84	104.70	79.56	16.9167	1500.70	104.80	79.12
15.7833	1500.83	104.70	79.51	16.9333	1500.69	104.70	79.10
15.8000	1500.80	104.70	79.48	16.9500	1500.64	104.80	79.14
15.8167	1500.86	104.70	79.45	16.9667	1500.67	104.80	79.15
15.8333	1500.83	104.70	79.47	16.9833	1500.62	104.80	79.10
15.8500	1500.86	104.70	79.45	17.0000	1500.64	104.80	79.10
15.8667	1500.81	104.70	79.46	17.0167	1500.63	104.80	79.07
15.8833	1500.81	104.70	79.45	17.0333	1500.61	104.80	79.12
15.9000	1500.82	104.70	79.52	17.0500	1500.67	104.80	79.12
15.9167	1500.87	104.70	79.58	17.0667	1500.68	104.80	79.12
15.9333	1500.86	104.70	79.42	17.0833	1500.68	104.80	79.14
15.9500	1500.82	104.70	79.38	17.1000	1500.68	104.80	79.13
15.9667	1500.83	104.70	79.36	17.1167	1500.67	104.80	79.13
15.9833	1500.84	104.70	79.32	17.1333	1500.66	104.80	79.15
16.0000	1500.82	104.70	79.32	17.1500	1500.67	104.80	79.18
16.0167	1500.82	104.70	79.44	17.1667	1500.66	104.80	79.15
16.0333	1500.78	104.70	79.44	17.1833	1500.66	104.80	79.09
16.0500	1500.79	104.70	79.40	17.2000	1500.65	104.80	78.95
16.0667	1500.81	104.70	79.42	17.2167	1500.64	104.80	78.89
16.0833	1500.81	104.70	79.40	17.2333	1500.63	104.80	78.79
16.1000	1500.79	104.70	79.37	17.2500	1500.66	104.80	78.76
16.1167	1500.79	104.70	79.34	17.2667	1500.64	104.80	78.63
16.1333	1500.80	104.70	79.30	17.2833	1500.63	104.80	78.57
16.1500	1500.81	104.70	79.28	17.3000	1500.64	104.80	78.63
16.1667	1500.80	104.70	79.27	17.3167	1500.64	104.80	78.63
16.1833	1500.80	104.70	79.21	17.3333	1500.62	104.80	78.58
16.2000	1500.79	104.70	79.17	17.3500	1500.63	104.80	78.62
16.2167	1500.80	104.70	79.17	17.3667	1500.62	104.80	78.70
16.2333	1500.77	104.70	79.18	17.3833	1500.60	104.80	78.79

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
17.4000	1500.61	104.80	78.80	18.5500	1500.46	104.90	78.88
17.4167	1500.60	104.80	78.83	18.5833	1500.43	104.90	78.94
17.4333	1500.60	104.80	78.91	18.6000	1500.46	104.90	78.91
17.4500	1500.59	104.80	78.92	18.6167	1500.42	104.90	78.93
17.4667	1500.57	104.80	78.89	18.6333	1500.43	104.90	78.90
17.4833	1500.58	104.80	78.74	18.6500	1500.44	104.90	78.75
17.5000	1500.64	104.80	78.65	18.6667	1500.45	104.90	78.64
17.5167	1500.66	104.80	78.60	18.6833	1500.43	104.90	78.56
17.5333	1500.57	104.80	78.49	18.7000	1500.44	104.90	78.57
17.5500	1501.13	104.80	79.11	18.7167	1500.43	104.90	78.55
17.5667	1500.99	104.80	79.29	18.7333	1500.43	104.90	78.56
17.5833	1501.00	104.80	79.08	18.7500	1500.43	104.90	78.58
17.6000	1500.96	104.80	78.89	18.7667	1500.43	104.90	78.55
17.6167	1500.85	104.80	78.75	18.7833	1500.44	104.90	78.53
17.6333	1500.84	104.80	78.72	18.8000	1500.43	104.90	78.52
17.6500	1500.82	104.80	78.72	18.8167	1500.43	104.90	78.55
17.6667	1500.80	104.80	78.80	18.8333	1500.43	104.90	78.58
17.6833	1500.75	104.80	78.79	18.8500	1500.43	104.90	78.60
17.7000	1500.73	104.80	78.76	18.8667	1500.44	104.90	78.60
17.7167	1500.71	104.80	78.75	18.8833	1500.46	104.90	78.57
17.7333	1500.73	104.80	78.85	18.9000	1500.46	104.90	78.61
17.7500	1500.66	104.80	78.79	18.9167	1500.44	104.90	78.59
17.7667	1500.68	104.80	78.78	18.9333	1500.44	104.90	78.45
17.7833	1500.62	104.80	78.77	18.9500	1500.46	104.90	78.46
17.8000	1500.61	104.80	78.77	18.9667	1500.44	104.90	78.48
17.8167	1500.62	104.80	78.82	18.9833	1500.45	104.90	78.44
17.8333	1500.59	104.80	78.84	19.0000	1500.44	104.90	78.36
17.8500	1500.59	104.80	78.86	19.0167	1500.44	104.90	78.33
17.8667	1500.57	104.80	78.90	19.0333	1500.42	104.90	78.28
17.8833	1500.60	104.80	78.89	19.0500	1500.42	104.90	78.28
17.9000	1500.62	104.80	78.82	19.0667	1500.43	104.90	78.36
17.9167	1500.62	104.80	78.81	19.0833	1500.41	104.90	78.42
17.9333	1500.62	104.80	78.80	19.1000	1500.44	104.90	78.44
17.9500	1500.63	104.80	78.81	19.1167	1500.45	104.90	78.45
17.9667	1500.60	104.80	78.77	19.1333	1500.45	104.90	78.49
17.9833	1500.61	104.80	78.76	19.1500	1500.44	104.90	78.52
18.0000	1500.55	104.80	78.74	19.1667	1500.42	104.90	78.51
18.0167	1500.56	104.80	78.73	19.1833	1500.45	104.90	78.46
18.0333	1500.56	104.80	78.73	19.2000	1500.41	104.90	78.51
18.0500	1500.53	104.80	78.73	19.2167	1500.39	104.90	78.54
18.0667	1500.54	104.80	78.76	19.2333	1500.41	104.90	78.58
18.0833	1500.54	104.80	78.78	19.2500	1500.44	104.90	78.63
18.1000	1500.53	104.80	78.79	19.2667	1500.40	104.90	78.68
18.1167	1500.51	104.80	78.81	19.2833	1500.41	104.90	78.65
18.1333	1500.57	104.90	78.83	19.3000	1500.41	104.90	78.58
18.1500	1500.51	104.90	78.84	19.3167	1500.41	104.90	78.54
18.1667	1500.58	104.90	78.84	19.3333	1500.40	104.90	78.43
18.1833	1500.55	104.90	78.84	19.3500	1500.39	104.90	78.37
18.2000	1500.53	104.80	78.82	19.3667	1500.38	104.90	78.47
18.2167	1500.53	104.90	78.83	19.3833	1500.43	104.90	78.46
18.2333	1500.54	104.90	78.83	19.4000	1500.40	104.90	78.50
18.2500	1500.51	104.90	78.84	19.4167	1500.43	104.90	78.48
18.2667	1500.51	104.90	78.82	19.4333	1500.44	104.90	78.44
18.2833	1500.48	104.90	78.80	19.4500	1500.45	104.90	78.40
18.3000	1500.52	104.90	78.84	19.4667	1500.44	104.90	78.45
18.3167	1500.53	104.90	78.84	19.4833	1500.43	104.90	78.42
18.3333	1500.51	104.90	78.85	19.5000	1500.41	105.00	78.46
18.3500	1500.50	104.90	78.84	19.5167	1500.43	104.90	78.48
18.3667	1500.47	104.90	78.82	19.5333	1500.39	105.00	78.41
18.3833	1500.49	104.90	78.79	19.5500	1500.37	104.90	78.36
18.4000	1500.49	104.90	78.80	19.5667	1500.40	105.00	78.30
18.4167	1500.45	104.90	78.78	19.5833	1500.41	105.00	78.26
18.4333	1500.46	104.90	78.71	19.6000	1500.42	105.00	78.22
18.4500	1500.45	104.90	78.70	19.6167	1500.42	105.00	78.17
18.4667	1500.46	104.90	78.67	19.6333	1500.37	105.00	78.17
18.4833	1500.47	104.90	78.74	19.6500	1500.40	105.00	78.19
18.5000	1500.46	104.90	78.75	19.6667	1500.40	105.00	78.21
18.5167	1500.44	104.90	78.81	19.6833	1500.34	105.00	78.25
18.5333	1500.45	104.90	78.87	19.7000	1500.41	105.00	78.31

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
19.7167	1500.39	105.00	78.38	20.8667	1500.31	105.00	78.37
19.7333	1500.37	105.00	78.36	20.8833	1500.32	105.00	78.23
19.7500	1500.40	105.00	78.34	20.9000	1500.31	105.00	78.15
19.7667	1500.39	105.00	78.28	20.9167	1500.30	105.00	78.17
19.7833	1500.40	105.00	78.20	20.9333	1500.34	105.00	78.21
19.8000	1500.35	105.00	78.18	20.9500	1500.30	105.00	78.22
19.8167	1500.38	105.00	78.19	20.9667	1500.28	105.00	78.22
19.8333	1500.37	105.00	78.15	20.9833	1500.34	105.00	78.25
19.8500	1500.37	105.00	78.15	21.0000	1500.29	105.00	78.24
19.8667	1500.38	105.00	78.18	21.0167	1500.31	105.00	78.21
19.8833	1500.35	105.00	78.17	21.0333	1500.30	105.00	78.16
19.9000	1500.34	105.00	78.21	21.0500	1500.25	105.00	78.13
19.9167	1500.38	105.00	78.27	21.0667	1500.30	105.00	78.21
19.9333	1500.36	105.00	78.27	21.0833	1500.30	105.00	78.23
19.9500	1500.34	105.00	78.25	21.1000	1500.30	105.00	78.24
19.9667	1500.37	105.00	78.19	21.1167	1500.31	105.10	78.21
19.9833	1500.34	105.00	78.18	21.1333	1500.25	105.00	78.24
20.0000	1500.32	105.00	78.21	21.1500	1500.30	105.10	78.32
20.0167	1500.34	105.00	78.19	21.1667	1500.31	105.10	78.37
20.0333	1500.32	105.00	78.15	21.1833	1500.30	105.10	78.51
20.0500	1500.33	105.00	78.12	21.2000	1500.24	105.00	78.39
20.0667	1500.35	105.00	78.10	21.2167	1500.30	105.10	78.34
20.0833	1500.32	105.00	78.08	21.2333	1500.30	105.10	78.25
20.1000	1500.38	105.00	78.05	21.2500	1500.31	105.10	78.12
20.1167	1500.31	105.00	77.99	21.2667	1500.29	105.10	78.09
20.1333	1500.38	105.00	78.06	21.2833	1500.29	105.10	78.17
20.1500	1500.35	105.00	78.15	21.3000	1500.30	105.10	78.27
20.1667	1500.34	105.00	78.14	21.3167	1500.29	105.10	78.40
20.1833	1500.37	105.00	78.16	21.3333	1500.31	105.10	78.40
20.2000	1500.33	105.00	78.17	21.3500	1500.29	105.10	78.38
20.2167	1500.36	105.00	78.21	21.3667	1500.30	105.10	78.37
20.2333	1500.37	105.00	78.23	21.3833	1500.29	105.10	78.35
20.2500	1500.26	105.00	78.30	21.4000	1500.27	105.10	78.36
20.2667	1500.29	105.00	78.45	21.4167	1500.23	105.10	78.42
20.2833	1500.34	105.00	78.47	21.4333	1500.31	105.10	78.41
20.3000	1500.31	105.00	78.35	21.4500	1500.31	105.10	78.38
20.3167	1500.31	105.00	78.33	21.4667	1500.28	105.10	78.47
20.3333	1500.29	105.00	78.31	21.4833	1500.25	105.10	78.42
20.3500	1500.32	105.00	78.26	21.5000	1500.26	105.10	78.34
20.3667	1500.29	105.00	78.16	21.5167	1500.22	105.10	78.55
20.3833	1500.29	105.00	78.08	21.5333	1500.26	105.10	78.77
20.4000	1500.30	105.00	78.07	21.5500	1500.30	105.10	78.65
20.4167	1500.28	105.00	78.00	21.5667	1500.26	105.10	78.47
20.4333	1500.29	105.00	78.01	21.5833	1500.27	105.10	78.43
20.4500	1500.29	105.00	77.99	21.6000	1500.28	105.10	78.30
20.4667	1500.28	105.00	78.02	21.6167	1500.33	105.10	78.05
20.4833	1500.32	105.00	78.05	21.6333	1500.31	105.10	77.98
20.5000	1500.32	105.00	78.12	21.6500	1500.33	105.10	77.97
20.5167	1500.32	105.00	78.19	21.6667	1500.29	105.10	78.23
20.5333	1500.36	105.00	78.19	21.6833	1500.26	105.10	78.39
20.5500	1500.30	105.00	78.22	21.7000	1500.32	105.10	78.44
20.5667	1500.29	105.00	78.21	21.7167	1500.32	105.10	78.47
20.5833	1500.37	105.00	78.19	21.7333	1500.33	105.10	78.53
20.6000	1500.29	105.00	78.20	21.7500	1500.34	105.10	78.61
20.6167	1500.33	105.00	78.21	21.7667	1500.34	105.10	78.65
20.6333	1500.28	105.00	78.20	21.7833	1500.34	105.10	78.33
20.6500	1500.31	105.00	78.14	21.8000	1500.31	105.10	78.20
20.6667	1500.24	105.00	78.13	21.8167	1500.31	105.10	78.05
20.6833	1500.29	105.00	78.16	21.8333	1500.30	105.10	77.97
20.7000	1500.30	105.00	78.13	21.8500	1500.29	105.10	78.14
20.7167	1500.25	105.00	78.10	21.8667	1500.31	105.10	78.09
20.7333	1500.26	105.00	78.10	21.8833	1500.27	105.10	78.17
20.7500	1500.32	105.00	78.16	21.9000	1500.25	105.10	78.28
20.7667	1500.32	105.00	78.23	21.9167	1500.26	105.10	78.26
20.7833	1500.30	105.00	78.29	21.9333	1500.27	105.10	78.31
20.8000	1500.26	105.00	78.33	21.9500	1500.27	105.10	78.30
20.8167	1500.30	105.00	78.26	21.9667	1500.26	105.10	78.23
20.8333	1500.31	105.00	78.34	21.9833	1500.26	105.10	78.13
20.8500	1500.32	105.00	78.41	22.0000	1500.26	105.10	78.18

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
22.0167	1500.26	105.10	78.26	23.1667	1500.18	105.20	79.07
22.0333	1500.24	105.10	78.24	23.1833	1500.20	105.20	79.05
22.0500	1500.27	105.10	78.33	23.2000	1500.16	105.20	79.02
22.0667	1500.26	105.10	78.19	23.2167	1500.18	105.20	79.00
22.0833	1500.23	105.10	78.08	23.2333	1500.19	105.20	78.85
22.1000	1500.22	105.10	78.02	23.2500	1500.22	105.20	78.66
22.1167	1500.24	105.10	78.03	23.2667	1500.18	105.20	78.51
22.1333	1500.21	105.10	78.03	23.2833	1500.22	105.20	78.60
22.1500	1500.20	105.10	78.11	23.3000	1500.13	105.20	78.72
22.1667	1500.23	105.10	78.32	23.3167	1500.17	105.20	78.86
22.1833	1500.21	105.10	78.34	23.3333	1500.13	105.20	79.11
22.2000	1500.20	105.10	78.35	23.3500	1500.19	105.20	79.06
22.2167	1500.19	105.10	78.24	23.3667	1500.17	105.20	78.57
22.2333	1500.20	105.10	78.17	23.3833	1500.13	105.20	78.25
22.2500	1500.19	105.10	78.28	23.4000	1500.22	105.20	78.12
22.2667	1500.20	105.10	78.32	23.4167	1500.23	105.20	78.11
22.2833	1500.20	105.10	78.37	23.4333	1500.22	105.20	78.32
22.3000	1500.23	105.10	78.43	23.4500	1500.22	105.20	78.36
22.3167	1500.24	105.10	78.52	23.4667	1500.20	105.20	78.55
22.3333	1500.19	105.10	78.68	23.4833	1500.21	105.20	78.93
22.3500	1500.17	105.10	78.64	23.5000	1500.21	105.20	79.06
22.3667	1500.20	105.10	78.56	23.5167	1500.19	105.20	79.04
22.3833	1500.17	105.10	78.54	23.5333	1500.18	105.20	78.98
22.4000	1500.20	105.10	78.61	23.5500	1500.21	105.20	78.82
22.4167	1500.21	105.10	78.54	23.5667	1500.20	105.20	78.66
22.4333	1500.22	105.10	78.51	23.5833	1500.15	105.20	78.42
22.4500	1500.22	105.10	78.51	23.6000	1500.14	105.20	78.38
22.4667	1500.23	105.10	78.40	23.6167	1500.15	105.20	78.36
22.4833	1500.23	105.10	78.28	23.6333	1500.11	105.20	78.29
22.5000	1500.23	105.10	78.47	23.6500	1500.14	105.20	77.95
22.5167	1500.23	105.10	78.71	23.6667	1500.14	105.20	77.77
22.5333	1500.25	105.10	78.61	23.6833	1500.15	105.20	77.67
22.5500	1500.20	105.10	78.46	23.7000	1500.12	105.20	77.70
22.5667	1500.22	105.10	78.44	23.7167	1500.13	105.20	77.69
22.5833	1500.21	105.10	78.43	23.7333	1500.10	105.20	77.73
22.6000	1500.22	105.10	78.37	23.7500	1500.12	105.20	77.70
22.6167	1500.21	105.10	78.31	23.7667	1500.14	105.20	77.77
22.6333	1500.23	105.10	78.34	23.7833	1500.14	105.20	77.81
22.6500	1500.24	105.10	78.48	23.8000	1500.13	105.20	78.02
22.6667	1500.22	105.10	78.53	23.8167	1500.12	105.20	78.29
22.6833	1500.23	105.10	78.45	23.8333	1500.12	105.20	78.75
22.7000	1500.22	105.10	78.36	23.8500	1500.10	105.20	78.94
22.7167	1500.22	105.10	78.32	23.8667	1500.14	105.20	78.66
22.7333	1500.18	105.10	78.29	23.8833	1500.09	105.20	78.71
22.7500	1500.22	105.10	78.29	23.9000	1500.08	105.20	78.38
22.7667	1500.22	105.10	78.43	23.9167	1500.13	105.20	78.09
22.7833	1500.24	105.10	78.42	23.9333	1500.10	105.20	77.97
22.8000	1500.26	105.10	78.43	23.9500	1500.08	105.20	78.02
22.8167	1500.19	105.10	78.35	23.9667	1500.12	105.20	78.13
22.8333	1500.17	105.10	78.28	23.9833	1500.09	105.20	78.20
22.8500	1500.15	105.10	78.23	24.0000	1500.10	105.20	78.27
22.8667	1500.16	105.10	78.25	24.0167	1500.11	105.20	78.44
22.8833	1500.15	105.10	78.28	24.0333	1500.11	105.20	78.55
22.9000	1500.17	105.20	78.28	24.0500	1500.12	105.20	78.61
22.9167	1500.14	105.10	78.26	24.0667	1500.08	105.20	78.50
22.9333	1500.16	105.10	78.28	24.0833	1500.11	105.20	78.41
22.9500	1500.15	105.10	78.26	24.1000	1500.11	105.20	78.34
22.9667	1500.16	105.20	78.29	24.1167	1500.12	105.20	78.02
22.9833	1500.19	105.10	78.34	24.1333	1500.11	105.20	77.84
23.0000	1500.13	105.20	78.41	24.1500	1500.10	105.20	78.03
23.0167	1500.20	105.20	78.56	24.1667	1500.11	105.20	78.13
23.0333	1500.19	105.20	78.70	24.1833	1500.10	105.20	78.23
23.0500	1500.22	105.20	78.78	24.2000	1500.12	105.20	78.24
23.0667	1500.17	105.20	78.81	24.2167	1500.10	105.20	78.25
23.0833	1500.20	105.20	78.66	24.2333	1500.11	105.20	78.16
23.1000	1500.16	105.20	78.58	24.2500	1500.12	105.20	78.07
23.1167	1500.19	105.20	78.58	24.2667	1500.10	105.20	77.97
23.1333	1500.19	105.20	78.64	24.2833	1500.07	105.20	77.91
23.1500	1500.19	105.20	78.86	24.3000	1500.11	105.20	77.97

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
24.3167	1500.08	105.20	78.10	25.4667	1499.97	105.30	78.27
24.3333	1500.07	105.20	78.31	25.4833	1499.97	105.30	78.33
24.3500	1500.06	105.20	78.22	25.5000	1499.97	105.30	78.33
24.3667	1500.08	105.20	78.20	25.5167	1499.98	105.30	78.37
24.3833	1500.09	105.20	78.02	25.5333	1499.99	105.30	78.41
24.4000	1500.10	105.20	78.00	25.5500	1499.96	105.30	78.62
24.4167	1500.04	105.20	77.95	25.5667	1499.95	105.30	78.85
24.4333	1500.04	105.20	78.01	25.5833	1499.98	105.30	78.64
24.4500	1500.03	105.20	78.13	25.6000	1499.95	105.30	78.69
24.4667	1500.02	105.20	78.31	25.6167	1499.97	105.30	78.56
24.4833	1500.05	105.20	78.32	25.6333	1499.95	105.30	78.18
24.5000	1500.01	105.20	78.52	25.6500	1499.97	105.30	77.91
24.5167	1500.03	105.20	78.79	25.6667	1499.94	105.30	77.66
24.5333	1500.08	105.20	78.64	25.6833	1499.94	105.30	77.70
24.5500	1500.07	105.20	78.62	25.7000	1499.96	105.30	77.84
24.5667	1500.04	105.20	78.64	25.7167	1499.95	105.30	78.00
24.5833	1500.06	105.20	79.11	25.7333	1499.95	105.30	77.79
24.6000	1500.06	105.20	78.74	25.7500	1499.97	105.30	77.67
24.6167	1500.07	105.20	78.47	25.7667	1499.98	105.30	77.63
24.6333	1500.10	105.20	78.33	25.7833	1499.97	105.30	77.70
24.6500	1500.10	105.20	77.83	25.8000	1499.98	105.30	77.69
24.6667	1500.09	105.20	77.43	25.8167	1499.93	105.30	77.69
24.6833	1500.07	105.30	77.37	25.8333	1499.98	105.30	77.77
24.7000	1500.09	105.20	77.51	25.8500	1499.94	105.30	77.96
24.7167	1500.05	105.20	77.58	25.8667	1499.96	105.30	78.11
24.7333	1500.05	105.30	77.94	25.8833	1499.94	105.30	78.08
24.7500	1500.10	105.30	78.16	25.9000	1499.95	105.30	77.85
24.7667	1500.06	105.30	78.70	25.9167	1499.93	105.30	77.99
24.7833	1500.06	105.30	78.96	25.9333	1499.91	105.30	78.06
24.8000	1500.05	105.30	78.73	25.9500	1499.92	105.30	78.10
24.8167	1500.10	105.30	78.52	25.9667	1499.92	105.30	78.36
24.8333	1500.09	105.30	78.24	25.9833	1499.91	105.30	78.59
24.8500	1500.09	105.30	78.62	26.0000	1499.91	105.30	78.17
24.8667	1500.08	105.30	78.32	26.0167	1499.98	105.30	77.87
24.8833	1500.10	105.30	77.90	26.0333	1499.91	105.30	77.77
24.9000	1500.08	105.30	77.48	26.0500	1499.90	105.30	78.03
24.9167	1500.10	105.30	77.23	26.0667	1499.91	105.30	78.02
24.9333	1500.08	105.30	76.76	26.0833	1499.90	105.30	78.09
24.9500	1500.09	105.30	76.68	26.1000	1499.91	105.30	78.13
24.9667	1500.05	105.30	76.78	26.1167	1499.91	105.30	78.04
24.9833	1500.08	105.30	77.02	26.1333	1499.98	105.30	78.38
25.0000	1500.09	105.30	77.58	26.1500	1499.92	105.30	78.50
25.0167	1500.11	105.30	78.13	26.1667	1499.88	105.30	78.20
25.0333	1500.10	105.30	78.16	26.1833	1499.86	105.30	77.89
25.0500	1500.11	105.30	78.19	26.2000	1499.90	105.30	77.79
25.0667	1500.07	105.30	77.88	26.2167	1499.92	105.30	77.72
25.0833	1500.08	105.30	77.82	26.2333	1499.85	105.30	77.60
25.1000	1500.07	105.30	77.75	26.2500	1499.88	105.30	77.68
25.1167	1500.08	105.30	77.62	26.2667	1499.88	105.30	77.96
25.1333	1500.10	105.30	77.69	26.2833	1499.87	105.30	78.04
25.1500	1500.05	105.30	77.52	26.3000	1499.89	105.30	78.14
25.1667	1500.05	105.30	77.40	26.3167	1499.82	105.30	78.16
25.1833	1500.00	105.30	77.41	26.3333	1499.89	105.30	78.21
25.2000	1500.01	105.30	77.44	26.3500	1499.86	105.30	78.22
25.2167	1500.00	105.30	77.61	26.3667	1499.83	105.30	78.13
25.2333	1500.02	105.30	77.85	26.3833	1499.85	105.30	78.08
25.2500	1500.00	105.30	77.88	26.4000	1499.84	105.30	78.18
25.2667	1500.00	105.30	77.76	26.4167	1499.85	105.30	78.40
25.2833	1500.01	105.30	77.74	26.4333	1499.85	105.30	78.28
25.3000	1499.98	105.30	77.79	26.4500	1499.85	105.30	78.17
25.3167	1500.00	105.30	77.84	26.4667	1499.83	105.30	78.40
25.3333	1500.00	105.30	78.16	26.4833	1499.87	105.30	78.55
25.3500	1499.97	105.30	78.38	26.5000	1499.85	105.30	78.27
25.3667	1499.98	105.30	78.27	26.5167	1499.84	105.30	78.43
25.3833	1500.00	105.30	78.14	26.5333	1499.88	105.30	79.25
25.4000	1499.99	105.30	78.13	26.5500	1499.87	105.30	79.45
25.4167	1499.99	105.30	78.14	26.5667	1499.88	105.30	79.28
25.4333	1500.00	105.30	78.11	26.5833	1499.95	105.30	78.37
25.4500	1499.99	105.30	78.13	26.6000	1499.97	105.30	77.78

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
26.6167	1499.91	105.30	77.35	27.7667	1499.78	105.40	79.11
26.6333	1499.92	105.40	77.49	27.7833	1499.78	105.40	78.78
26.6500	1499.89	105.30	77.57	27.8000	1499.78	105.40	77.96
26.6667	1499.89	105.30	77.94	27.8167	1499.84	105.40	77.83
26.6833	1499.90	105.30	78.04	27.8333	1499.75	105.40	77.89
26.7000	1499.89	105.40	78.46	27.8500	1499.83	105.40	78.36
26.7167	1499.89	105.40	78.65	27.8667	1499.76	105.40	79.09
26.7333	1499.90	105.40	78.66	27.8833	1499.74	105.40	79.44
26.7500	1499.84	105.40	78.67	27.9000	1499.81	105.40	79.16
26.7667	1499.88	105.40	78.58	27.9167	1499.73	105.40	78.53
26.7833	1499.82	105.40	78.62	27.9333	1499.75	105.40	78.10
26.8000	1499.81	105.40	78.68	27.9500	1499.81	105.40	77.99
26.8167	1499.85	105.40	78.75	27.9667	1499.78	105.40	78.00
26.8333	1499.82	105.40	78.76	27.9833	1499.78	105.40	78.22
26.8500	1499.80	105.40	78.52	28.0000	1499.69	105.40	78.42
26.8667	1499.82	105.40	78.57	28.0167	1499.68	105.40	78.43
26.8833	1499.82	105.40	78.65	28.0333	1499.77	105.40	78.44
26.9000	1499.80	105.40	78.50	28.0500	1499.66	105.40	78.41
26.9167	1499.81	105.40	78.44	28.0667	1499.67	105.40	78.43
26.9333	1499.82	105.40	78.43	28.0833	1499.64	105.40	78.48
26.9500	1499.85	105.40	78.47	28.1000	1499.68	105.40	78.60
26.9667	1499.81	105.40	78.65	28.1167	1499.67	105.40	78.77
26.9833	1499.82	105.40	78.85	28.1333	1499.61	105.40	78.88
27.0000	1499.85	105.40	78.96	28.1500	1499.66	105.40	78.94
27.0167	1499.79	105.40	78.77	28.1667	1499.66	105.40	78.91
27.0333	1499.77	105.40	78.71	28.1833	1499.66	105.40	78.79
27.0500	1499.79	105.40	78.84	28.2000	1499.64	105.40	78.70
27.0667	1499.83	105.40	78.73	28.2167	1499.64	105.40	78.81
27.0833	1499.82	105.40	78.61	28.2333	1499.64	105.40	78.94
27.1000	1499.79	105.40	78.72	28.2500	1499.65	105.40	78.98
27.1167	1499.77	105.40	78.82	28.2667	1499.63	105.40	79.09
27.1333	1499.76	105.40	79.12	28.2833	1499.62	105.40	79.26
27.1500	1499.81	105.40	79.22	28.3000	1499.63	105.40	79.29
27.1667	1499.78	105.40	79.27	28.3167	1499.64	105.40	79.48
27.1833	1499.77	105.40	79.33	28.3333	1499.64	105.40	79.53
27.2000	1499.76	105.40	79.57	28.3500	1499.64	105.40	79.59
27.2167	1499.81	105.40	79.75	28.3667	1499.61	105.40	79.55
27.2333	1499.77	105.40	79.50	28.3833	1499.65	105.40	79.46
27.2500	1499.85	105.40	79.36	28.4000	1499.62	105.40	79.34
27.2667	1499.83	105.40	79.53	28.4167	1499.60	105.40	79.15
27.2833	1499.79	105.40	79.11	28.4333	1499.64	105.40	79.09
27.3000	1499.83	105.40	78.93	28.4500	1499.60	105.40	79.06
27.3167	1499.84	105.40	79.02	28.4667	1499.60	105.40	78.97
27.3333	1499.87	105.40	79.02	28.4833	1499.62	105.40	78.90
27.3500	1499.83	105.40	79.09	28.5000	1499.65	105.40	78.94
27.3667	1499.89	105.40	78.77	28.5167	1499.65	105.40	78.97
27.3833	1499.86	105.40	78.35	28.5333	1499.61	105.40	79.05
27.4000	1499.87	105.40	78.19	28.5500	1499.61	105.40	79.03
27.4167	1499.89	105.40	78.16	28.5667	1499.65	105.40	78.95
27.4333	1499.82	105.40	78.04	28.5833	1499.61	105.40	79.04
27.4500	1499.82	105.40	78.05	28.6000	1499.64	105.40	79.15
27.4667	1499.85	105.40	78.29	28.6167	1499.64	105.40	79.28
27.4833	1499.86	105.40	78.42	28.6333	1499.61	105.40	79.12
27.5000	1499.85	105.40	78.30	28.6500	1499.60	105.50	79.01
27.5167	1499.84	105.40	78.29	28.6667	1499.59	105.40	78.95
27.5333	1499.85	105.40	78.27	28.6833	1499.60	105.40	78.93
27.5500	1499.83	105.40	78.08	28.7000	1499.60	105.50	78.87
27.5667	1499.82	105.40	77.79	28.7167	1499.58	105.50	78.71
27.5833	1499.83	105.40	77.68	28.7333	1499.56	105.50	78.62
27.6000	1499.81	105.40	77.74	28.7500	1499.55	105.50	78.69
27.6167	1499.78	105.40	77.83	28.7667	1499.55	105.50	78.81
27.6333	1499.80	105.40	77.98	28.7833	1499.54	105.50	78.78
27.6500	1499.79	105.40	78.44	28.8000	1499.54	105.50	78.80
27.6667	1499.79	105.40	77.94	28.8167	1499.55	105.50	78.86
27.6833	1499.78	105.40	78.19	28.8333	1499.55	105.50	78.94
27.7000	1499.78	105.40	78.15	28.8500	1499.56	105.50	78.89
27.7167	1499.77	105.40	78.24	28.8667	1499.56	105.50	78.90
27.7333	1499.75	105.40	78.53	28.8833	1499.57	105.50	78.97
27.7500	1499.76	105.40	78.78	28.9000	1499.58	105.50	78.91

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia
28.9167	1499.51	105.50	78.90
28.9333	1499.56	105.50	79.07
28.9500	1499.53	105.50	79.10
28.9667	1499.52	105.50	79.12
28.9833	1499.54	105.50	79.12
29.0000	1499.56	105.50	79.08
29.0167	1499.59	105.50	78.97
29.0333	1499.57	105.50	78.93
29.0500	1499.52	105.50	78.94
29.0667	1499.52	105.50	78.89
29.0833	1499.49	105.50	78.81
29.1000	1499.52	105.50	78.76
29.1167	1499.50	105.50	78.78
29.1333	1499.58	105.50	78.75
29.1500	1499.48	105.50	78.78
29.1667	1499.53	105.50	78.82
29.1833	1499.55	105.50	78.86
29.2000	1499.51	105.50	78.88
29.2167	1499.50	105.50	78.92
29.2333	1499.51	105.50	78.96
29.2500	1499.49	105.50	78.91
29.2667	1499.51	105.50	78.89
29.2833	1499.50	105.50	78.88
29.3000	1499.51	105.50	78.89
29.3167	1499.57	105.50	78.87
29.3333	1499.50	105.50	78.83
29.3500	1499.51	105.50	78.75
29.3667	1499.51	105.50	78.71
29.3833	1499.49	105.50	78.67
29.4000	1499.56	105.50	78.64
29.4167	1499.54	105.50	78.69
29.4333	1499.51	105.50	78.74
29.4500	1499.51	105.50	78.77
29.4667	1499.54	105.50	78.82
29.4833	1499.49	105.50	78.87
29.5000	1499.51	105.50	78.91
29.5167	1499.50	105.50	78.88
29.5333	1499.47	105.50	78.86
29.5500	1499.50	105.50	78.86
29.5667	1499.48	105.50	78.84
29.5833	1499.49	105.50	78.84
29.6000	1499.48	105.50	78.80
29.6167	1499.47	105.50	78.72
29.6333	1499.45	105.50	78.73
29.6500	1499.45	105.50	78.73
29.6667	1499.42	105.50	78.71
29.6833	1499.43	105.50	78.67
29.7000	1499.43	105.50	78.67
29.7167	1499.41	105.50	78.63
29.7333	1499.42	105.50	78.60
29.7500	1499.45	105.50	78.56
29.7667	1499.44	105.50	78.55
29.7833	1499.42	105.50	78.60
29.8000	1499.40	105.50	78.68
29.8167	1499.46	105.50	78.62
29.8333	1499.42	105.50	78.64
29.8500	1499.39	105.50	78.62
29.8667	1499.46	105.50	78.63
29.8833	1499.41	105.50	78.63
29.9000	1499.40	105.50	78.62
29.9167	1499.41	105.50	78.64
29.9333	1499.44	105.50	78.61
29.9500	1499.39	105.50	78.64
29.9667	1499.41	105.50	78.65
29.9833	1499.37	105.50	78.64
30.0000	1499.37	105.50	78.62
30.0167	1499.38	105.50	78.61
30.0333	1499.38	105.50	78.57
30.0500	1499.37	105.50	78.53
30.0667	1499.36	105.50	78.51
30.0833	1499.37	105.50	78.49
30.1000	1499.38	105.50	78.48
30.1167	1499.35	105.50	78.49
30.1333	1499.35	105.50	78.50
30.1500	1499.38	105.50	78.50
30.1667	1499.34	105.50	78.46
30.1833	1499.38	105.50	78.42
30.2000	1499.35	105.50	78.45
30.2167	1499.32	105.50	78.46
30.2333	1499.30	105.50	78.45
30.2500	1499.36	105.50	78.46
30.2667	1499.34	105.50	78.47
30.2833	1499.37	105.50	78.49
30.3000	1499.37	105.50	78.53
30.3167	1499.36	105.50	78.52
30.3333	1499.34	105.50	78.48
30.3500	1499.33	105.50	78.47
30.3667	1499.36	105.50	78.45
30.3833	1499.33	105.50	78.45
30.4000	1499.33	105.50	78.39
30.4167	1499.33	105.50	78.41
30.4333	1499.30	105.50	78.44
30.4500	1499.31	105.50	78.49
30.4667	1499.31	105.50	78.50
30.4833	1499.31	105.50	78.50
30.5000	1499.32	105.50	78.47
30.5167	1499.30	105.50	78.48
30.5333	1499.31	105.50	78.48
30.5500	1499.31	105.50	78.51
30.5667	1499.31	105.50	78.52
30.5833	1499.31	105.50	78.51
30.6000	1499.36	105.50	78.51
30.6167	1499.32	105.50	78.51
30.6333	1499.31	105.50	78.51
30.6500	1499.34	105.50	78.53
30.6667	1499.37	105.60	78.48
30.6833	1499.36	105.50	78.48
30.7000	1499.36	105.50	78.48
30.7167	1499.30	105.60	78.49
30.7333	1499.34	105.50	78.45
30.7500	1499.38	105.50	78.45
30.7667	1499.30	105.60	78.52
30.7833	1499.29	105.60	78.49
30.8000	1499.34	105.50	78.50
30.8167	1499.29	105.60	78.48
30.8333	1499.28	105.60	78.51
30.8500	1499.36	105.60	78.50
30.8667	1499.30	105.60	78.47
30.8833	1499.33	105.60	78.41
30.9000	1499.31	105.60	78.41
30.9167	1499.35	105.60	78.35
30.9333	1499.32	105.60	78.31
30.9500	1499.32	105.60	78.30
30.9667	1499.32	105.60	78.30
30.9833	1499.31	105.60	78.28
31.0000	1499.30	105.60	78.28
31.0167	1499.26	105.60	78.26
31.0333	1499.27	105.60	78.22
31.0500	1499.25	105.60	78.16
31.0833	1499.33	105.60	78.14
31.1000	1499.33	105.60	78.15
31.1167	1499.31	105.60	78.12
31.1333	1499.32	105.60	78.17
31.1500	1499.27	105.60	78.19
31.1667	1499.33	105.60	78.20
31.1833	1499.33	105.60	78.22
31.2000	1499.32	105.60	78.20
31.2167	1499.30	105.60	78.19

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
31.2333	1499.32	105.60	78.20	32.4000	1499.23	105.60	77.68
31.2500	1499.27	105.60	78.22	32.4167	1499.25	105.60	77.70
31.2667	1499.29	105.60	78.21	32.4333	1499.24	105.60	77.72
31.2833	1499.29	105.60	78.20	32.4500	1499.23	105.60	77.74
31.3000	1499.28	105.60	78.18	32.4667	1499.24	105.60	77.76
31.3167	1499.30	105.60	78.19	32.4833	1499.22	105.60	77.80
31.3333	1499.30	105.60	78.13	32.5000	1499.23	105.60	77.81
31.3500	1499.30	105.60	78.08	32.5167	1499.22	105.60	77.80
31.3667	1499.30	105.60	78.05	32.5333	1499.23	105.60	77.81
31.3833	1499.31	105.60	78.04	32.5500	1499.22	105.60	77.82
31.4000	1499.29	105.60	78.01	32.5667	1499.21	105.60	77.86
31.4167	1499.28	105.60	77.97	32.5833	1499.18	105.60	77.87
31.4333	1499.28	105.60	77.96	32.6000	1499.19	105.60	77.89
31.4500	1499.32	105.60	77.96	32.6167	1499.19	105.60	77.87
31.4667	1499.29	105.60	77.98	32.6333	1499.23	105.60	77.84
31.4833	1499.29	105.60	78.04	32.6500	1499.18	105.60	77.81
31.5000	1499.29	105.60	78.07	32.6667	1499.23	105.60	77.75
31.5167	1499.30	105.60	78.09	32.6833	1499.19	105.60	77.76
31.5333	1499.31	105.60	78.13	32.7000	1499.21	105.60	77.73
31.5500	1499.30	105.60	78.04	32.7167	1499.19	105.60	77.76
31.5667	1499.29	105.60	78.03	32.7333	1499.19	105.60	77.75
31.5833	1499.29	105.60	78.01	32.7500	1499.24	105.60	77.77
31.6000	1499.30	105.60	77.97	32.7667	1499.17	105.60	77.78
31.6167	1499.29	105.60	77.93	32.7833	1499.24	105.60	77.78
31.6333	1499.31	105.60	77.89	32.8000	1499.17	105.70	77.81
31.6500	1499.32	105.60	77.84	32.8167	1499.20	105.60	77.81
31.6667	1499.26	105.60	77.88	32.8333	1499.22	105.70	77.77
31.6833	1499.25	105.60	77.82	32.8500	1499.19	105.70	77.74
31.7000	1499.31	105.60	77.79	32.8667	1499.20	105.60	77.76
31.7167	1499.30	105.60	77.77	32.8833	1499.22	105.70	77.76
31.7333	1499.28	105.60	77.78	32.9000	1499.18	105.70	77.77
31.7500	1499.28	105.60	77.80	32.9167	1499.22	105.70	77.78
31.7667	1499.27	105.60	77.85	32.9333	1499.16	105.70	77.80
31.7833	1499.23	105.60	77.88	32.9500	1499.23	105.70	77.79
31.8000	1499.22	105.60	77.86	32.9667	1499.21	105.70	77.79
31.8167	1499.26	105.60	77.82	32.9833	1499.20	105.70	77.81
31.8333	1499.25	105.60	77.87	33.0000	1499.19	105.70	77.84
31.8667	1499.22	105.60	77.92	33.0167	1499.22	105.70	77.82
31.8833	1499.25	105.60	77.91	33.0333	1499.21	105.70	77.81
31.9000	1499.25	105.60	77.93	33.0500	1499.20	105.70	77.80
31.9167	1499.23	105.60	77.92	33.0667	1499.22	105.70	77.78
31.9333	1499.24	105.60	77.88	33.0833	1499.18	105.70	77.80
31.9500	1499.26	105.60	77.85	33.1000	1499.16	105.70	77.80
31.9667	1499.24	105.60	77.80	33.1167	1499.18	105.70	77.81
31.9833	1499.25	105.60	77.78	33.1333	1499.17	105.70	77.79
32.0000	1499.25	105.60	77.76	33.1500	1499.18	105.70	77.81
32.0167	1499.23	105.60	77.74	33.1667	1499.16	105.70	77.76
32.0333	1499.26	105.60	77.76	33.1833	1499.16	105.70	77.79
32.0500	1499.24	105.60	77.72	33.2000	1499.18	105.70	77.80
32.0667	1499.21	105.60	77.70	33.2167	1499.16	105.70	77.79
32.0833	1499.24	105.60	77.71	33.2333	1499.17	105.70	77.79
32.1000	1499.20	105.60	77.66	33.2500	1499.17	105.70	77.75
32.1167	1499.21	105.60	77.67	33.2667	1499.18	105.70	77.79
32.1333	1499.24	105.60	77.70	33.2833	1499.17	105.70	77.82
32.1500	1499.21	105.60	77.69	33.3000	1499.19	105.70	77.84
32.1667	1499.21	105.60	77.68	33.3167	1499.18	105.70	77.83
32.1833	1499.21	105.60	77.65	33.3333	1499.20	105.70	77.87
32.2000	1499.22	105.60	77.67	33.3500	1499.19	105.70	77.87
32.2167	1499.20	105.60	77.64	33.3667	1499.21	105.70	77.80
32.2333	1499.21	105.60	77.67	33.3833	1499.15	105.70	77.82
32.2500	1499.22	105.60	77.64	33.4000	1499.21	105.70	77.79
32.2667	1499.21	105.60	77.63	33.4167	1499.20	105.70	77.79
32.2833	1499.20	105.60	77.65	33.4333	1499.21	105.70	77.81
32.3000	1499.22	105.60	77.65	33.4500	1499.17	105.70	77.83
32.3167	1499.13	105.60	77.59	33.4667	1499.22	105.70	77.84
32.3333	1499.16	105.60	77.59	33.4833	1499.16	105.70	77.90
32.3500	1499.20	105.60	77.65	33.5000	1499.20	105.70	77.87
32.3667	1499.21	105.60	77.65	33.5167	1499.16	105.70	77.85
32.3833	1499.22	105.60	77.70	33.5333	1499.18	105.70	77.83

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia
33.5500	1499.21	105.70	77.79
33.5667	1499.20	105.70	77.73
33.5833	1499.22	105.70	77.70
33.6000	1499.22	105.70	77.69
33.6167	1499.21	105.70	77.69
33.6333	1499.17	105.70	77.68
33.6500	1499.18	105.70	77.67
33.6667	1499.21	105.70	77.69
33.6833	1499.19	105.70	77.71
33.7000	1499.16	105.70	77.69
33.7167	1499.19	105.70	77.67
33.7333	1499.19	105.70	77.67
33.7500	1499.20	105.70	77.64
33.7667	1499.17	105.70	77.62
33.7833	1499.20	105.70	77.61
33.8000	1499.18	105.70	77.63
33.8167	1499.20	105.70	77.64
33.8333	1499.18	105.70	77.62
33.8500	1499.19	105.70	77.62
33.8667	1499.17	105.70	77.61
33.8833	1499.16	105.70	77.60
33.9000	1499.17	105.70	77.56
33.9167	1499.18	105.70	77.57
33.9333	1499.17	105.70	77.57
33.9500	1499.19	105.70	77.57
33.9667	1499.14	105.70	77.55
33.9833	1499.16	105.70	77.54
34.0000	1499.16	105.70	77.53
34.0167	1499.21	105.70	77.52
34.0333	1499.16	105.70	77.52
34.0500	1499.14	105.70	77.49
34.0667	1499.17	105.70	77.51
34.0833	1499.15	105.70	77.52
34.1000	1499.14	105.70	77.58
34.1167	1499.15	105.70	77.61
34.1333	1499.14	105.70	77.60
34.1500	1499.16	105.70	77.59
34.1667	1499.13	105.70	77.57
34.1833	1499.16	105.70	77.56
34.2000	1499.16	105.70	77.57
34.2167	1499.08	105.70	77.56
34.2333	1499.12	105.70	77.55
34.2500	1499.15	105.70	77.57
34.2667	1499.12	105.70	77.56
34.2833	1499.11	105.70	77.56
34.3000	1499.11	105.70	77.57
34.3167	1499.14	105.70	77.59
34.3333	1499.12	105.70	77.59
34.3500	1499.14	105.70	77.58
34.3667	1499.12	105.70	77.61
34.3833	1499.13	105.70	77.62
34.4000	1499.13	105.70	77.61
34.4167	1499.11	105.70	77.62
34.4333	1499.11	105.70	77.62
34.4500	1499.12	105.70	77.61
34.4667	1499.12	105.70	77.60
34.4833	1499.11	105.70	77.60
34.5000	1499.13	105.70	77.57
34.5167	1499.15	105.70	77.58
34.5333	1499.12	105.70	77.58
34.5500	1499.14	105.70	77.57
34.5667	1499.17	105.70	77.55
34.5833	1499.13	105.70	77.51
34.6000	1499.16	105.70	77.51
34.6167	1499.11	105.70	77.51
34.6333	1499.14	105.70	77.52
34.6500	1499.18	105.70	77.52
34.6667	1499.17	105.70	77.53
34.6833	1499.15	105.70	77.56
34.7000	1499.15	105.70	77.55
34.7167	1499.10	105.70	77.55
34.7333	1499.17	105.70	77.58
34.7500	1499.12	105.70	77.57
34.7667	1499.15	105.70	77.57
34.7833	1499.15	105.70	77.55
34.8000	1499.17	105.70	77.52
34.8167	1499.15	105.70	77.50
34.8333	1499.15	105.70	77.47
34.8500	1499.16	105.70	77.50
34.8667	1499.16	105.70	77.47
34.8833	1499.15	105.70	77.49
34.9000	1499.16	105.70	77.48
34.9167	1499.14	105.70	77.46
34.9333	1499.12	105.70	77.47
34.9500	1499.13	105.70	77.47
34.9667	1499.15	105.70	77.48
34.9833	1499.15	105.70	77.47
35.0000	1499.11	105.70	77.45
35.0167	1499.13	105.70	77.46
35.0333	1499.12	105.70	77.48
35.0500	1499.14	105.70	77.45
35.0667	1499.12	105.70	77.45
35.0833	1499.12	105.70	77.43
35.1000	1499.13	105.70	77.43
35.1167	1499.12	105.70	77.43
35.1333	1499.11	105.70	77.44
35.1500	1499.12	105.70	77.41
35.1667	1499.11	105.70	77.40
35.1833	1499.12	105.70	77.41
35.2000	1499.12	105.70	77.42
35.2167	1499.07	105.70	77.43
35.2333	1499.11	105.70	77.41
35.2500	1499.11	105.70	77.38
35.2667	1499.11	105.70	77.40
35.2833	1499.13	105.70	77.45
35.3000	1499.11	105.70	77.41
35.3167	1499.11	105.70	77.40
35.3333	1499.11	105.80	77.41
35.3500	1499.12	105.80	77.44
35.3667	1499.13	105.70	77.44
35.3833	1499.10	105.80	77.46
35.4000	1499.18	105.70	77.43
35.4167	1499.08	105.80	77.43
35.4333	1499.14	105.70	77.45
35.4500	1499.11	105.80	77.46
35.4667	1499.08	105.80	77.46
35.4833	1499.09	105.80	77.46
35.5000	1499.10	105.80	77.45
35.5167	1499.09	105.80	77.45
35.5333	1499.11	105.80	77.46
35.5500	1499.09	105.80	77.46
35.5667	1499.10	105.80	77.47
35.5833	1499.08	105.80	77.50
35.6000	1499.09	105.80	77.53
35.6167	1499.10	105.80	77.50
35.6333	1499.09	105.80	77.50
35.6500	1499.08	105.80	77.52
35.6667	1499.12	105.80	77.56
35.6833	1499.13	105.80	77.58
35.7000	1499.11	105.80	77.57
35.7167	1499.07	105.80	77.60
35.7333	1499.13	105.80	77.58
35.7500	1499.13	105.80	77.59
35.7667	1499.11	105.80	77.60
35.7833	1499.15	105.80	77.64
35.8000	1499.15	105.80	77.63
35.8167	1499.11	105.80	77.64
35.8333	1499.12	105.80	77.63

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
35.8500	1499.10	105.80	77.64	37.0000	1499.06	105.80	77.50
35.8667	1499.09	105.80	77.64	37.0167	1499.12	105.80	77.51
35.8833	1499.12	105.80	77.63	37.0333	1499.14	105.80	77.51
35.9000	1499.10	105.80	77.62	37.0500	1499.11	105.80	77.54
35.9167	1499.13	105.80	77.60	37.0667	1499.08	105.80	77.53
35.9333	1499.14	105.80	77.58	37.0833	1499.12	105.80	77.50
35.9500	1499.13	105.80	77.57	37.1000	1499.08	105.80	77.48
35.9667	1499.12	105.80	77.59	37.1167	1499.06	105.80	77.48
35.9833	1499.11	105.80	77.61	37.1333	1499.05	105.80	77.46
36.0000	1499.11	105.80	77.59	37.1500	1499.08	105.80	77.46
36.0167	1499.06	105.80	77.60	37.1667	1499.07	105.80	77.48
36.0333	1499.13	105.80	77.62	37.1833	1499.10	105.80	77.50
36.0500	1499.10	105.80	77.63	37.2000	1499.07	105.80	77.52
36.0667	1499.10	105.80	77.58	37.2167	1499.09	105.80	77.53
36.0833	1499.08	105.80	77.53	37.2333	1499.05	105.80	77.50
36.1000	1499.09	105.80	77.52	37.2500	1499.08	105.80	77.52
36.1167	1499.10	105.80	77.51	37.2667	1499.10	105.80	77.51
36.1333	1499.09	105.80	77.52	37.2833	1499.05	105.80	77.48
36.1500	1499.10	105.80	77.53	37.3000	1499.12	105.80	77.46
36.1667	1499.09	105.80	77.54	37.3167	1499.08	105.80	77.46
36.1833	1499.13	105.80	77.51	37.3333	1499.10	105.80	77.42
36.2000	1499.12	105.80	77.48	37.3500	1499.11	105.80	77.43
36.2167	1499.10	105.80	77.47	37.3667	1499.11	105.80	77.43
36.2333	1499.09	105.80	77.47	37.3833	1499.06	105.80	77.41
36.2500	1499.09	105.80	77.49	37.4000	1499.09	105.80	77.43
36.2667	1499.10	105.80	77.50	37.4167	1499.05	105.80	77.41
36.2833	1499.15	105.80	77.49	37.4333	1499.12	105.80	77.41
36.3000	1499.12	105.80	77.45	37.4500	1499.12	105.80	77.45
36.3167	1499.11	105.80	77.42	37.4667	1499.04	105.80	77.48
36.3333	1499.11	105.80	77.42	37.4833	1499.08	105.80	77.48
36.3500	1499.11	105.80	77.42	37.5000	1499.05	105.80	77.46
36.3667	1499.15	105.80	77.46	37.5167	1499.04	105.80	77.41
36.3833	1499.11	105.80	77.49	37.5333	1499.05	105.80	77.45
36.4000	1499.09	105.80	77.50	37.5500	1499.03	105.80	77.43
36.4167	1499.09	105.80	77.51	37.5667	1499.04	105.80	77.46
36.4333	1499.12	105.80	77.52	37.5833	1499.04	105.80	77.50
36.4500	1499.13	105.80	77.50	37.6000	1499.10	105.80	77.52
36.4667	1499.11	105.80	77.52	37.6167	1499.03	105.80	77.52
36.4833	1499.11	105.80	77.49	37.6333	1499.11	105.80	77.51
36.5000	1499.11	105.80	77.47	37.6500	1499.05	105.80	77.52
36.5167	1499.12	105.80	77.45	37.6667	1499.08	105.80	77.49
36.5333	1499.08	105.80	77.42	37.6833	1499.09	105.80	77.47
36.5500	1499.05	105.80	77.43	37.7000	1499.05	105.80	77.45
36.5667	1499.12	105.80	77.44	37.7167	1499.04	105.80	77.42
36.5833	1499.14	105.80	77.44	37.7333	1499.10	105.80	77.37
36.6000	1499.06	105.80	77.42	37.7500	1499.07	105.80	77.37
36.6167	1499.12	105.80	77.41	37.7667	1499.04	105.80	77.38
36.6333	1499.11	105.80	77.42	37.7833	1499.08	105.80	77.38
36.6500	1499.11	105.80	77.42	37.8000	1499.06	105.80	77.37
36.6667	1499.04	105.80	77.44	37.8167	1499.06	105.80	77.37
36.6833	1499.09	105.80	77.42	37.8333	1499.06	105.80	77.41
36.7000	1499.11	105.80	77.45	37.8500	1499.06	105.80	77.41
36.7167	1499.10	105.80	77.44	37.8667	1499.03	105.80	77.38
36.7333	1499.09	105.80	77.45	37.8833	1499.06	105.80	77.41
36.7500	1499.11	105.80	77.41	37.9000	1499.06	105.80	77.41
36.7667	1499.07	105.80	77.44	37.9167	1499.06	105.80	77.42
36.7833	1499.10	105.80	77.42	37.9333	1499.07	105.80	77.45
36.8000	1499.10	105.80	77.42	37.9500	1499.07	105.80	77.41
36.8167	1499.13	105.80	77.40	37.9667	1499.08	105.80	77.39
36.8333	1499.09	105.80	77.38	37.9833	1499.07	105.80	77.37
36.8500	1499.12	105.80	77.38	38.0000	1499.06	105.80	77.36
36.8667	1499.12	105.80	77.37	38.0167	1499.03	105.80	77.32
36.8833	1499.12	105.80	77.38	38.0333	1499.07	105.80	77.31
36.9000	1499.10	105.80	77.39	38.0500	1499.07	105.90	77.34
36.9167	1499.08	105.80	77.41	38.0667	1499.06	105.80	77.35
36.9333	1499.10	105.80	77.44	38.0833	1499.02	105.90	77.36
36.9500	1499.09	105.80	77.46	38.1000	1499.05	105.90	77.32
36.9667	1499.08	105.80	77.46	38.1167	1499.02	105.90	77.32
36.9833	1499.10	105.80	77.47	38.1333	1499.02	105.90	77.30

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
38.1500	1499.04	105.90	77.30	39.3000	1498.97	105.90	77.10
38.1667	1499.01	105.90	77.31	39.3167	1498.96	105.90	77.09
38.1833	1499.07	105.90	77.34	39.3333	1498.97	105.90	77.08
38.2000	1499.04	105.90	77.34	39.3500	1498.96	105.90	77.10
38.2167	1499.02	105.90	77.34	39.3667	1498.95	105.90	77.08
38.2333	1499.03	105.90	77.34	39.3833	1498.95	105.90	77.10
38.2500	1499.03	105.90	77.32	39.4000	1498.96	105.90	77.12
38.2667	1499.02	105.90	77.35	39.4167	1498.97	105.90	77.14
38.2833	1499.03	105.90	77.33	39.4333	1498.97	105.90	77.14
38.3000	1499.03	105.90	77.37	39.4500	1498.97	105.90	77.15
38.3167	1499.03	105.90	77.34	39.4667	1498.93	105.90	77.16
38.3333	1499.04	105.90	77.32	39.4833	1498.92	105.90	77.15
38.3500	1499.04	105.90	77.29	39.5000	1498.96	105.90	77.17
38.3667	1499.06	105.90	77.30	39.5167	1498.98	105.90	77.16
38.3833	1499.04	105.90	77.30	39.5333	1498.95	105.90	77.18
38.4000	1499.03	105.90	77.30	39.5500	1498.96	105.90	77.18
38.4167	1499.04	105.90	77.33	39.5667	1498.95	105.90	77.19
38.4333	1499.04	105.90	77.35	39.5833	1498.95	105.90	77.17
38.4500	1499.02	105.90	77.37	39.6000	1498.95	105.90	77.19
38.4667	1499.06	105.90	77.36	39.6167	1498.97	105.90	77.21
38.4833	1499.04	105.90	77.39	39.6333	1498.95	105.90	77.22
38.5000	1498.99	105.90	77.36	39.6500	1498.97	105.90	77.23
38.5167	1499.03	105.90	77.32	39.6667	1498.95	105.90	77.21
38.5333	1499.03	105.90	77.31	39.6833	1498.95	105.90	77.21
38.5500	1499.06	105.90	77.29	39.7000	1498.97	105.90	77.17
38.5667	1499.01	105.90	77.28	39.7167	1498.98	105.90	77.14
38.5833	1498.99	105.90	77.29	39.7333	1498.93	105.90	77.15
38.6000	1498.99	105.90	77.22	39.7500	1498.96	105.90	77.12
38.6167	1499.00	105.90	77.24	39.7667	1498.97	105.90	77.08
38.6333	1499.00	105.90	77.21	39.7833	1498.96	105.90	77.08
38.6500	1498.97	105.90	77.20	39.8000	1498.95	105.90	77.07
38.6667	1499.01	105.90	77.21	39.8167	1498.97	105.90	77.04
38.6833	1499.02	105.90	77.21	39.8333	1498.95	105.90	77.03
38.7000	1499.02	105.90	77.21	39.8500	1498.99	105.90	77.05
38.7167	1498.99	105.90	77.23	39.8667	1498.91	105.90	77.07
38.7333	1498.98	105.90	77.24	39.8833	1498.97	105.90	77.06
38.7500	1499.01	105.90	77.24	39.9000	1499.00	105.90	77.07
38.7667	1498.99	105.90	77.22	39.9167	1498.89	105.90	77.06
38.7833	1498.99	105.90	77.20	39.9333	1498.93	105.90	77.05
38.8000	1499.02	105.90	77.17	39.9500	1498.99	105.90	77.01
38.8167	1499.02	105.90	77.14	39.9667	1498.97	105.90	77.02
38.8333	1499.07	105.90	77.16	39.9833	1498.97	105.90	77.03
38.8500	1499.01	105.90	77.17	40.0000	1498.99	105.90	77.07
38.8667	1499.04	105.90	77.18	40.0167	1498.97	105.90	77.06
38.8833	1499.03	105.90	77.22	40.0333	1498.96	105.90	77.09
38.9000	1499.00	105.90	77.23	40.0500	1498.95	105.90	77.10
38.9167	1499.00	105.90	77.23	40.0667	1498.97	105.90	77.10
38.9333	1499.04	105.90	77.22	40.0833	1498.94	105.90	77.10
38.9500	1499.00	105.90	77.21	40.1000	1500.38	105.90	77.13
38.9667	1499.01	105.90	77.14	40.1500	1485.77	105.90	76.89
38.9833	1499.02	105.90	77.14	40.1667	1414.98	105.90	76.20
39.0000	1499.02	105.90	77.13	40.1833	1370.03	105.80	76.29
39.0167	1499.02	105.90	77.13	40.2000	1370.46	105.60	76.60
39.0333	1499.06	105.90	77.10	40.2167	1370.52	105.40	76.81
39.0500	1498.98	105.90	77.12	40.2333	1370.59	105.20	76.88
39.0667	1498.98	105.90	77.11	40.2500	1370.59	105.00	76.93
39.0833	1499.00	105.90	77.13	40.2667	1370.57	104.90	76.96
39.1000	1498.98	105.90	77.11	40.2833	1319.82	104.70	76.39
39.1167	1498.99	105.90	77.14	40.3000	1246.05	104.50	75.87
39.1333	1498.96	105.90	77.12	40.3167	1170.66	104.20	75.60
39.1500	1498.97	105.90	77.09	40.3333	1095.43	103.90	75.53
39.1667	1498.98	105.90	77.09	40.3500	1017.31	103.40	75.49
39.1833	1498.99	105.90	77.09	40.3667	944.68	102.90	75.40
39.2000	1498.98	105.90	77.07	40.3833	942.93	102.30	76.27
39.2167	1498.96	105.90	77.10	40.4000	943.13	101.80	76.68
39.2333	1498.94	105.90	77.08	40.4167	943.12	101.30	76.77
39.2500	1498.98	105.90	77.08	40.4333	943.14	100.80	76.82
39.2667	1498.98	105.90	77.09	40.4500	943.08	100.40	76.85
39.2833	1498.97	105.90	77.09	40.4667	943.07	100.00	76.88

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia	Time,hra	BHP, psia	Temp, °F	Tbg, psia
40.4833	942.98	99.70	76.86	45.1083	648.31	69.00	12.80
40.5000	896.62	99.40	76.17	45.1167	688.22	69.00	12.80
40.5167	795.71	99.00	75.52	45.1250	712.68	69.00	12.80
40.5333	690.68	98.60	75.26	45.1333	747.66	69.00	12.80
40.5500	594.87	98.20	75.11	45.1417	935.36	69.00	12.80
40.5833	515.27	97.00	76.18	45.1500	924.78	69.00	12.80
40.6000	515.47	96.40	76.56	45.1583	1012.27	69.00	12.80
40.6167	515.54	96.00	76.72	45.1667	1120.55	69.00	12.80
40.6333	515.54	95.50	76.85	45.1750	1064.80	69.00	12.80
40.6500	515.47	95.00	76.90	45.1833	1139.15	69.00	12.80
40.6667	515.41	94.60	76.94	45.1917	1113.50	69.00	12.80
40.6833	470.27	94.30	76.36	45.2000	1110.92	69.00	12.80
40.7000	384.26	93.90	75.71	45.2083	1110.77	69.00	12.80
40.7167	306.22	93.50	75.43	45.2167	1111.62	69.00	12.80
40.7333	300.93	93.10	76.31	45.2250	1111.97	69.00	12.80
40.7500	301.20	92.70	76.70	45.2333	1112.19	69.00	12.80
40.7667	301.23	92.40	76.84	45.2417	1112.26	69.00	12.80
40.7833	301.26	92.10	76.94	45.2500	1112.22	69.00	12.80
40.8000	301.27	91.80	76.96	45.2583	1112.03	69.00	12.80
40.8167	301.23	91.50	76.95	45.2667	1111.93	69.00	12.80
40.8333	301.18	91.30	76.97	45.2750	1111.77	69.00	12.80
40.8500	267.16	91.10	76.44	45.2833	1111.71	69.00	12.80
40.8667	204.80	90.90	75.99	45.2917	1111.75	69.00	12.80
40.8833	138.19	90.60	75.71	45.3000	1111.77	69.00	12.80
40.9000	100.78	90.30	76.01	45.3083	1111.75	69.00	12.80
40.9167	86.03	89.90	76.31	45.3167	1111.73	69.00	12.80
40.9333	77.95	88.60	76.54	45.3250	1111.69	69.00	12.80
40.9500	76.85	86.90	76.77	45.3333	1111.62	69.00	12.80
40.9667	76.99	85.20	76.84	45.3417	1111.47	69.00	12.80
40.9750	76.69	84.30	76.88	45.3500	1111.27	69.00	12.80
40.9778	76.66	83.90	76.89	45.3583	1111.06	69.00	12.80
40.9806	76.63	83.50	76.88	45.3667	1111.05	69.00	12.80
40.9833	76.60	83.30	76.88	45.3750	1111.06	69.00	12.80
40.9861	76.50	83.00	76.89	45.3833	1110.95	69.00	12.80
40.9889	76.53	82.60	76.89	45.3917	1110.79	69.00	12.80
40.9917	76.50	82.50	76.90	45.4000	1110.59	69.00	12.80
40.9944	76.61	82.10	76.90	45.4083	1110.42	69.00	12.80
40.9972	76.58	81.90	76.90	45.4167	1110.38	69.00	12.80
41.0000	76.50	81.60	76.90	45.4250	1110.35	69.00	12.80
41.2444	14.79	69.10	0.78	45.4333	1110.30	69.00	12.80
41.2500	14.75	69.00	0.78	45.4417	1110.25	69.00	12.80
44.9944	0.14	69.00	12.80	45.4500	1110.20	69.00	12.80
45.0056	11.61	69.00	12.80	45.4583	1110.17	69.00	12.80
45.0083	11.66	69.00	12.80	45.4667	1110.14	69.00	12.80
45.0111	11.65	69.00	12.80	45.4750	1110.14	69.00	12.80
45.0139	11.65	69.00	12.80	45.4833	1110.17	69.00	12.80
45.0167	11.65	69.00	12.80	45.4917	1110.14	69.00	12.80
45.0194	222.28	69.00	12.80	45.5000	1110.08	69.00	12.80
45.0222	239.11	69.00	12.80	45.5083	1110.04	69.00	12.80
45.0250	275.47	69.00	12.80	45.5167	1110.04	69.00	12.80
45.0278	284.72	69.00	12.80	45.5250	1110.05	69.00	12.80
45.0306	292.47	69.00	12.80	45.5333	1110.06	69.00	12.80
45.0333	313.52	69.00	12.80	45.5417	1110.06	69.00	12.80
45.0361	341.47	69.00	12.80	45.5500	1110.03	69.00	12.80
45.0389	351.11	69.00	12.80	45.5583	1109.96	69.00	12.80
45.0417	360.27	69.00	12.80	45.5667	1109.89	69.00	12.80
45.0444	402.61	69.00	12.80	45.5750	1109.91	69.00	12.80
45.0472	429.56	69.00	12.80	45.5833	1109.89	69.00	12.80
45.0500	448.88	69.00	12.80	45.5917	1109.86	69.00	12.80
45.0528	466.97	69.00	12.80	45.6000	1109.78	69.00	12.80
45.0556	479.30	69.00	12.80	45.6083	1109.72	69.00	12.80
45.0583	501.94	69.00	12.80	45.6167	1109.68	69.00	12.80
45.0611	516.53	69.00	12.80	45.6250	1109.57	69.00	12.80
45.0639	560.58	69.00	12.80	45.6333	1109.61	69.00	12.80
45.0667	575.06	69.00	12.80	45.6417	1109.64	69.00	12.80
45.0694	587.89	69.00	12.80	45.6500	1109.59	69.00	12.80
45.0833	551.06	69.00	12.80	45.6583	1109.45	69.00	12.80
45.0917	550.75	69.00	12.80	45.6667	1109.28	69.00	12.80
45.1000	594.91	69.00	12.80	45.6750	1109.19	69.00	12.80

Reference Depth: 3300'

Time,hra	BHP, psia	Temp, °F	Tbg, psia
45.6833	1108.84	69.00	12.80
45.6917	1108.71	69.00	12.80
45.7000	1108.69	69.00	12.80
45.7083	1108.69	69.00	12.80
45.7167	1108.71	69.00	12.80
45.7250	1108.71	69.00	12.80
45.7333	1108.72	69.00	12.80
45.7417	1108.64	69.00	12.80
45.7500	1108.61	69.00	12.80
45.7583	1108.57	69.00	12.80
45.7667	1108.58	69.00	12.80
45.7750	1108.55	69.00	12.80
45.7833	1108.47	69.00	12.80
45.7917	1108.45	69.00	12.80
45.8000	1108.43	69.00	12.80
45.8083	1108.40	69.00	12.80
45.8167	1108.36	69.00	12.80
45.8250	1108.27	69.00	12.80
45.8333	1108.19	69.00	12.80
45.8417	1108.16	69.00	12.80
45.8500	1108.15	69.00	12.80
45.8583	1108.14	69.00	12.80
45.8667	1108.19	69.00	12.80
45.8750	1108.23	69.00	12.80
45.8833	1108.21	69.00	12.80
45.8917	1108.16	69.00	12.80
45.9000	1108.15	69.00	12.80
45.9083	1108.17	69.00	12.80
45.9167	1108.14	69.00	12.80
45.9250	1108.09	69.00	12.80
45.9333	1108.06	69.00	12.80
45.9417	1108.02	69.00	12.80
45.9500	1108.02	69.00	12.80
45.9583	1107.99	69.00	12.80
45.9667	1107.98	69.00	12.80
45.9750	1108.00	69.00	12.80
45.9833	1107.99	69.00	12.80
45.9917	1107.93	69.00	12.80
46.0000	1107.89	69.00	12.80
46.0083	1107.84	69.00	12.80
46.0167	1107.81	69.00	12.80
46.0250	1107.80	69.00	12.80
46.0333	1107.76	69.00	12.80
46.0417	1107.67	69.00	12.80
46.0500	1107.61	69.00	12.80
46.0583	1107.61	69.00	12.80
46.0667	1107.60	69.00	12.80
46.0750	1107.53	69.00	12.80
46.0833	1107.50	69.00	12.80
46.0917	1107.45	69.00	12.80
46.1000	1107.43	69.00	12.80
46.1083	1107.39	69.00	12.80
46.1167	1107.31	69.00	12.80
46.1250	1107.16	69.00	12.80
46.1333	1107.03	69.00	12.80
46.1417	1106.95	69.00	12.80
46.1500	1106.85	69.00	12.80
46.1583	1106.82	69.00	12.80
46.1667	1106.81	69.00	12.80
46.1750	1106.84	69.00	12.80
46.1833	1106.88	69.00	12.80
46.1917	1106.89	69.00	12.80
46.2000	1106.91	69.00	12.80
46.2083	1106.89	69.00	12.80
46.2167	1106.89	69.00	12.80
46.2250	1106.88	69.00	12.80
46.2333	1105.97	69.00	12.80
46.2417	1091.33	69.00	12.80
46.2500	1028.47	69.00	12.80
46.2583	934.19	69.00	12.80

SAMPLE RESULTS FOR #1A WELL FEED FOR MIT

DATE	TIME	VISCOSITY	SPECIFIC GRAVITY
1-17-97	6pm	.574 cps	1.0007
1-18-97	2am	.565 cps	1.0007
1-18-97	10am	.555 cps	1.0008
1-18-97	6pm	.566 cps	1.0007
1-19-97	2am	.545 cps	1.0007
1-19-97	10am	.573 cps	1.0007
1-19-97	6pm	.564 cps	1.0007
1-19-97	10pm	.570 cps	1.0008
1-20-97	2am	.565 cps	1.0008
1-20-97	10pm	.560 cps	1.0008
1-20-97	6am	.555 cps	1.0008
1-20-97	2pm	.587 cps	1.0008
1-21-97	6am	.555 cps	1.0008

1-25-97

L.P. Molina

Attn: Wes Smith

From: Bryan Barrington

Wes,

Let me know if you need anything else.

Bryan

409-241-4413

Mechanical Integrity Test Log Sheet for 1A well

Date	Time ##	OPER INIT.	Well Flow (GPM)	Well HD. INJ. PSIG PRESS. CR2/FIELD		ANN. PRESS. CR2/FIELD		DIFF. PRESS.	BOILER F.W. FLOW	WELL SAMPLE ++	V-509 INLET TEMP
1-17	6P	SG	207	600	565	580	450	114	2.08	✓	90
1-17	10P	MAS	210	472.5	460	580	570	111	2.08	—	90
1-18	2A	MAS	210	480	460	580	570	105	1.92	✓	92
1-18	6A	MAS	210	480	460	560	570	103.5	2.08	—	88
1-18	10A	EO	210	480	460	560	570	103.3	2.08	✓	88
1-18	2P	EO	198	480	462	570	574	112.5	2.08	—	84
1-18	6P	EO	204	480	462	580	570	111	2.08	✓	86
1-18	10P	RL	204	480	462	580	570	105	2.16	—	84
1-19	2A	RL	204	480	462	580	575	105	2.16	✓	88
1-19	6A	RL	204	480	462	580	570	105	2.16	—	88
1-19	10A	GVW	204	480	468	585	588	105	2.08	✓	92
1-19	2P	GVW	201	480	475	580	590	105	2.08	—	96
1-19	6P	GVW	207	488	480	600	590	114	2.16	✓	96
1-19	10P	TQ	210	488	480	590	580	105	2.16	✓	96
1-20	2A	TQ	207	488	480	590	585	108	2.08	✓	94
1-20	6A	TQ	210	495	480	590	585	104	2.08	✓	96
1-20	10A	TH	204	495	495	580	590	102	2.08	—	96
1-20	2P	EO	207	495	482	590	590	108	2.08	✓	96
1-20	6P	TH	204	495	490	590	596	105	2.24	—	96
1-20	10P	TQ	207	495	485	600	595	105	2.16	✓	96
1-21	2A	TQ	207	503	485	600	595	108	2.24	—	96
1-21	6A	TQ	207	503	485	600	595	108	2.24	✓	98
1-21	10A	TH	204	502	485	600	595	105	2.24	—	98
1-21	2P	TH	204	503	485	600	595	105	2.24	—	98

Record reading every 4 hours

++ Take 1 pint sample off injection pump every 8 hours, catch 1st sample at start

2:00 pm 1-21-97 - Shut-in well flow, Took BFW off annulus and lined up N_2

APPENDIX F

CALCULATION FLOW CHART

SOLUTIONS, INC.

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.

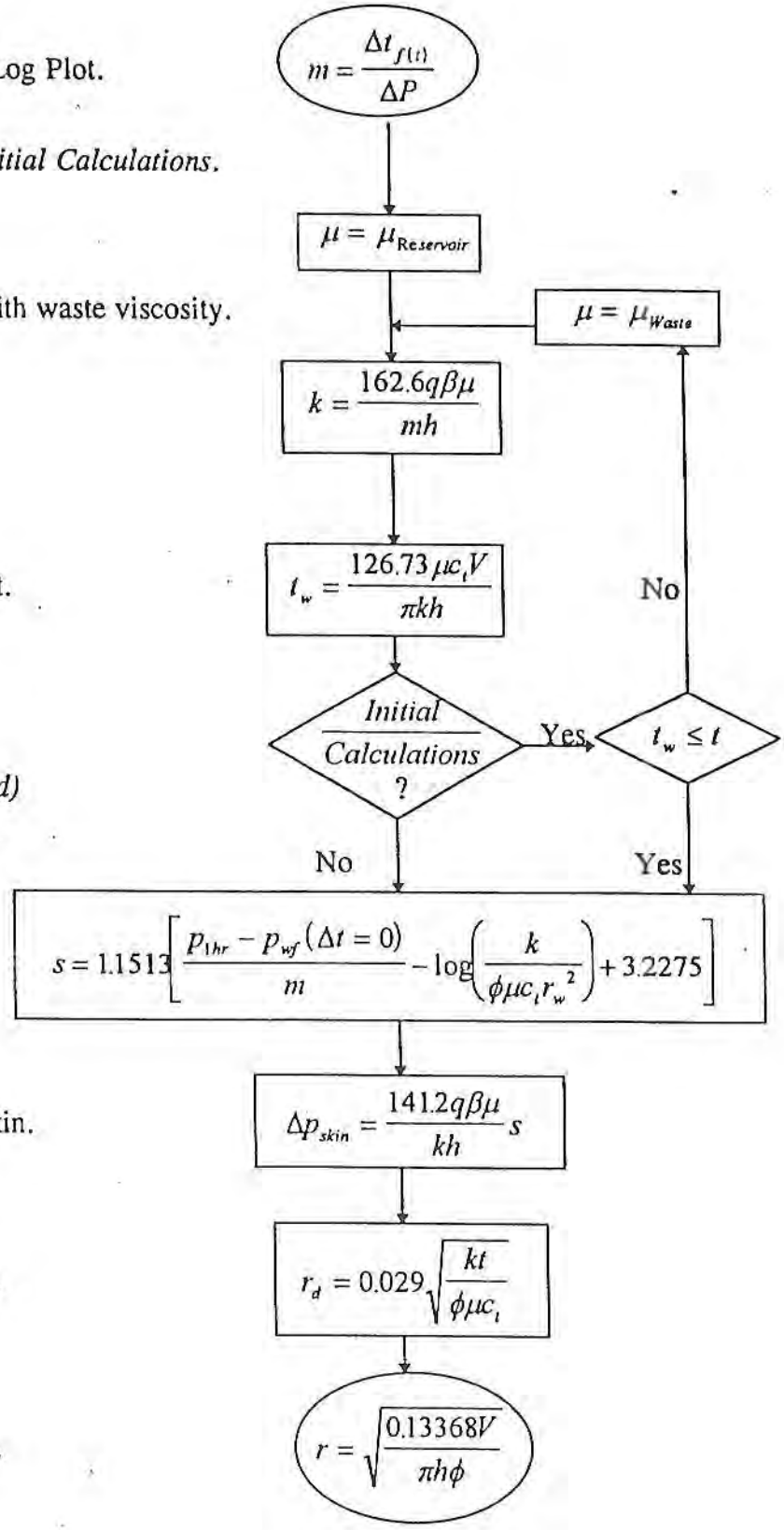
5. Conditional statements.
   (t, beginning of radial flow period)

6. Calculate skin factor.

7. Calculate Pressure drop due to skin.

8. Calculate radius of investigation.

9. Calculate distance to waste front.



APPENDIX G

STATIC GRADIENT SURVEY DATA

SOLUTIONS, INC.

GULF
COAST
WELL
ANALYSIS

COASTAL WIRELINE SERVICES, INC.

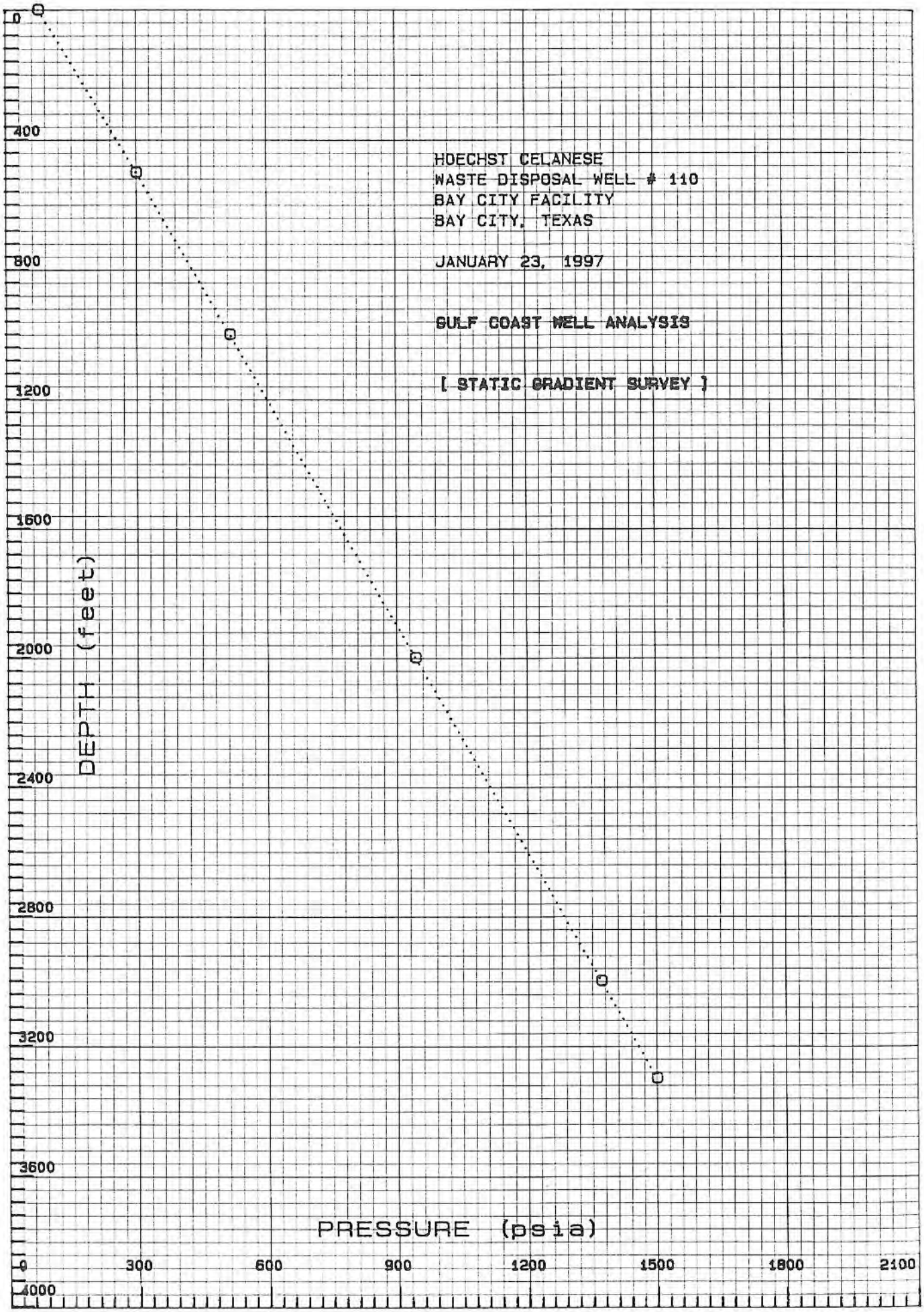
Company: Hoechst Celanese
Well No.: Waste Disposal Well # 110
Field: Bay City Facility
State: Texas
Date: January 23, 1997

STATIC GRADIENT SURVEY

STOP #	M.D. FEET	T.V.D. FEET	PRESSURE PSIA	PSI/FT	MIN. STOP
1	0	0	76.50	0.000	5 Min.
2	500	500	301.18	0.449	5 Min.
3	1000	1000	515.41	0.428	5 Min.
4	2000	2000	942.98	0.428	5 Min.
5	3000	3000	1370.57	0.428	5 Min.
6	3300	3300	1498.94	0.428	38 Hrs.

Fluid Level:	0	Well Type:	Injection
Gauge Type:	Panex	Test Type:	Gradient
Gauge No.	31S-1140A	Well Status;	Static
Range:	0-5000	Engineer:	K. Rood

3909 Halik Road - Pearland, Texas 77581 - Office 281-485-6548 Telecopier 281-485-1954



46 0700
K&E 10 X 10 TO THE INCH • 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.

APPENDIX H

CORRESPONDENCE

SOLUTIONS, INC.

Hoechst Celanese

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

December 12, 1996
IOC-058-96

FEDERAL EXPRESS MAIL

Ms. Alice Hamilton Rogers, P.E., Manager
UIC, Uranium and Radioactive Waste Section
Industrial and Hazardous Waste Division (MC-131)
Texas Natural Resource Conservation Commission
12100 Park 35 Circle
Austin, TX 78753

Subject: WDW-110 (PLANT WELL NUMBER 1A)
PROPOSED MECHANICAL INTEGRITY TEST PROCEDURES
HOECHST CELANESE CHEMICAL GROUP, LTD.
BAY CITY PLANT, BAY CITY, TX

Dear Ms. Hamilton:

Enclosed herewith as Addendum I are the proposed Mechanical Integrity Test (MIT) Procedures to demonstrate mechanical integrity of WDW-110 (Plant Well No. 1A) which are provided for your review and approval. Our plan is to conduct the testing during the week of January 20, 1997.

We appreciate in advance your consideration, review and approval of the above request.

Please don't hesitate to contact me at 409-241-4197 or Mr. B.S. Barrington at 409-241-4413 if you have any questions concerning this matter.

Very truly yours,

I. O. Coleman, Jr./cjs

I. O. Coleman, Jr.
Staff Environmental Chemist

IOC/cjs
attachment

cc:

Mr. Jim L. Boswell, Permit Coordinator
Underground Injection Control Team (MC-131
UIC, Uranium & Radioactive Waste Section
TX Natl Resource Conservation Commission
P.O. Box 13087
Austin, TX 78711-3087

Mr. Phil Dellinger
UIC State Programs Section (6W-SU)
Environmental Protection Agency
1445 Ross Avenue
Dallas, TX 75202-2733

bcc: Via e-mail (w/o attachment)

C. J. Griffith
B. R. Hightower
R. S. O'Neal
M. L. Wyatt

w/attachment

A. Conley-Pitchell - Bridgewater
G. J. McCarthy
P. H. Richardson
R. J. Johnston
B. S. Barrington
Environmental File Nos.: 202.5 and 203.13

Mr. Tom Jones
ECO Solutions, Inc.
9800 Richmond Ave., Ste 320
Houston, TX 77042-4519

Mr. Wesley Smith
ECO Solutions, Inc.
9800 Richmond Ave., Ste 320
Houston, TX 77042-4519

ADDENDUM I

PROPOSED PROCEDURE TO DEMONSTRATE MECHANICAL INTEGRITY FOR WDW-110 (WELL 1A)

HOECHST CELANESE CHEMICAL GROUP, LTD.
BAY CITY FACILITY

PROPOSED PROCEDURE TO DEMONSTRATE MECHANICAL INTEGRITY TESTING FOR WDW-110 (WELL #1-A)

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 demonstrate mechanical integrity testing (MIT). (ECO/HCCG)

* Define annulus pressure test and downhole logging procedures.

* Draft a letter including MIT procedures for review and approval by HCCG's personnel which will provide formal notification to the TNRCC of the intent and scope to demonstrate MIT.

* Modify these procedures as per HCCG's comments and submit to the TNRCC for review and approval.

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 #1-A 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 200 non-hazardous effluent into Well #1-A at a constant and stable high rate (+/-~~225~~ gpm) for a minimum of four days prior to performing the falloff test. HCCG will furnish non-hazardous fluid.

* Move in and rig up wireline unit to run bottom hole pressure (BHP) falloff test with surface readout Panex BHP gauges.

* Go in the hole with BHP gauges and correlate depth measurement to packer depth, and pull BHP tool up to +/-3300', or to the depth previously performed BHP surveys have been conducted.

* Secure a representative sample of the effluent pumped into Well #1-A. Transmit fluid sample to the HCCG laboratory for analysis.

* 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 higher 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 (@ 3,330'), or up to ±3,000'. Make short repeat G/R run to prove tool repeatability.

* Run one (1) five-minute statistical log at a depth of 3,310'.

* 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 the multiple pass survey.

* Release second R/A slug from tool at ±20' above top perforation, or at ±3,310' 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 #1-A. (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 the MIT fails, submit a workover procedure to the TNRCC. Note: This latter work is not included in the scope of this project.

* If Well #1-A has successfully passed all MIT tests, then return the well to shut-in (standby) status.

7) Submit MIT report. (ECO/HCCG)

* Prepare a draft copy of the MIT report detailing the demonstration of MIT on WDW-110 (Well #1-A).

* 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.

HOECHST CELANESE CHEMICAL GROUP

MECHANICAL INTEGRITY TEST

WDW-14 (WELL #2)
BAY CITY, TEXAS

Prepared By:

Bob Hall
Dawn Bilbrey

Golden Environmental Services, Inc.
711 Louisiana, Suite 1600
Houston, Texas 77002

(713)228-7000

RECEIVED
JAN 11 1993
C WST

January 5, 1993

File Name: C:\03300992

GOLDEN ENVIRONMENTAL SERVICES, INC.
SUBSIDIARY OF GOLDEN STRATASERVICES, INC.

Hoechst Celanese

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

January 7, 1993
IOC-004-93

Mr. Richard E. Merritt,
Permit Coordinator
Underground Injection Control Team Permits Section
Office Of Waste Management and Pollution Cleanup
Texas Water Commission
P. O. Box 13087
1700 North Congress Avenue
Austin, Texas 78711-2087

Subject: Annual (1992) Mechanical Integrity Testing (MIT) Report
Class I Injection Well, WDW-14
Hoechst Celanese Chemical Group, Inc.,
Bay City Plant, Bay City, Texas
(Reference Letter, HRH-9-93, Dated January 7, 1993 Attached as Addendum I)

Dear Mr. Merritt:

Enclosed herewith is a copy of the final MIT report on WDW-14 for your review and approval.

As you are aware: (1) the MIT of the well was performed by Golden Environmental Services, Inc.(GES), on December 1 and 2, 1992, (2) the final MIT report was prepared by GES and (3) WDW-14 demonstrated mechanical intergity as required by Texas Water Commission Underground Control Program and 31 TAC, Sections, 331.4 and 331.43.

Please don't hesitate to contact Mr. H. R. Horton at 409/241-4076 or me at 409/241-4197 if you have any questions concerning the report.

Very truly yours,

I. O. Coleman, Jr.

I. O. Coleman, Jr.

cc: Mr. Phillip B. Dellinger
UIC Program Section 6W-SU
Water Supply Branch
Environmental Protection Agency
Region VI
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Mr. Ben K. Knape
Underground Control Section
Texas Water Commission
P. O. Box 13087
1700 North Congress Ave.
Austin, Texas 78711-3087
(Without Enclosures)

ADDENDUM I

Interoffice Memo

Hoechst Celanese

Date: January 7, 1993

HRH-9-93

To: As Listed

From: H. R. Horton

Dept/Location:

Dept/Location: Maintenance Engineering

Subject: Mechanical Integrity Test Report

I. O. Coleman
J. L. Popejoy
E. H. Chiu → R. E. Bennett

pc: W. G. Cornman - Without Attachment
R. S. O'Neal - Without Attachment

File: 11.13.0.01 - With Attachment

Mechanical integrity tests were conducted on neutral waste injection well, WDW-14 (#2) on December 1 and 2, 1992.

The State of Texas requires all Class I waste disposal wells to demonstrate mechanical integrity on a yearly basis as outlined in 31 TAC ¶ 331.43. These tests are performed to demonstrate that no significant leaks exist in the casing, tubing or packer and that no significant fluid movement into any underground source of drinking water can occur.

Well WDW-14 (#2) is considered to be mechanically sound and in good condition at this time and suitable for use as a Class I waste injection well.

Attached is the complete report of test as submitted by Golden Strata Services, Inc.

H. R. Horton

dls
attachment

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1.0 INTRODUCTION AND SUMMARY 3

1.1 BACKGROUND 3
1.2 MECHANICAL INTEGRITY TEST RESULTS 3

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2.1 ANNULUS PRESSURE TEST 4
2.2 FALL-OFF TEST 4

Figure 2.1 Horner Plot 6
Figure 2.2 Type Curve 7

APPENDICES

APPENDIX A CORRESPONDENCE

APPENDIX B ANNULUS PRESSURE TEST DATA

APPENDIX C FALL-OFF TEST: ATTACHMENTS

APPENDIX D RADIOACTIVE TRACER SURVEY

1.0 INTRODUCTION AND SUMMARY

1.1 BACKGROUND

The attached report details the data and test results associated with the mechanical integrity testing of Hoechst Celanese Chemical Group's Class I injection well WDW-14 (Well #2). ~~These~~ This active injection well is located at the Hoechst Celanese facility near Bay City, Texas.

Golden Environmental, Inc. (GES) commenced operations on Tuesday, December 1, 1992, and completed mechanical integrity testing of the well on Wednesday, December 2, 1992. A Radioactive Tracer (RAT) survey, annulus pressure test and a fall-off test were performed on the well.

1.2 MECHANICAL INTEGRITY TEST RESULTS

The annulus pressure test was performed successfully on December 1, 1992. The pressure was monitored for one hour and showed only a 1% pressure loss. The Fall-off test was performed on November 29 - 30, 1992. The fall-off test resulted in a permeability of approximately 600 millidarceis. The Radioactive Tracer Survey (RAT) was run on December 1, 1992. The RAT indicated no upward movement of fluids behind pipe, and all injectate entering the injection interval.

2.0 FIELD OPERATIONS SUMMARY

2.1 ANNULUS PRESSURE TEST

The annulus pressure test (APT) was performed on Tuesday, December 1, 1992. The well was pressured up to 929.8 psi. The pressure was monitored for one hour. The pressure after one hour had fallen to 920.5 psi, for a total pressure loss of 9.3 psi, or 1%, well within the TWC guidelines of 5% pressure loss.

2.2 FALL-OFF TEST

On November 29 - 30, 1992, a pressure fall-off test was conducted on WDW-14 (Well #2) at Hoechst Celanese's Bay City waste disposal facility. A Horner plot of the fall-off data is shown in Figure 2.1, and the results of the analysis are given in Appendix C, Attachment I. These results gave an effective permeability of 602 millidarcies, a skin effect of 23.7, a pressure drop attributable to the skin effect of 127.3 psi, and a p* (average aquifer pressure) of 1533.5.

A type curve fit of the same data was achieved and the best fit is shown in Figure 2.2. This analysis gave an effective permeability of 605 millidarcies, a skin effect of 19.2, and a pressure drop attributable to skin effect of 103 psi. Appendix C, Attachment II is a summary of the type curve analysis.

The permeability of approximately 600 millidarcies is less than the permeability of 1350 millidarcies used in modeling for the petition. The final flowing pressure at the time of shut-in was 1722 psia. After subtracting the pressure drop of 127 psi for skin damage, the revised formation injection pressure becomes 1595 psia. This compares favorably with the maximum modeling pressure of 1641 psig or 1655.7 psia.

2.3 RADIOACTIVE TRACER SURVEY

The Radioactive Tracer Survey (RAT) was run on Tuesday, December 1, 1992 from 2,800' to 3,464'. The log and Atlas Wireline's interpretation are included in Appendix D. The log was run as follows:

1. Gamma-ray tie-in from 2,800' to 3,465'.

2. Base log was run from 2,795' to 3,464'.

3. Repeat base log from 2,795' to 3,464'.

4. The first radioactive slug was ejected at 2,800' with a pump-in rate of 22 gpm, and eleven passes made.

5. A stationary check was made with the tool set at 3,334'. A pump-in rate of 100 gpm was established. No sign of upward movement was detected.

6. A repeat stationary check was made with the tool set at 3,334'. A pump-in rate of 100 gpm was established. Confirmed that there was no sign of upward movement.

7. After survey base log was run from 2,796' to 3,440'. No suggestion of upward movement was found.

The conclusion derived from the flow profile surveys is that all injectate is entering the injection interval. The resulting information from the two stationary sequences would indicate that the casing/packer seal shows excellent integrity and is not leaking, and the cement sheath around the casing is preventing any upward migration of injected fluids up the annulus between the long string of casing and the wellbore.

Figure 2.1

HORNER

PRESSURE FALLOFF PLOT

HOECHST CELANESE BAY CITY
WDW14#2

PRESSURE FALL-OFF TEST
NOVEMBER 29-30.1992

$[k_1/u]_t$=847.33 k_1=601.61 md s=23.7 p*=1533.5

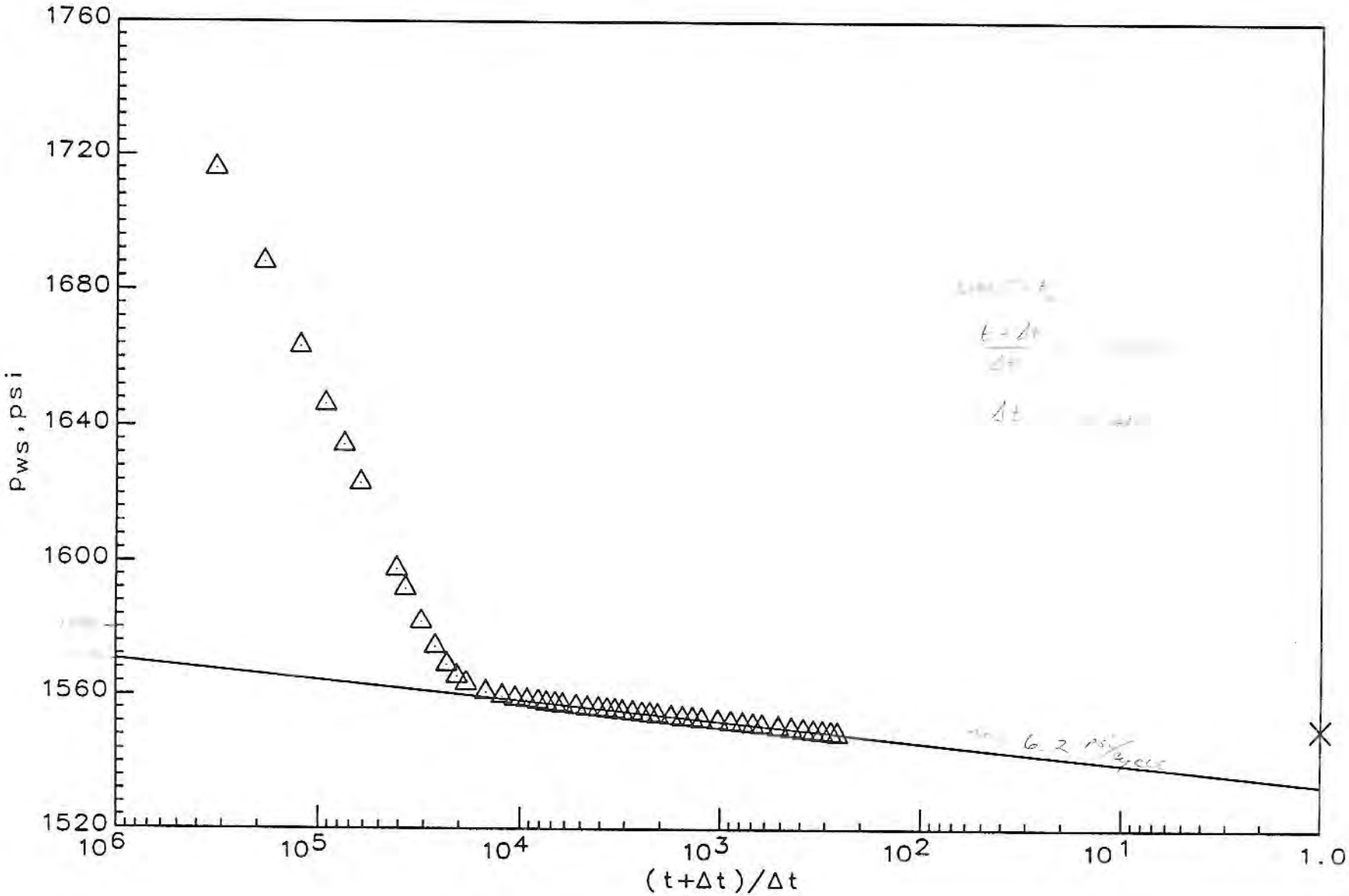
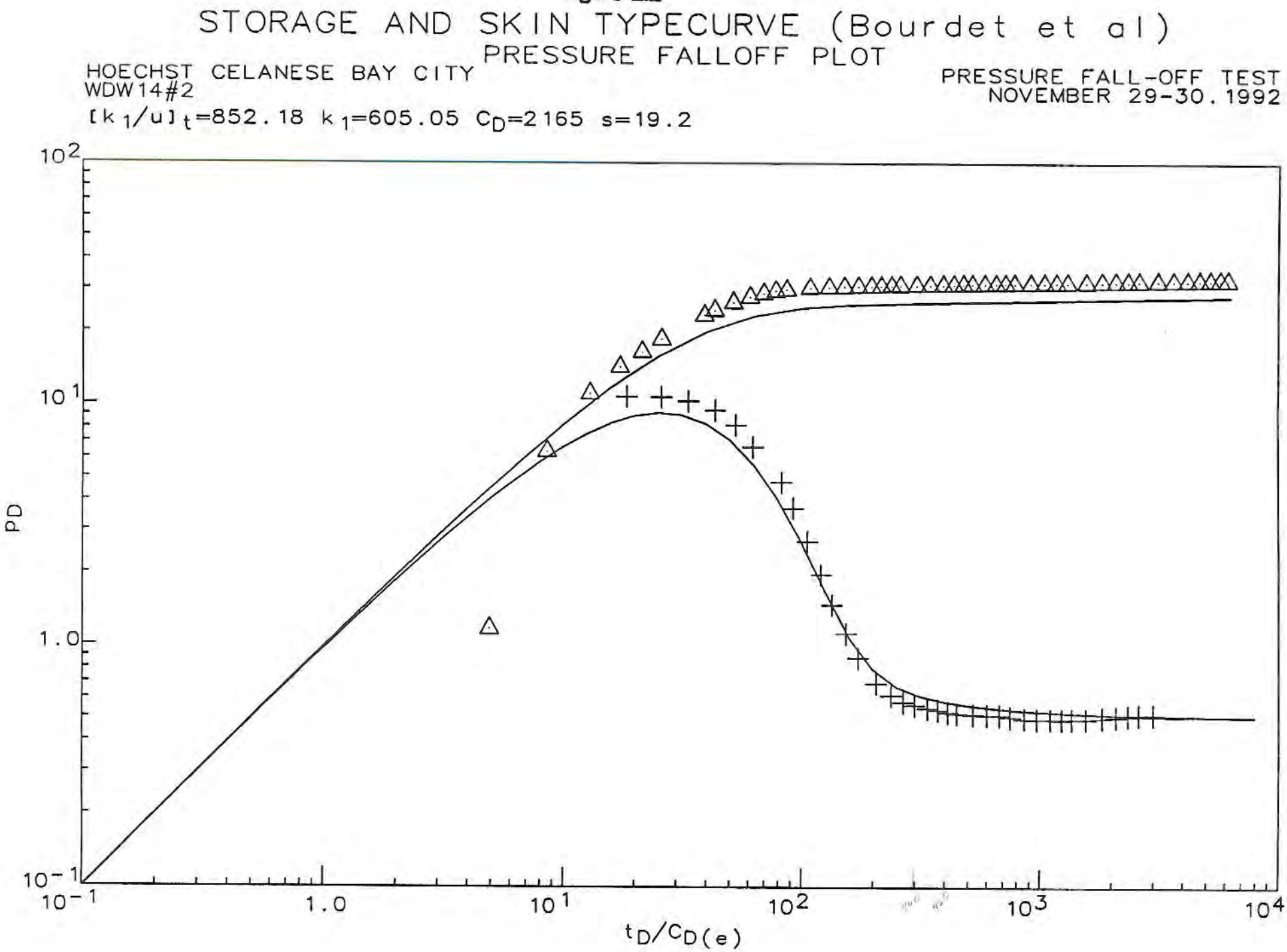


Figure 2.2


STORAGE AND SKIN TYPECURVE (Bourdet et al)
PRESSURE FALLOFF PLOT
HOECHST CELANESE BAY CITY
WDW14#2
[k 1/u]t=852.18 k 1=605.05 CD=2165 s=19.2
PRESSURE FALL-OFF TEST
NOVEMBER 29-30.1992
PD
tD/CD(e)
10^2
10^1
1.0
10^-1
10^-1
1.0
10^1
10^2
10^3
10^4

APPENDIX A
CORRESPONDENCE

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 Water Commission (TWC). Except where noted, all steps of this procedure will be performed by Golden Environmental Services' (GES) personnel.

1) Request and secure approval from the TWC to demonstrate MIT (HCCG & GES).

* 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 TWC of the intent to demonstrate MIT.
* HCCG will issue the letter to the TWC for review and acceptance.
* Receive approval letter from TWC on proposed MIT.

2) Notify the TWC 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 TWC.
* Determine the intent of TWC to field witness MIT.
* Determine desire of TWC 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. GES 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 24 hours prior to performing annulus pressure test.

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 radioactive tracer (RAT) survey.**

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

* 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 3150'.

* Commence pumping 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. Note: This injection rate will be used on all wells. 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 from tool at +/-2800' and run tool to +/-3150'. Hold tool stationary. Place recorder on time-drive sequence. Logging time will be predetermined based on actual injection rate and as agreed upon with the TWC inspector.

* 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.

* Advise TWC of test results and that each injection well is, or is not, ready to resume injection service. If MIT fails, submit a workover procedure to the TWC. Note: The latter work is not included in the scope of this project.

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

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

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

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

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

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

8) **Mechanical Integrity Testing Complete.**

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-ST-58-16 R (10M) 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), hi/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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John Hall, Chairman
Pam Reed, Commissioner
Peggy Garner, Commissioner

TEXAS WATER COMMISSION

PROTECTING TEXANS' HEALTH AND SAFETY BY PREVENTING AND REDUCING POLLUTION

November 19, 1992

Mr. I. O. Coleman, Jr.
Environmental Affairs Section Leader
Hoechst Celanese Chemical Group, Inc.
Bay City Plant
P. O. Box 509
Bay City, Texas 77404-0509

Re: Approval of Proposed Mechanical Integrity Testing, TWC Permit No. WDW-14

Dear Mr. Coleman:

This is to document the Commission's approval of the above referenced procedures dated October 30, 1992, as stipulated by 31 TAC §§ 331.43., 331.64.d and 331.64.g.2. Please note that all tests will also be required to be performed in accordance with the "T.W.C. Basic Guidelines for Mechanical Tests", revised October 23, 1991 and EPA Region VI "Pressure Falloff Testing Guidelines" dated May 22, 1992.

Please also note pursuant to 31 TAC § 331.65.b.4., within 30 working days of completion of the testing, the required submittal of a report to the executive director containing, at a minimum, the following information:

1. A complete chronology and description of all tests performed and procedures followed;

2. An APT time/pressure table, and a copy of the recorder chart if one was made;

3. Copies of all logs run;

4. Interpretation and discussion of all testing and logging results, including the identity of personnel making the technical interpretations; and

5. Certification by the individual preparing the reports that all test data is true and correct, and that the test procedures followed were submitted to, and received prior approval from the TWC UIC Unit.

I plan to be present on December 1, 1992, to witness the APT and RAT. Please inform myself or another member of the UIC Team as soon as possible if it should become necessary to reschedule these tests. If you have any questions, please contact me at 512/908-6638.

Sincerely,

Richard E. Merritt, Permit Coordinator
Underground Injection Control Team
Permits Section
Industrial and Hazardous Waste Division
Office of Waste Management and Pollution Cleanup

RM/

cc: Brian Graves, U.S.E.P.A. - Region VI (Mail Code 6WSU)
T.W.C. District 7 Office - Houston

Interoffice Memo

Hoechst Celanese

Date: December 4, 1992

PLR-71-92

To: H. R. Horton

From: P. L. Richard

Dept/Location: Bay City Plant

Dept/Location: BCP Laboratory

Subject: **Area 1A Well MIT Well Feed Analytical Results**

cc: B. A. Logue
G. E. Organ
B. L. Fritz
E. A. Wilson

As requested samples were taken to support the MIT of the Area 1A waste disposal well. Three samples per day were taken on Friday, November 27, 1992 and on Saturday, November 28, 1992. The samples were subsequently analyzed for specific gravity and viscosity at 40°C (104°F) which was the average well feed temperature during these two days.

The results of these samples can be found in the table below. The specific gravity was determined at 40°C relative to water at 40°C. Thus specific gravity (ρ) is reported as $D_{40°C}^{40°C}$. The viscosity was also determined at 40°C and is reported as absolute viscosity (η) in centipoise units (cp).

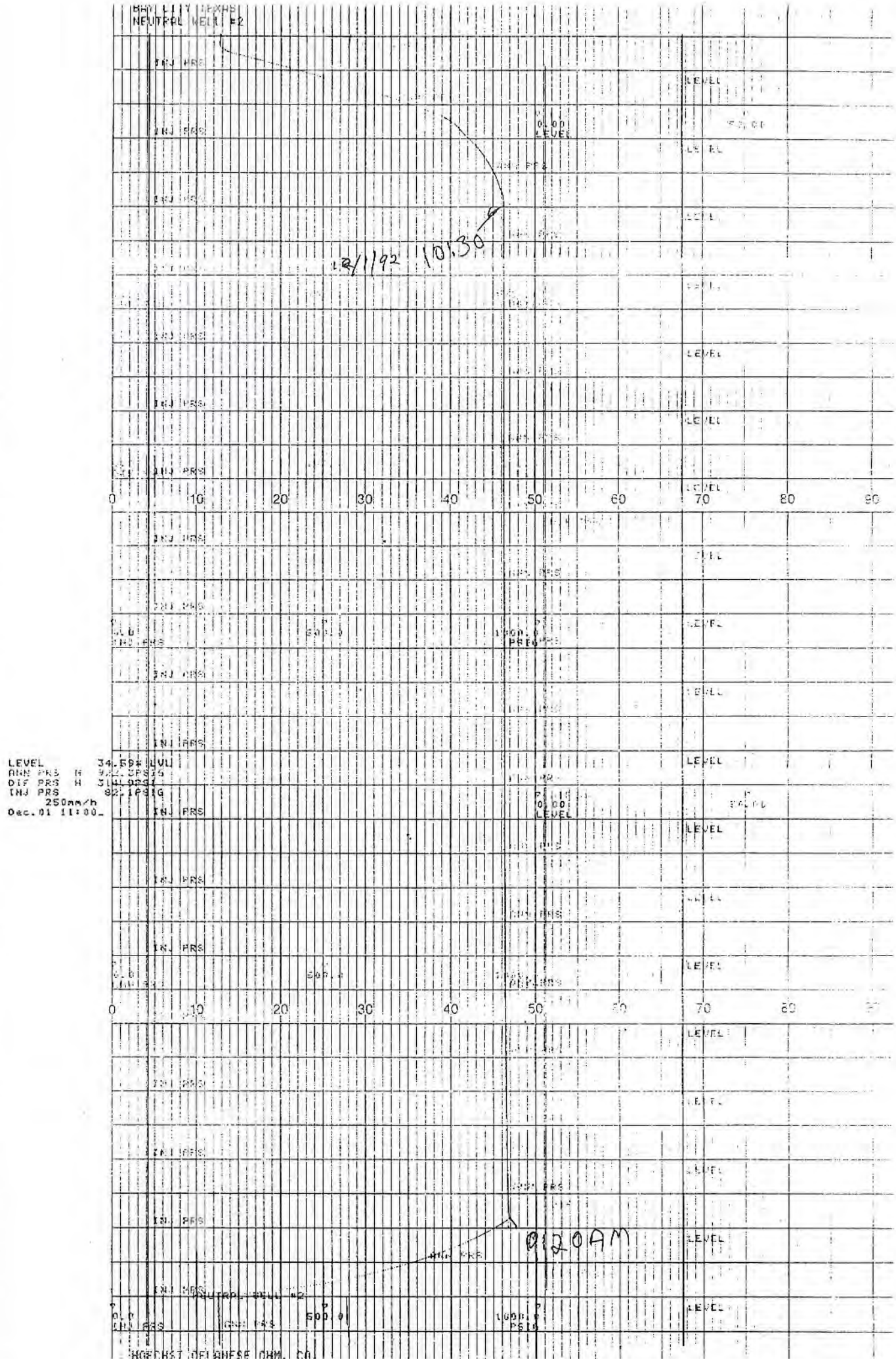
Area 1A Well Feed Sample Results from MIT Testing

Date	Time	Specific Gravity $D_{40°C}^{40°C}$	Viscosity, cp @ 40°C
11/27/92	10 AM	1.0065	0.706
11/27/92	8 PM	1.0057	0.699
11/27/92	11 PM	1.0058	0.654
11/28/92	8 AM	1.0062	0.691
11/28/92	2 PM	1.0057	0.679
11/28/92	8 PM	1.0062	0.666

Paul L. Richard

Paul L. Richard

APPENDIX B
ANNULUS PRESSURE TEST DATA


NEUTRAL WELL #2
INJ PRS
LEVEL
0.00
12/1/92 10:30
0
10
20
30
40
50
60
70
80
90
LEVEL 34.59% LVL
ANN PRS H 9.2 PSIG
DIF PRS H 31.0 PSI
INJ PRS 82.1 PSIG
250mm/h
Dec.01 11:00
9:20AM
NEUTRAL WELL #2
500.0
1000.0
PSIG
HOECHST CELANESE CHM. CO.

APPENDIX C
FALL-OFF TEST: ATTACHMENTS

Attachment I

Water Well Test - FALLOFF

Radial Flow Analysis

(Horner Time)

HOECHST CELANESE BAY CITY
WDW14#2

PRESSURE FALL-OFF TEST
NOVEMBER 29-30.1992

Production And Times

Cumulative Production (water)	=	-	bbl	<DEF>
Corrected Flow Time	tc =	6184.500	hr	<DEF>
Final Water Rate	qw =	-6771.40	bbl/d	

Fluid Properties

Reference Pressure	pRef =	1550.0	psi	<DEF>
Water Formation Vol Factor	Bw =	1.00		<DEF>
Water Compressibility	cw =	3.000×10^{-06}	psi^{-1}	<DEF>
Water Viscosity	muw =	0.710	cp	
Oil Formation Vol Factor	Bo =	1.16		<DEF>
Oil Compressibility	co =	1.911×10^{-04}	psi^{-1}	<DEF>
Oil Viscosity	muo =	2.452	cp	<DEF>
Solution Gas Oil Ratio	Rso =	274.6	scf/bbl	<DEF>
Gas Formation Vol Factor	Bg =	1.56×10^{-03}		<DEF>
Gas Compressibility	cg =	7.318×10^{-04}	psi^{-1}	<DEF>

Water Well Test - FALLOFF

Radial Flow Analysis

(Horner Time)

HOECHST CELANESE BAY CITY
WDW14#2

PRESSURE FALL-OFF TEST
NOVEMBER 29-30.1992

Reservoir Parameters

Net Pay	h =	210.00	ft	
Total Porosity	phit =	33.00	%	
Water Saturation	Sw =	100.00	%	
Oil Saturation	So =	0.00	%	
Gas Saturation	Sg =	0.00	%	
Wellbore Radius	rw =	0.45	ft	
Formation Temperature	T =	120.00	deg F	<DEF>
Formation Compressibility	cf =	3.000×10^{-06}	psi^{-1}	
Total Compressibility	ct =	6.000×10^{-06}	psi^{-1}	<DEF>

Water Well Test - FALLOFF

Radial Flow Analysis

(Horner Time)

HOECHST CELANESE BAY CITY
WDW14#2

PRESSURE FALL-OFF TEST
NOVEMBER 29-30.1992

Zone 1

Pressures

Initial Pressure	pi =	1550.0	psi
Extrapolated Pressure	p* =	1533.5	psi
Average Reservoir Pressure	pR =	-	psi
Final Flowing Pressure	pwfo =	1722.0	psi

Straight Line Results

Total Sandface Rate	QTBT =	-6771.40	bbl/d
Semilog Slope	msl =	6.2	psi/cycle
Transmissivity (Total)	kh/mu =	177939.88	md.ft/cp
Mobility (Total)	k/mu =	847.333	md/cp
Flow Capacity (Water)	kh =	126337.31	md.ft
Permeability (Water)	k =	601.61	md
Skin Effect (Total)	s =	23.695	
Pressure Drop Due To Skin	delps =	127.3	psi
Flow Efficiency	FE =	0.96	
Damage Ratio	DR =	1.04	
Radius Of Investigation	r(inv) =	-	ft
@ Time Of Investigation	t(inv) =	-	hr

Water Well Test - FALLOFF

Radial Flow Analysis

(Horner Time)

HOECHST CELANESE BAY CITY
WDW14#2

PRESSURE FALL-OFF TEST
NOVEMBER 29-30.1992

Zone 1

Extended Rates

3 - Month Constant Rate	=	-	bbl/d	
6 - Month Constant Rate	=	-	bbl/d	

Stabilized Rate

Shape Code	=	R1A		<DEF>
Drainage Area	A =	160.0	acres	<DEF>
Time To Stabilize	ts =	6.176	hr	
Stabilized Rate @ Current Skin	qs =	-141134.94	bbl/d	
Stabilized Rate @ Skin Of 0	qs =	-560077.82	bbl/d	
Stabilized Rate @ Skin Of -4	qs =	-1.12×10^{06}	bbl/d	

Attachment II

Water Well Test - FALLOFF

Bourdet Et Al Type Curve Analysis

(Equivalent Time)

HOECHST CELANESE BAY CITY
WDW14#2

PRESSURE FALL-OFF TEST
NOVEMBER 29-30.1992

Inner Zone

Match Curve	CDe2s =	1.00×10^{20}	
Match Point (pressure Ratio)	=	5.3	psi
Match Point (time Ratio)	=	0.004	hr
Dimensionless Storage Constant	CD =	2164.78	
Wellbore Storage Constant	C =	0.20	bbl/psi
Transmissivity (Total)	kh/mu =	178958.43	md.ft/cp
Mobility (Total)	k/mu =	852.183	md/cp
Flow Capacity	kh =	127060.49	md.ft
Permeability	k =	605.05	md
Skin Effect (Total)	s =	19.186	
Pressure Drop Due To Skin	delps =	102.5	psi
Radius Of Investigation	r(inv) =	-	ft
@ Time Of Investigation	t(inv) =	-	hr
Number Of Points In Derivative	=	11	

Dual Porosity

Inter Porosity Coeff	Lambda =	-	
Storativity Ratio	Omega =	-	

APPENDIX D
RADIOACTIVE TRACER SURVEY

RADIOACTIVE TRACERLOG ANALYSIS

HOECHST CELANESE CHEMICAL GROUP, INC.
EFFLUENT DISPOSAL WELL NO. 2
BAY CITY CELANESE PLANT
MATAGORDA COUNTY, TEXAS

PREPARED FOR
ROBERT M. HALL
GOLDEN STRATASERVICES, INC.
HOUSTON, TEXAS

ATLAS WIRELINE SERVICES
WESTERN ATLAS INTERNATIONAL

DECEMBER 1, 1992

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.

Logging Program and Analysis

1. Logged API gamma ray from well depth of 3,465′ to 2,800′.

Purpose: Correlation and to observe any excessive radiation areas.

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.

Often, water flow behind casing would develop "salt deposits" which tend to produce high gamma ray log response. These deposits result from the leaching of various elements from the formation which eventually precipitate onto casing and formations where water flow is continuously present

Excessive "hot" spots are not obvious.

2. Logged two (2) gamma ray detectors on Radioactive Tracerlog from 3,464′ to 2,795′.

Purpose: Base-log for radioactive tracer instrument.

Analysis: Detectors stable and are within tolerance.

3. Repeat step #2 - 3,464′ to 2,795′

Purpose: Ensure stability of instrument.

Analysis: Good repeatability.

4. With liquids being injected into the well (22 GPM), radioactive material (Iodine - 131) was ejected from radioactive tracer instrument at 2,800′ area. 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 disposal interval located below.

Purpose: Ensure injected fluids move through the tubing in a downward direction and that no upward fluid movement 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 disposal interval

Run Number	Interception Depth, ft
1	2,795′
2	2,795′ (20 GPM) (Slug spread out due to tool movement)
3	3,042′
4	3,178′ (22 GPM)
5	3,220′
6	3,257′ (20 GPM)
7	3,300′ (22 GPM)
8	3,350′ (40 GPM)
9	3,381′
10	3,390′
11	Dissipating

The radioactive peak responses from the first pass to the eleventh pass become smaller, but cover a longer vertical, due to the movement of the wireline and instrument mixing the radioactive slug with the injected fluids. All of the radioactive material released at approximately 2,800′ and all of the injected fluids passing 2,800′, appear to continually move in the downward direction and into the disposal interval.

5. Repeat step #4. Followed by 19 minute stationary measurement with the instrument positioned above the disposal zone. For stationary check, injection was increased to 100 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 2,800′) as it moved with the surface-injected fluids downward toward the disposal interval.

Run Number	Interception Depth, ft
1	2,892′ (40 GPM)
2	3,071′
3	3,232′
4	3,326′
5	3,370′
6	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. All of the radioactive material released at 2,800′ travels in the downward direction and into the disposal interval.

Western Atlas International

ATLAS WIRELINE SERVICES

PRODUCTION LOGGING SERVICES

FILE NO.
92180
API NO.

FINAL PRINT

COMPANY GOLDEN STRATA
WELL WDW 45
FIELD CLEAR LAKE CELANESE PLANT
COUNTY HARRIS STATE TEXAS

LOCATION:
N/A

SEC TWP RGE

OTHER SERVICES

PERMANENT DATUM GL ELEV. N/A
LOGGING MEASURED FROM RKB 16 FT. ABOVE P.D.
DRILLING MEASURED FROM RKB

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

DATE	11/20/92	
RUN	1	
SERVICE ORDER	110173	
DEPTH-DRILLER	5407	
DEPTH-LOGGER	5296	
BOTTOM LOGGED INTERVAL	5295	
TOP LOGGED INTERVAL	4800	
TYPE FLUID IN HOLE		
SALINITY PPM CL.	2% KCL	
DENSITY LB/GAL.		
LEVEL	FULL	
MAX. REC. TEMP. DEG. F	N/A	
OPR. RIG TIME	MAST	
EQUIP. NO. / LOC.	6428 HOUSTON	
RECORDED BY	JOHNSTON/MEAUX	
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
4.5		3579	5258

REMARKS RUN (1)

WELL LAST LOGGED BY ATLAS ON OCT. 17,1991.
ALL RATES AND TIMES NOTED ON LOG. NO SIGN OF
LEAKS OR CHANGELING SEEN.
THANK YOU FOR CALLING ATLAS WIRELINE.!!!!
FOR FURTHER INFO ON LOGS; M JOHNSTON, 713 485-8311

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIAL NO.	SERIES NO.	POSITION
1	1				
1	1				
1	1				
1	1				

**** FILE DATA ****

FILES ARE IN ORDER OF TIME AND SEQUENCE, BEGINNING AT THE BOTTOM OF THE LOG.

1 - API GR
2 & 3 R.A.T. BASE LOG
9 -13 FIRST SLUG, DYNAMIC
14-18 SECOND SLUG, DYNAMIC
19 TIME DRIVE ABOVE PACKER
20 TIME DRIVE BELOW PACKER
21 LAST R.A.T. BACKGROUND
22 REPEAT OF ABOVE

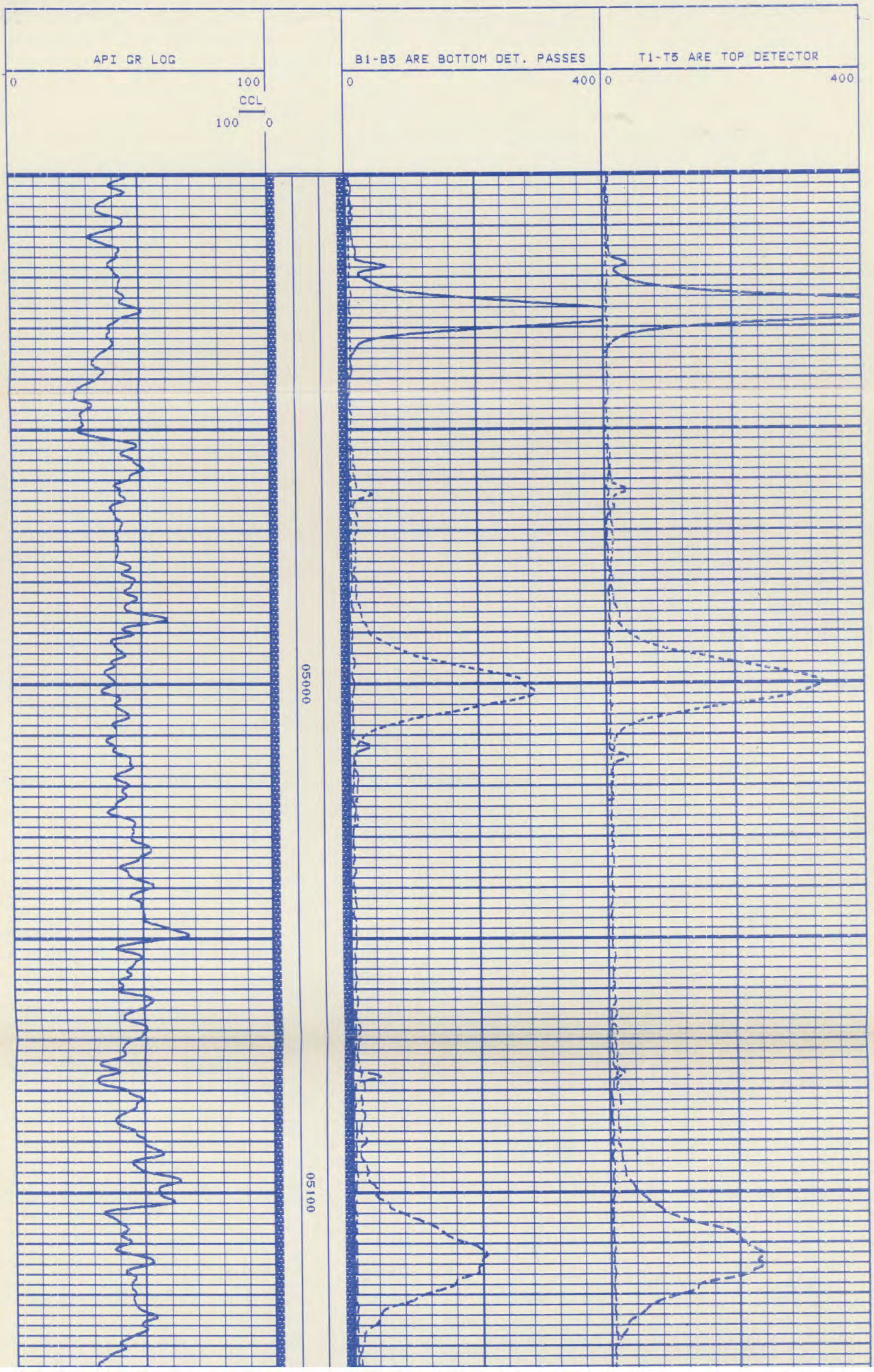
****TOOL CONFIGURATION****

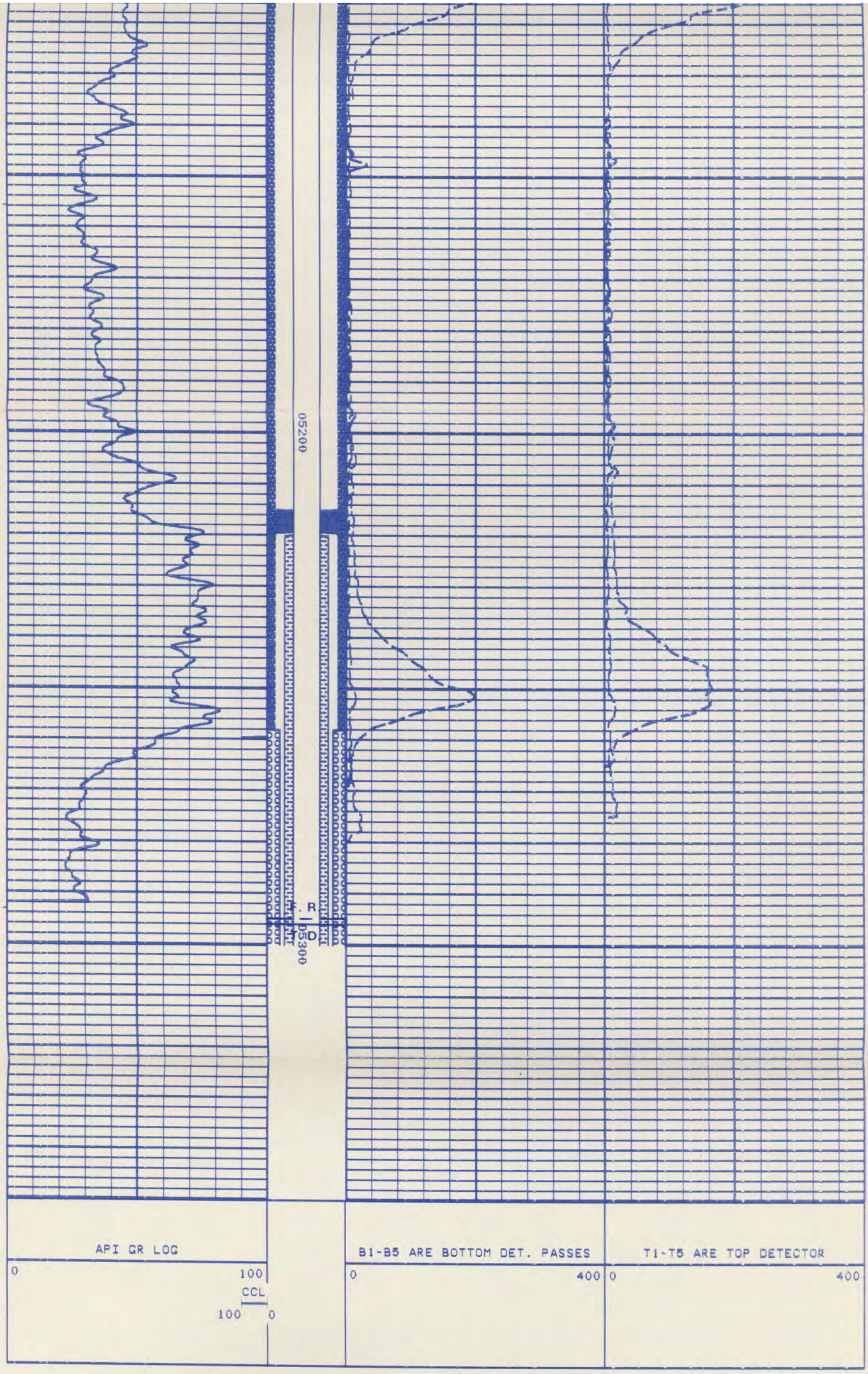
CCL - 8 FT. ABOVE BDET
TDET - 5 FT. ABOVE BDET
INJECTOR - 2.5 FT. ABOVE BDET
BDET= BOTTOM DETECTOR
TDET= TOP DETECTOR

API GR IS MOUNTED 6 FT. BELOW BDET.

5′ SEP. DETECTORS, WITH INJECTOR IN THE MIDDLE. TOOL IS 1 11/16" IN O.D.

****

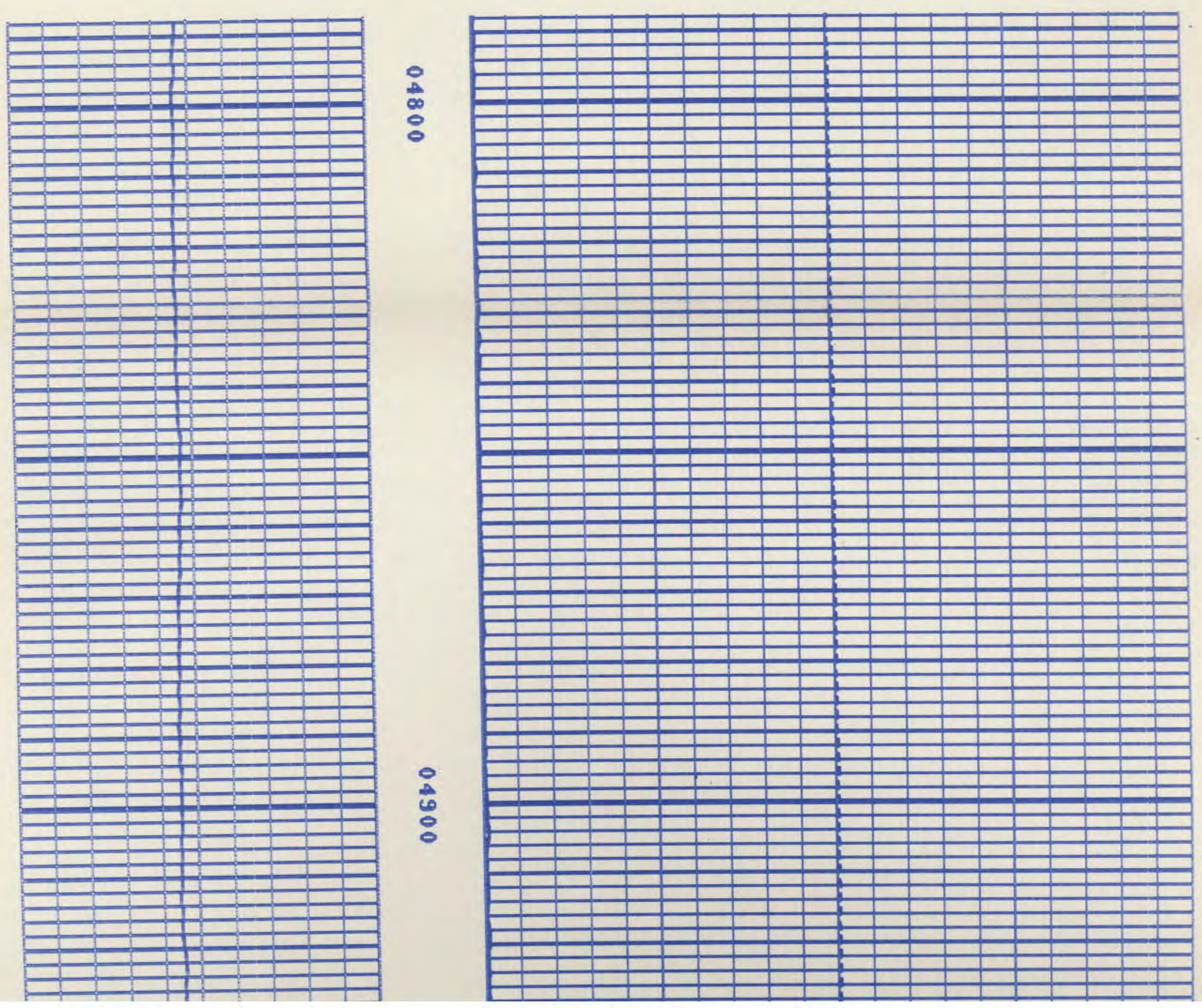

API GR LOG
0
100
CCL
100
0
B1-B5 ARE BOTTOM DET. PASSES
0
400
T1-T5 ARE TOP DETECTOR
0
400
05000
05100

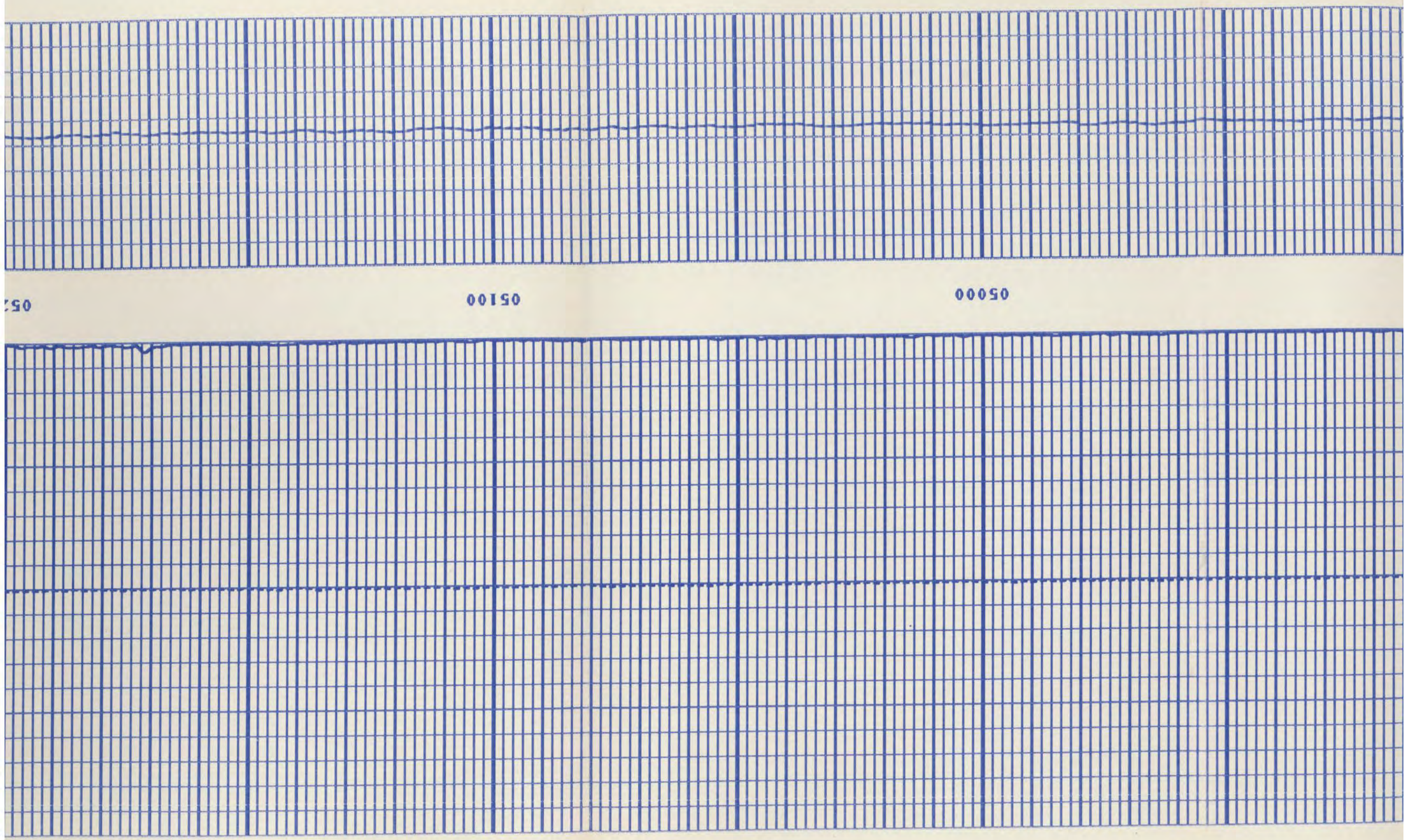

05200
F. R
D
05300
API GR LOG
0
100
CCL
100
0
B1-B5 ARE BOTTOM DET. PASSES
0
400
T1-T5 ARE TOP DETECTOR
0
400

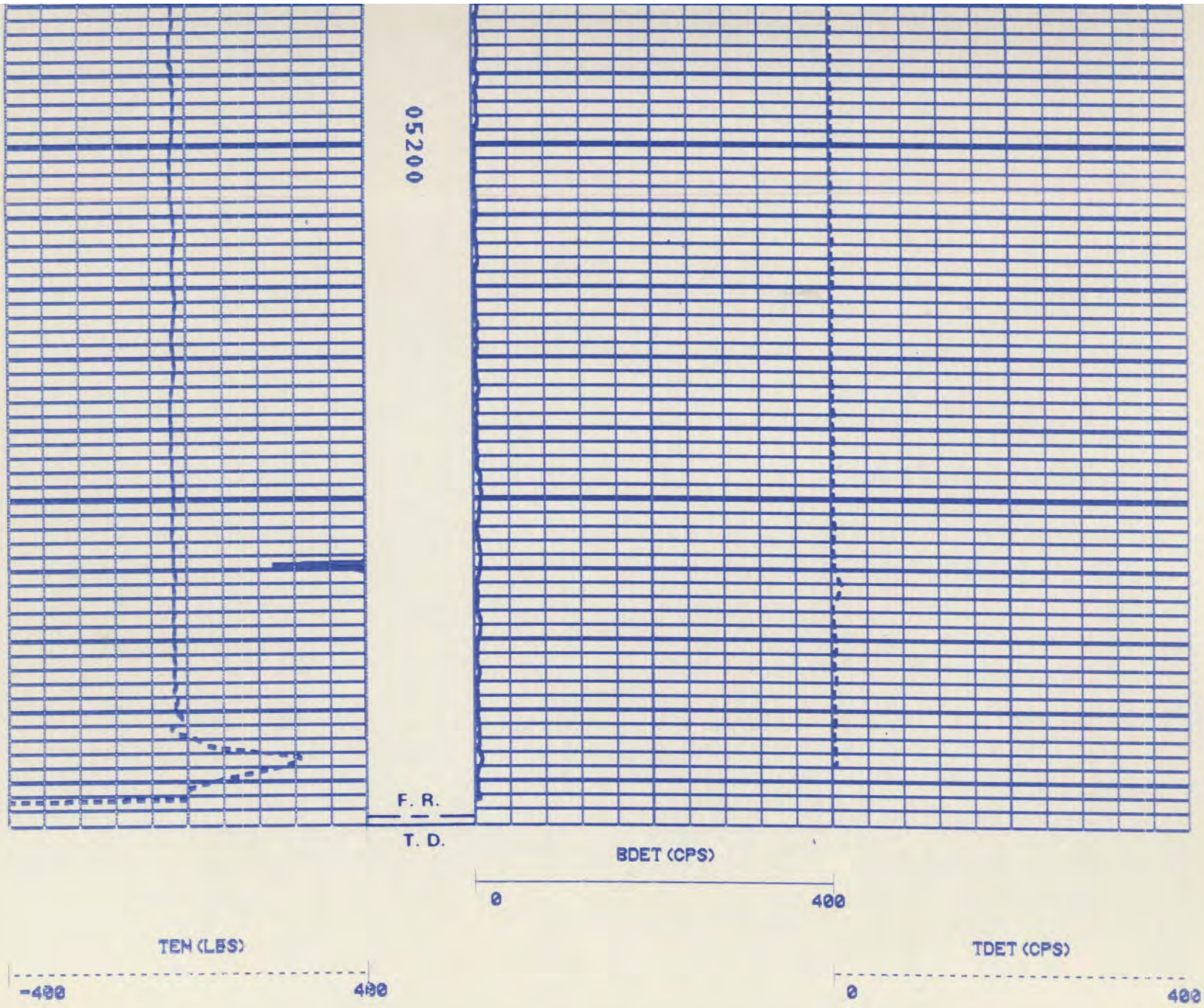
OVERLAY SECTION ABOVE IS
THE SECOND DYNAMIC RUN.
(SLUG NO. 2)

IODINE IS FIRED AT 4900, AND
IS TRACED DOWN TO TOP OF OH
SECTION.

LOG BELOW IS THE FINAL PASS
COMPLETED AT 3:50 PM...FINAL
R.A.T. BACKGROUND CHECK.




05100
05000



FILE: 22

****

LOG BELOW IS THE R.A.T. BASE LOG, AFTER SURVEY; LOG ABOVE, BEGUN AT 3:40 IS THE REPEAT BASE.

****

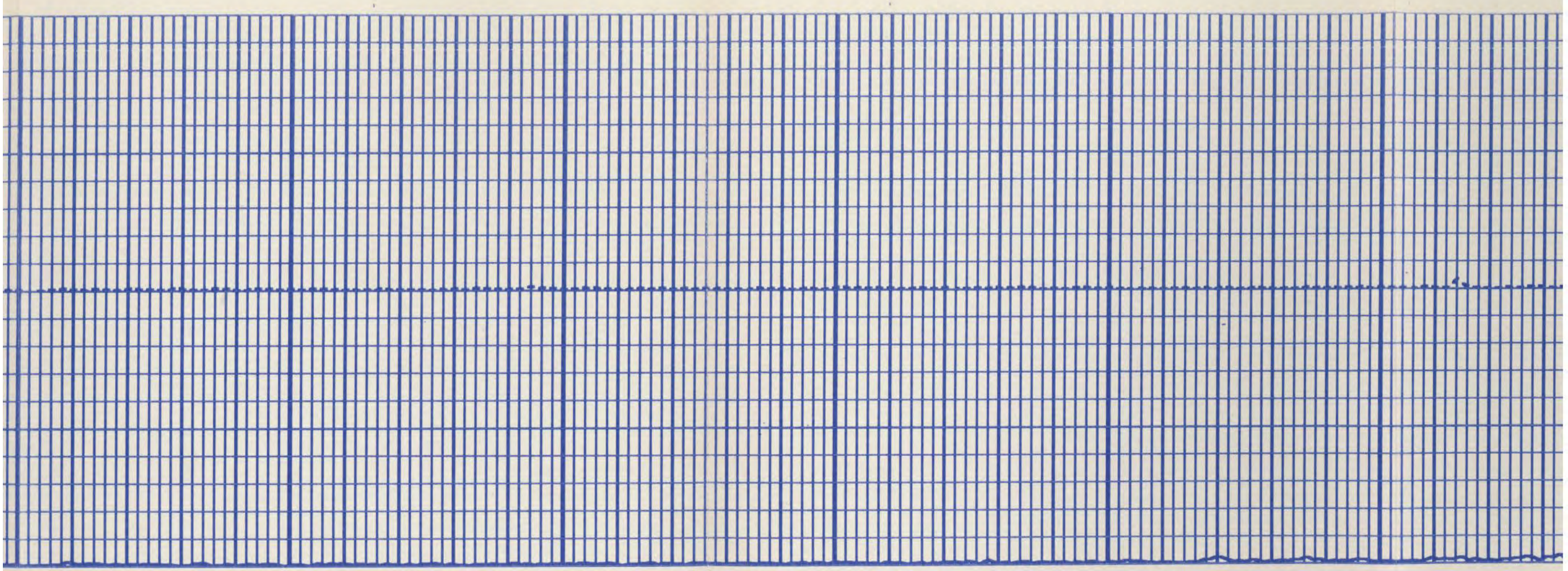
FILE: 21

CURVE DELAY REPORT

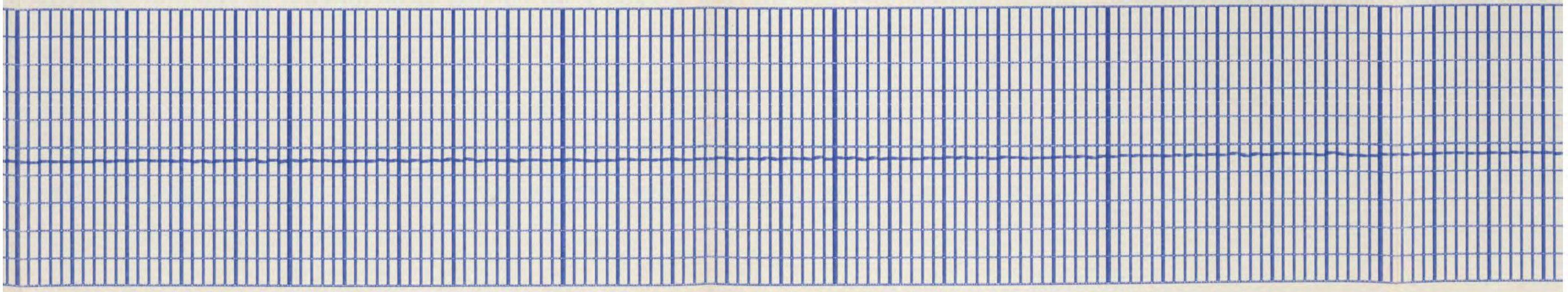
CURVE	PHYS. DELAY	UNITS
TDET	5,0	FT,IN
BDET	0	FT,IN
CCL	8,0	FT,IN

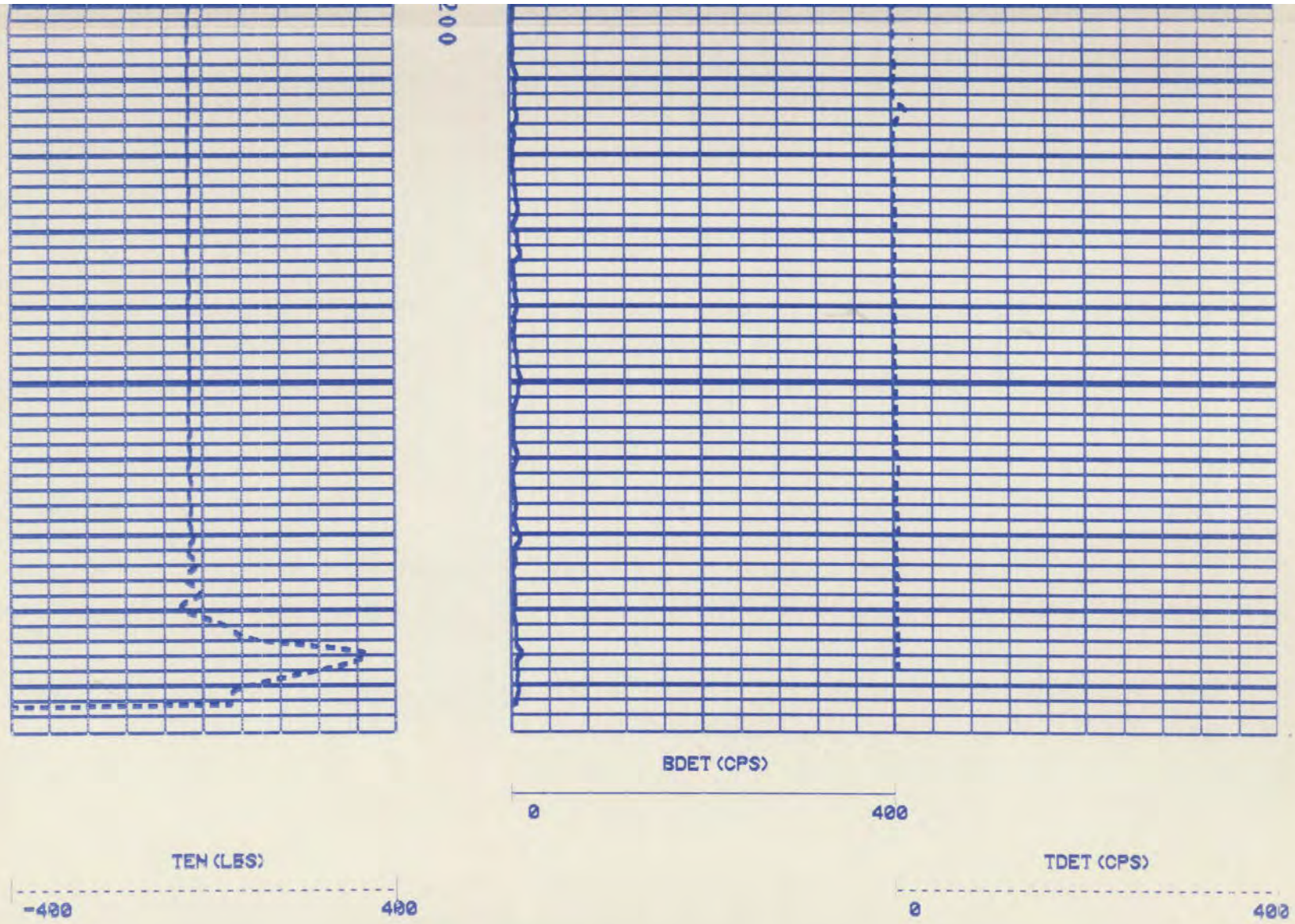
PARAMETERS

*** NONE ***



05000 05100 05200





FILE: 21

****

FILE ABOVE IS LAST R.A.T.
BACKGROUND AFTER SURVEY.

TIME DRIVE BELOW RUN FOR
30 MINUTES. FINISHED AT
3:25 PM. SHOT FIRED AT
5230, NO SIGN OF SLUG
RETURN.

****

FILE: 20

CURVE DELAY REPORT

CURVE	PHYS. DELAY	UNITS
TDET	5,0	FT,IN
BDET	0	FT,IN

CURVE DELAY REPORT

CURVE	PHYS. DELAY	UNITS
TDET	5,0	FT,IN
BDET	0	FT,IN
CCL	8,0	FT,IN

PARAMETERS

*** NONE ***

DISPLAY SCALE CHANGES

*** NONE ***

COMPANY: GOLDEN STRATA

WELL NAME: WDW-45

SERVICE: F 150C FILE: 20 DATE: 11/20/92

REVISION: FSYS256 REV:G002 VER:2.0

RUN: 1

TRIP: 1

TIME: 14:43:18

MODE: RECORD

BDET (CPS)

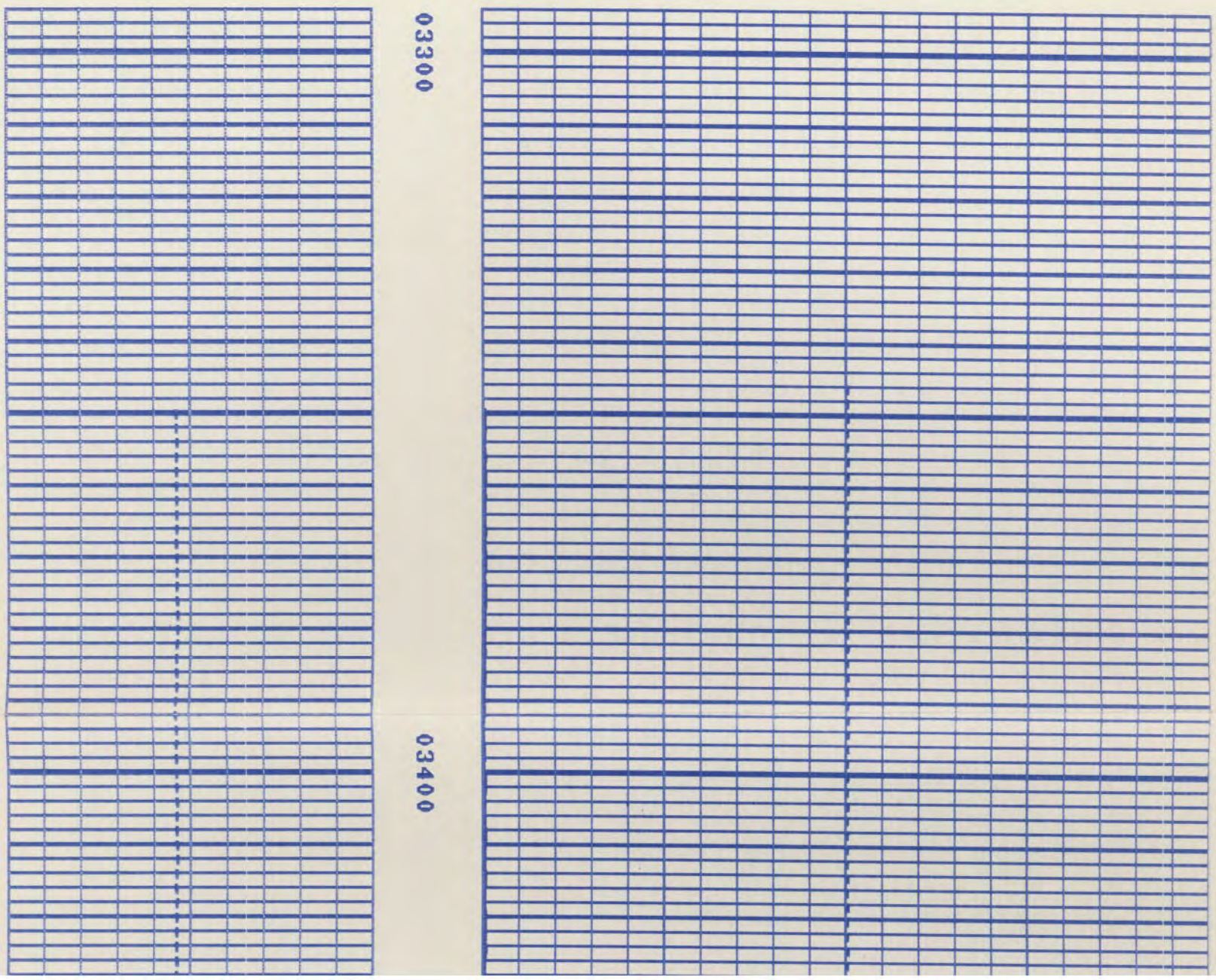
0 400

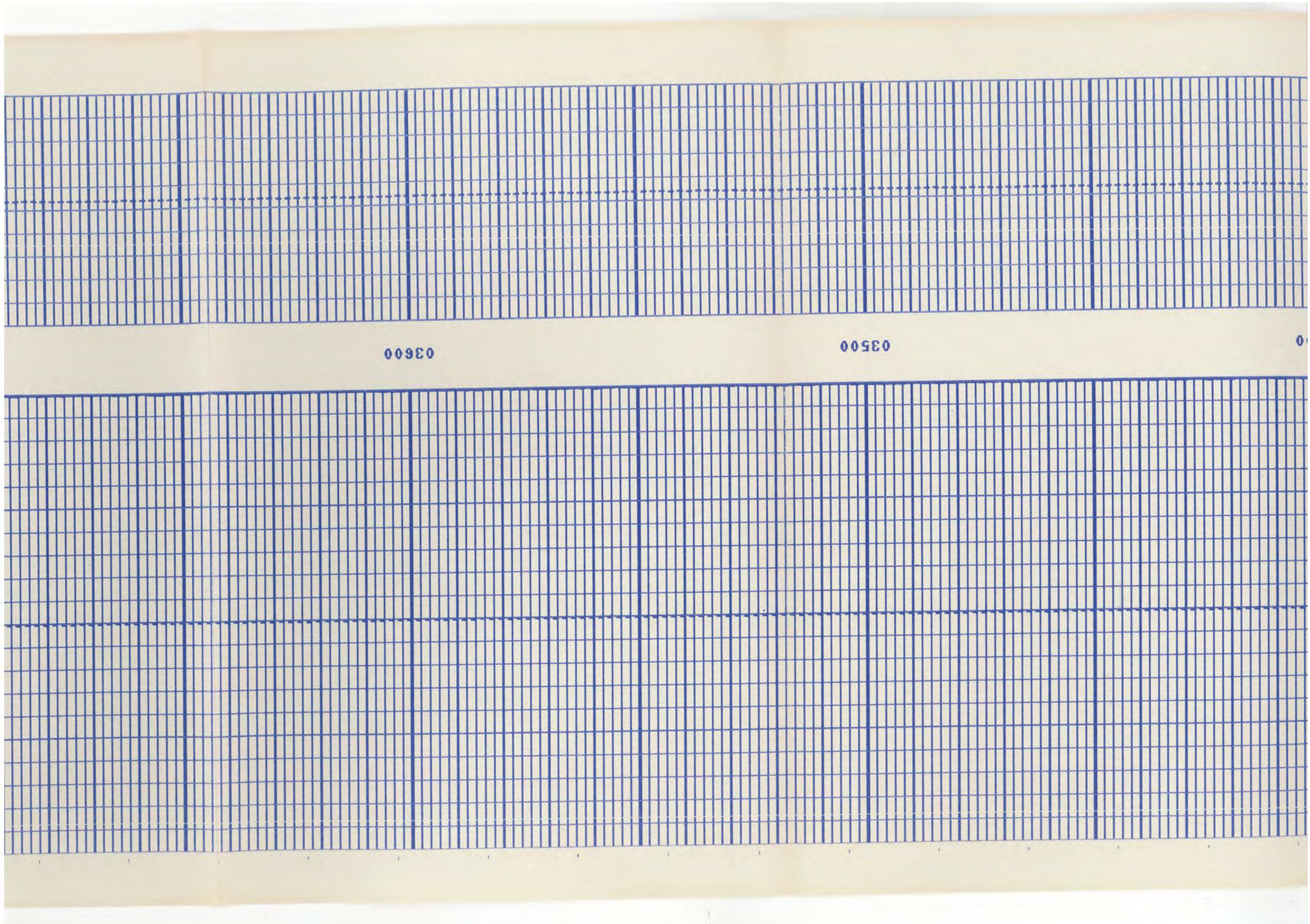
TEN (LBS)

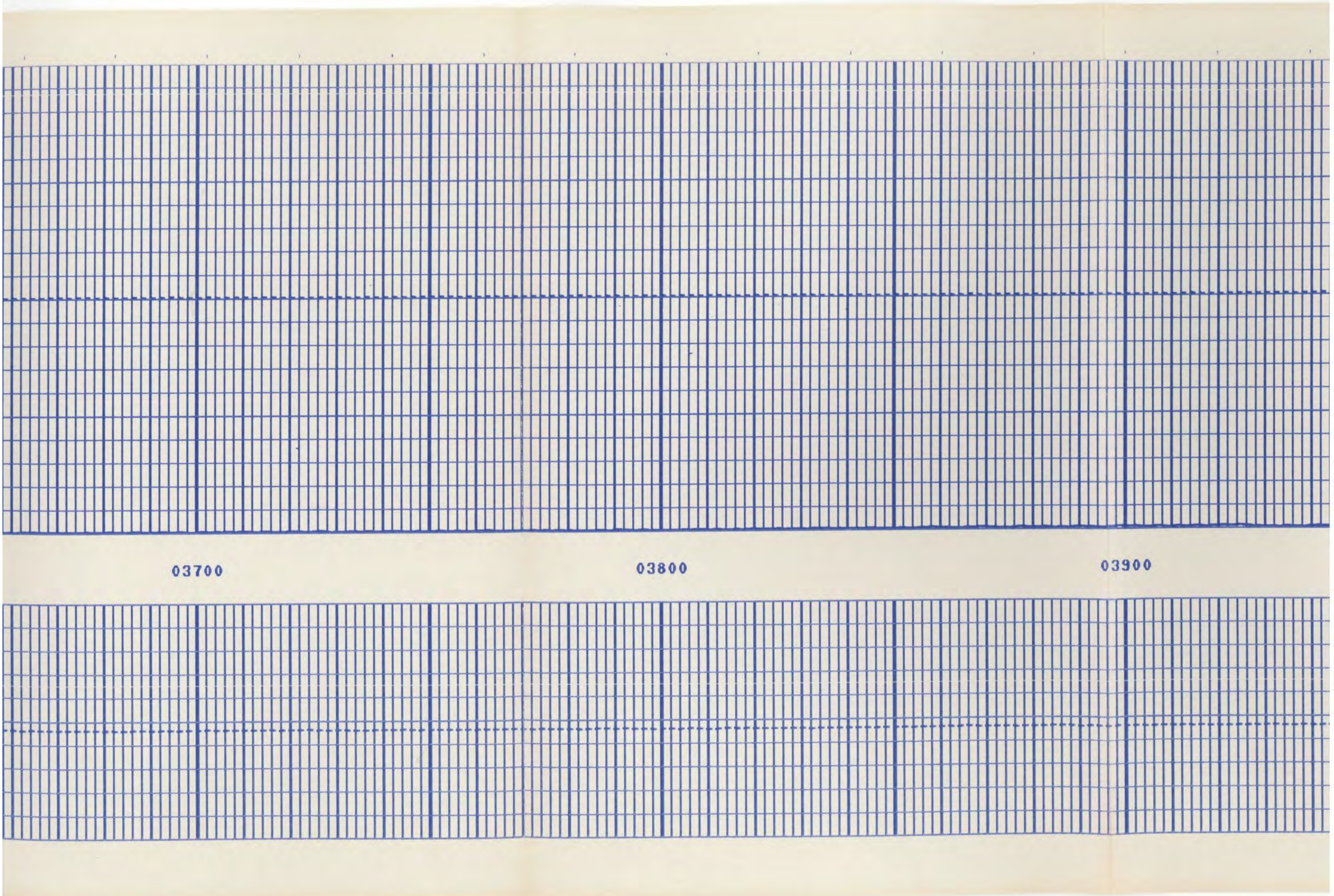
-400 400

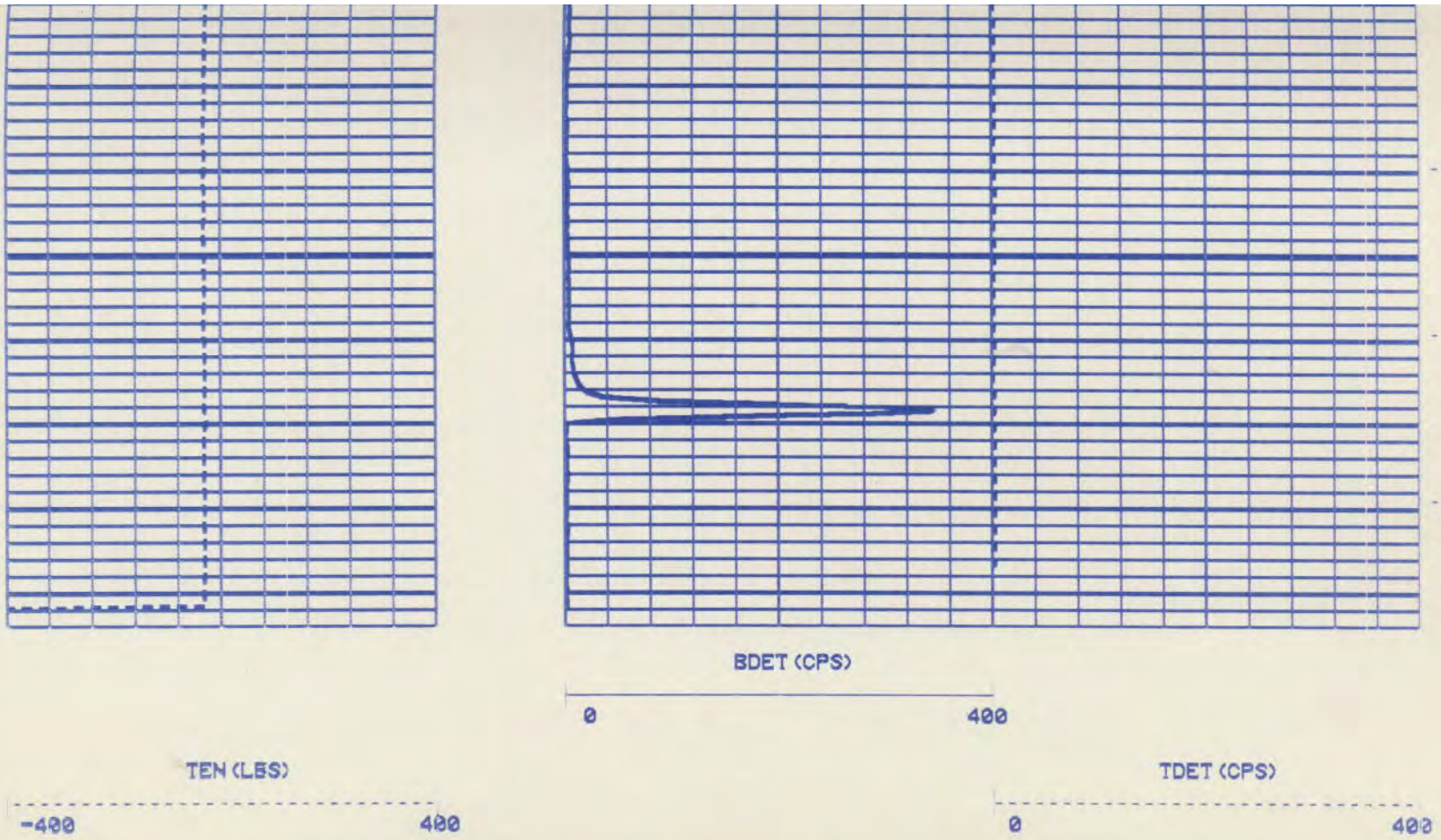
TDET (CPS)

0 400




03600
03500


03700
03800
03900



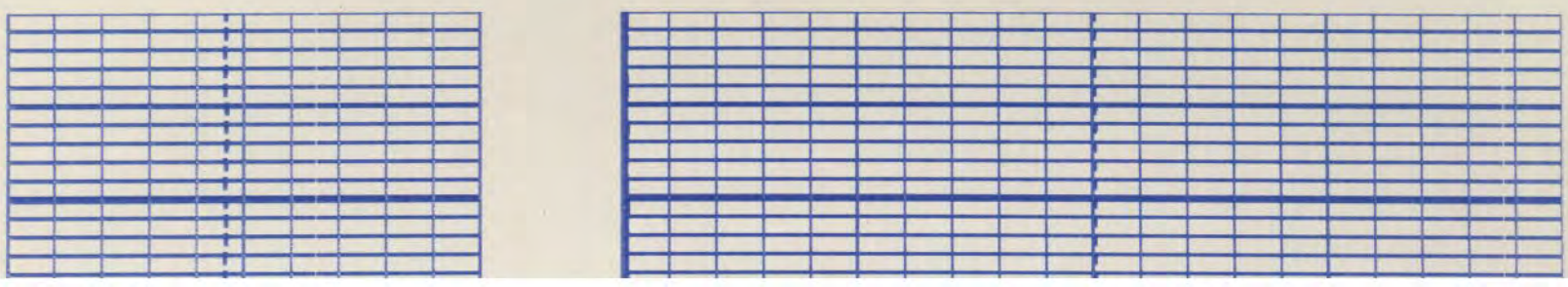
FILE: 20

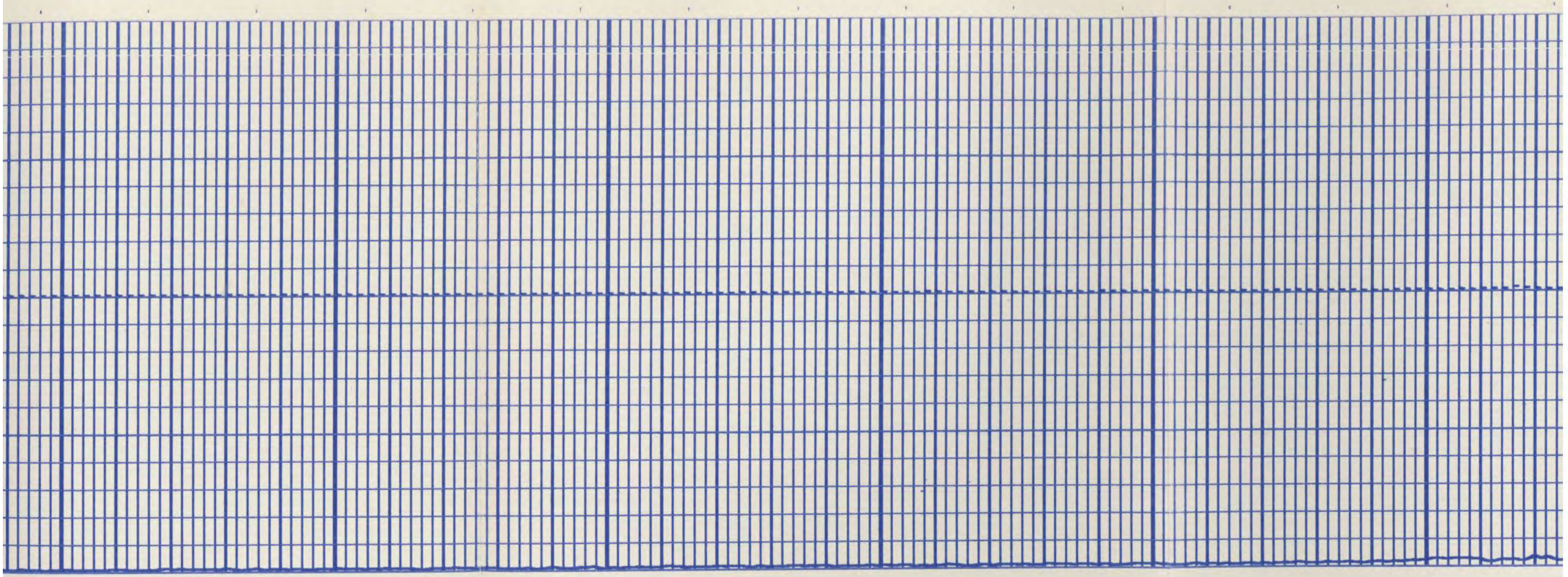
****

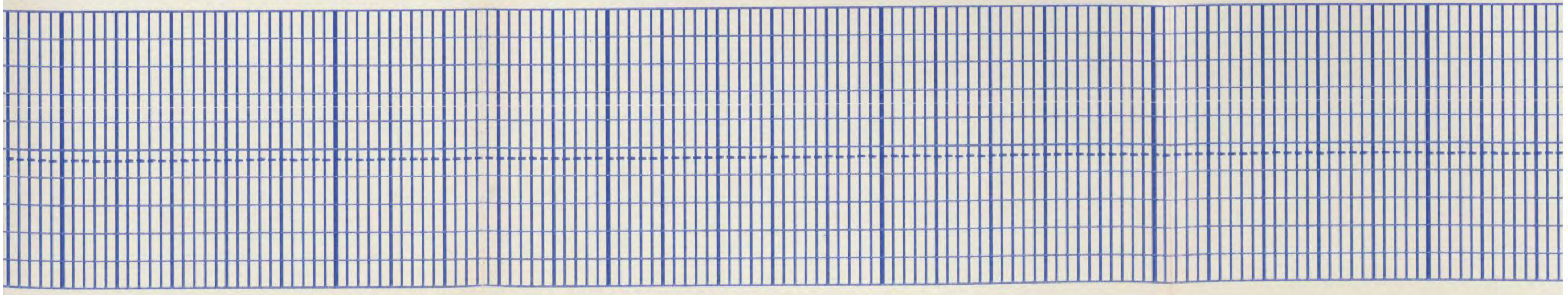
FILE ABOVE IS THE SECOND STATIONARY;TOOL IS AT 5230, POSITIONED BELOW PACKER. RATE IS STILL 80 GPM.

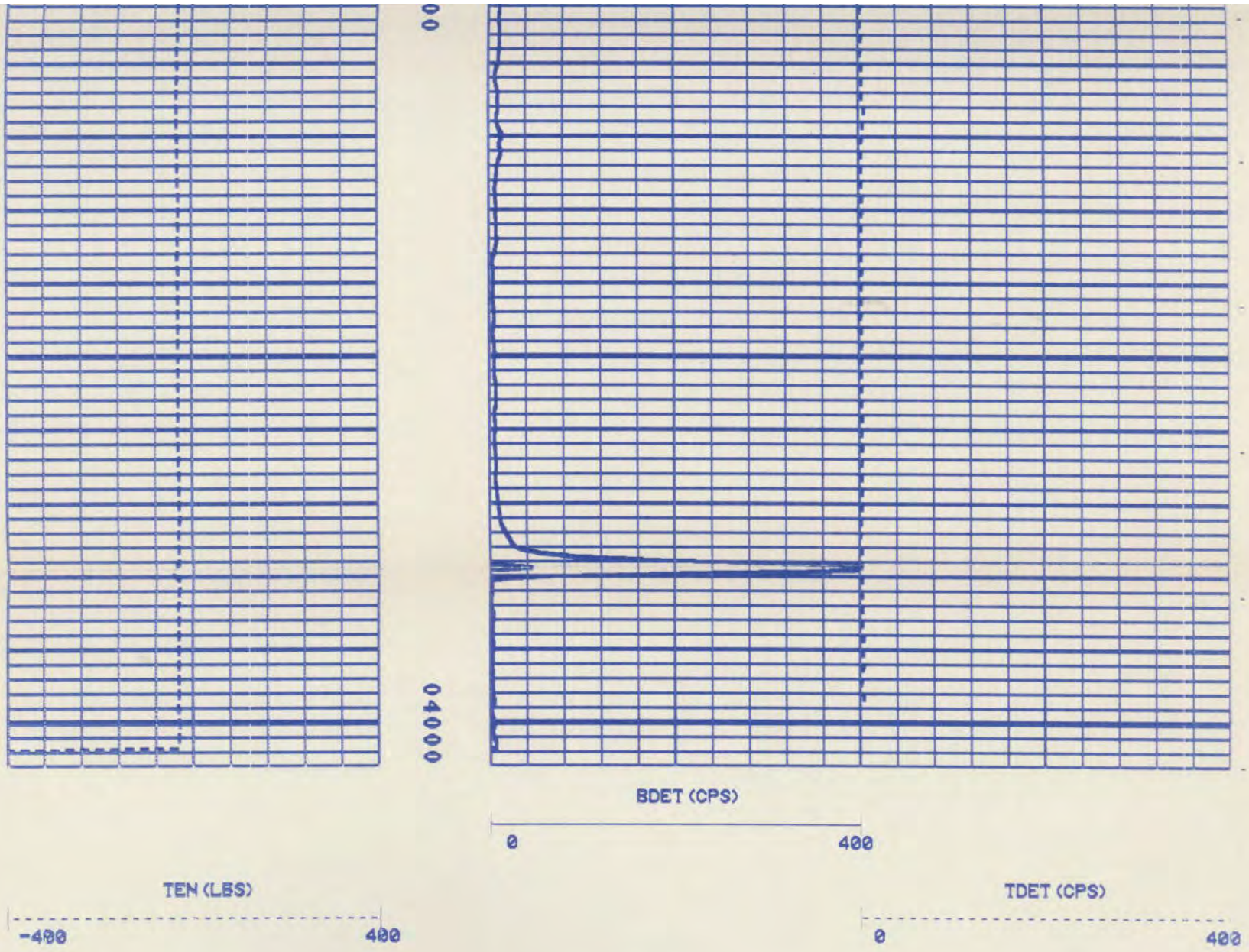
NOTE; ALL "TOOL DEPTHS" GIVEN ARE FOR BOTTOM DETECTOR, OR "BDET", PRES. FROM R0-R10.

FILE BELOW FINISHED AT 2:35 PM STATIONARY CHECK WITH TOOL AT 5207. NO SIGN OF SLUG RETURN. RATE WAS 80 GPM, SCALE IS 3SEC/FT., OF 5 MIN. EVERY "100 FT." TIME MODE RUN FOR 18 MINUTES.




03700
03800
03900





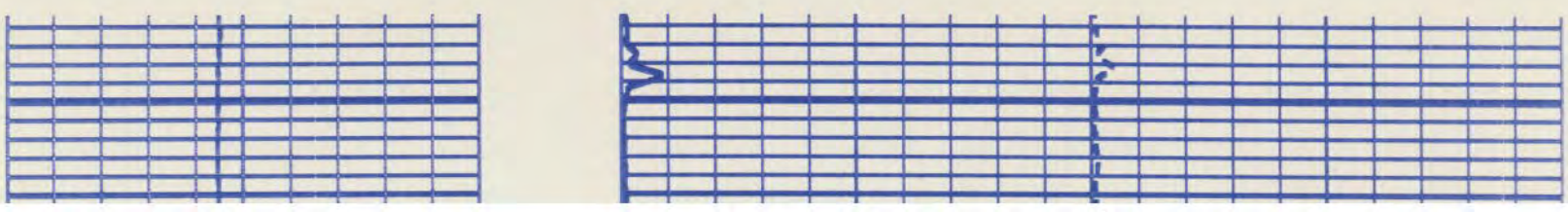
FILE: 19

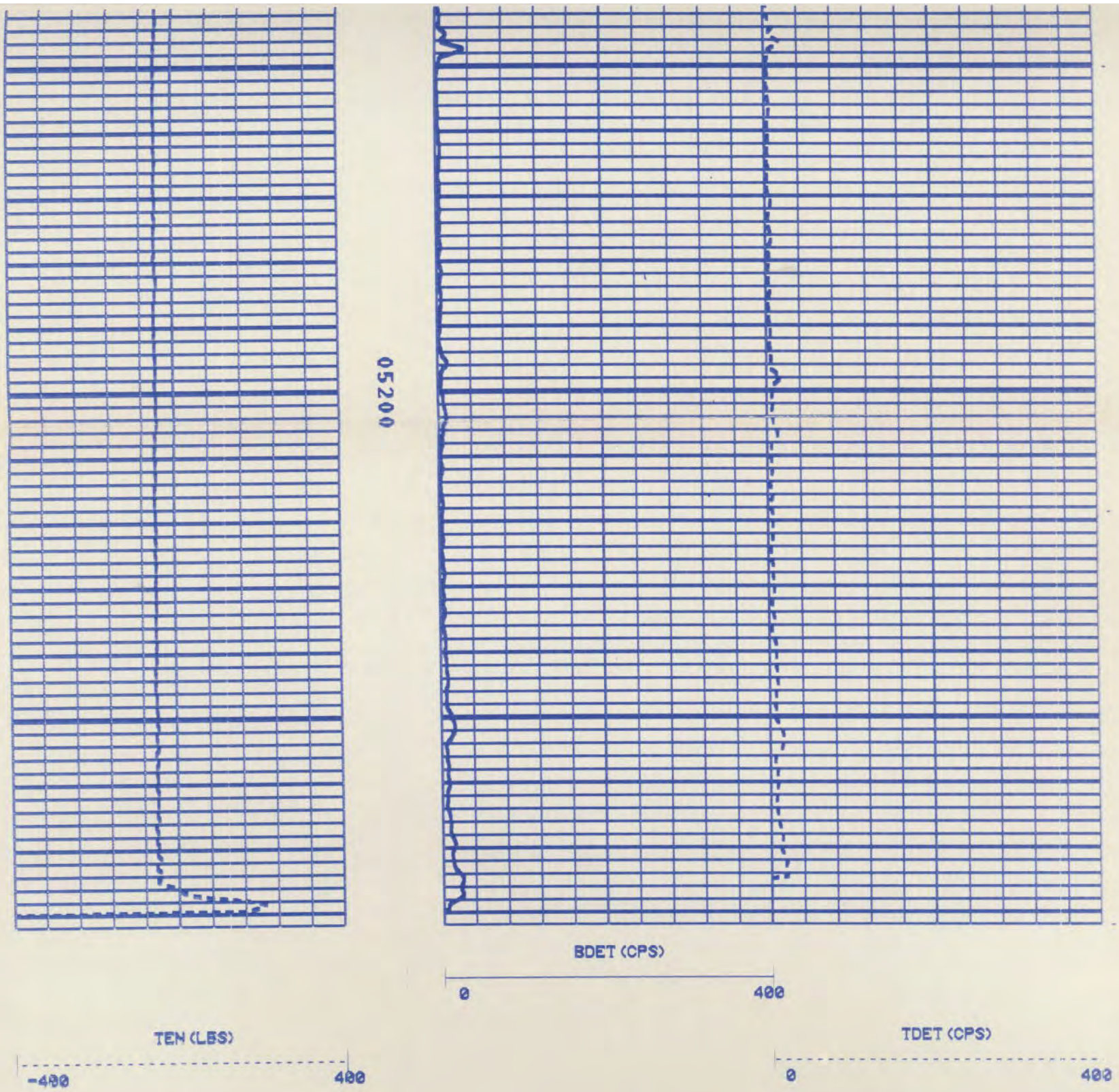
****

ABOVE ARE TIME DRIVE FILES FOR STATIONARY CHECKS; FIRST FILES IS ON A TIME SCALE OF 3 SEC/FT., RATE IS 80 GPM

FILES BELOW (14-18) REPRESENT SECOND SLUG RELEASED AT 4900, AND SUBSEQUENT LOGGING PASSES. TIME OF OP. END, 2:10 PM

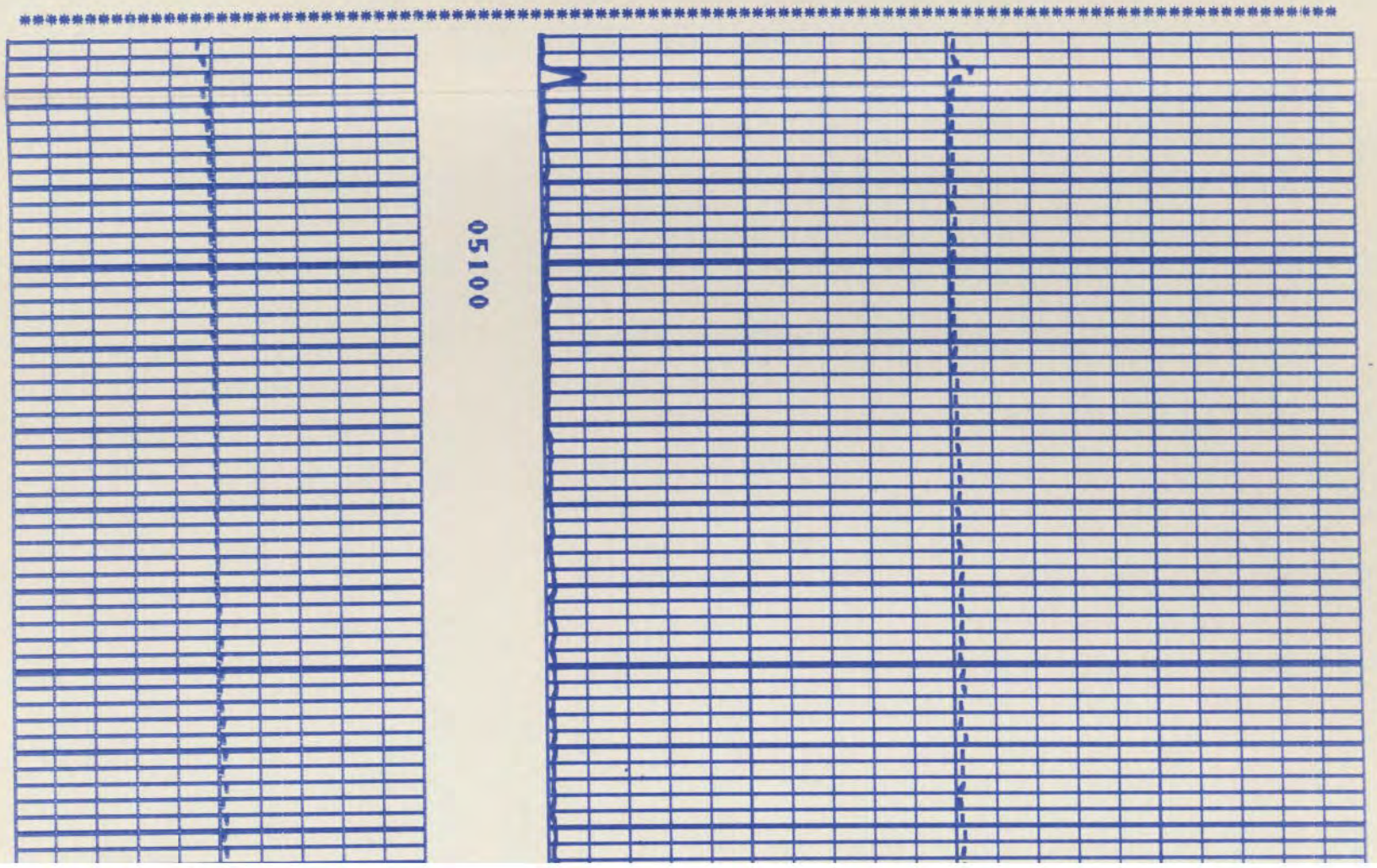
ALL RATES ARE 20 GPM

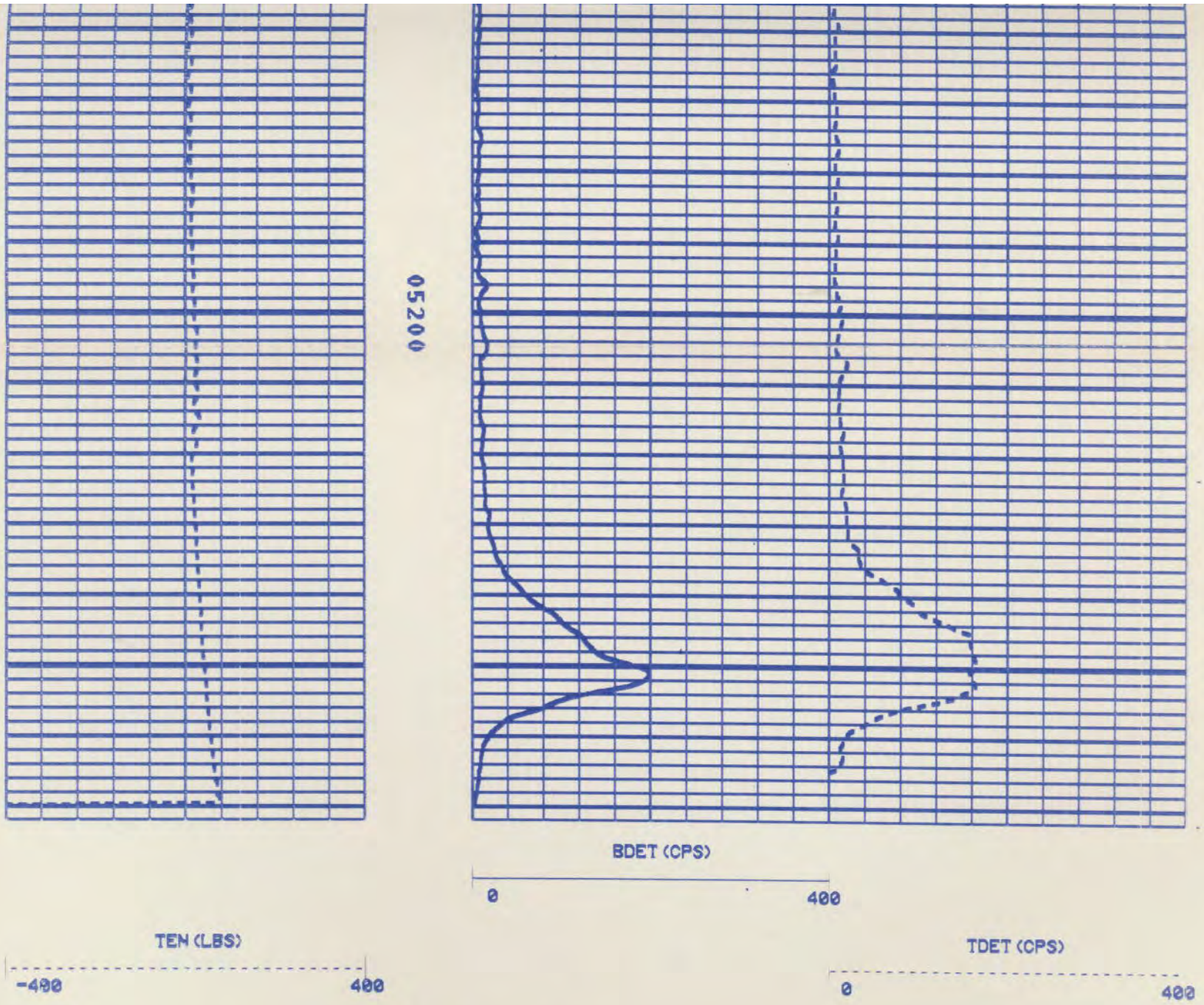




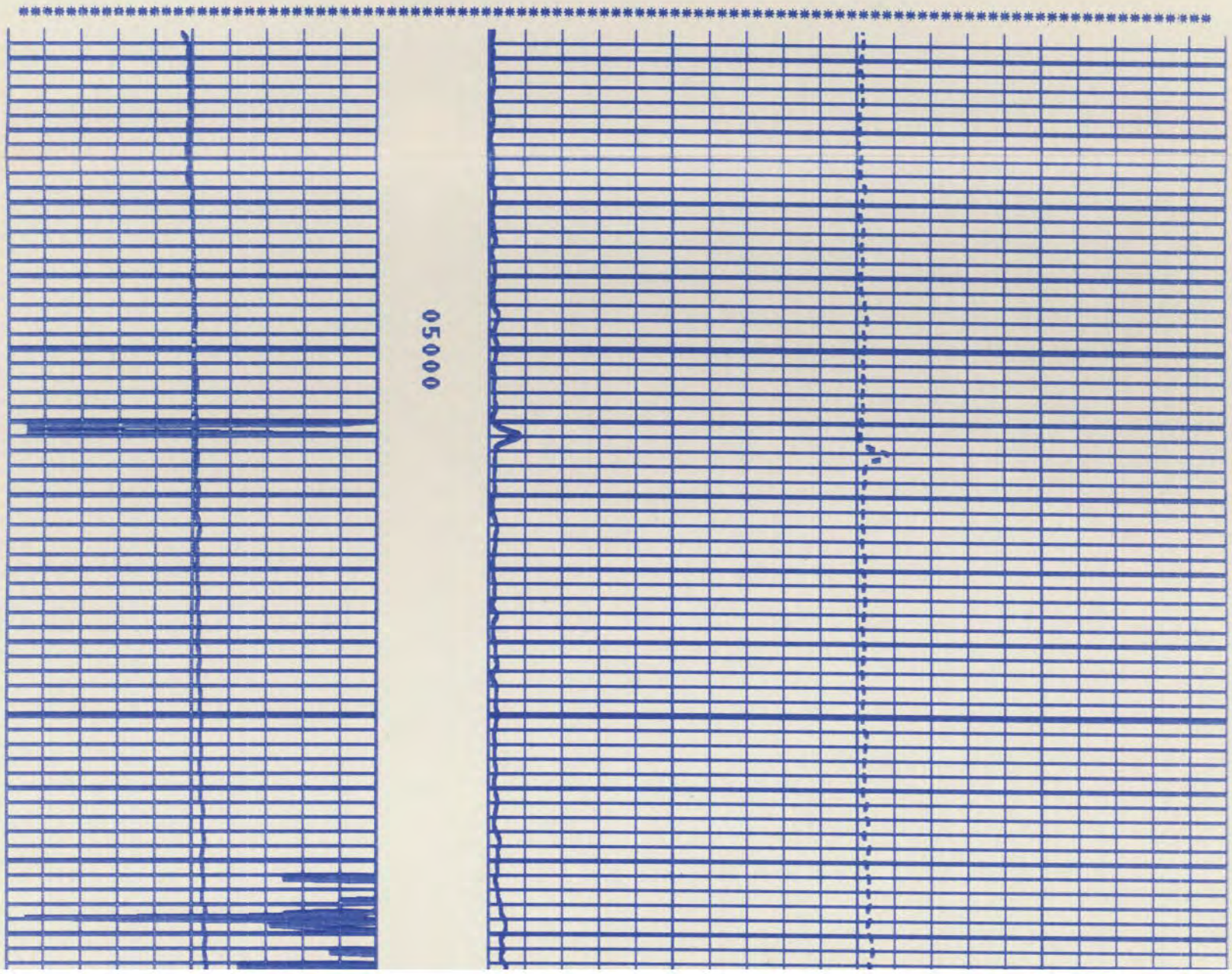
FILE: 18

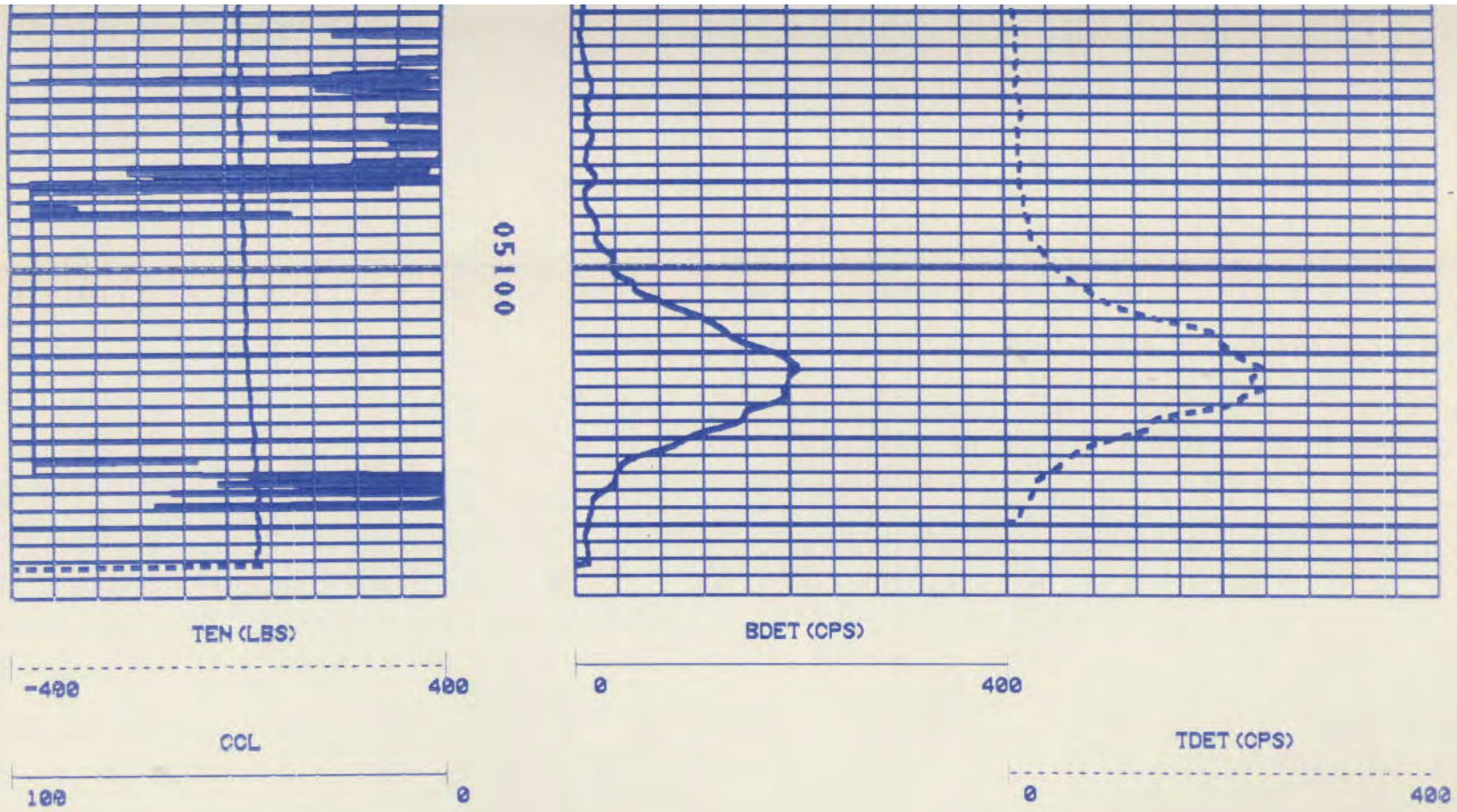
****



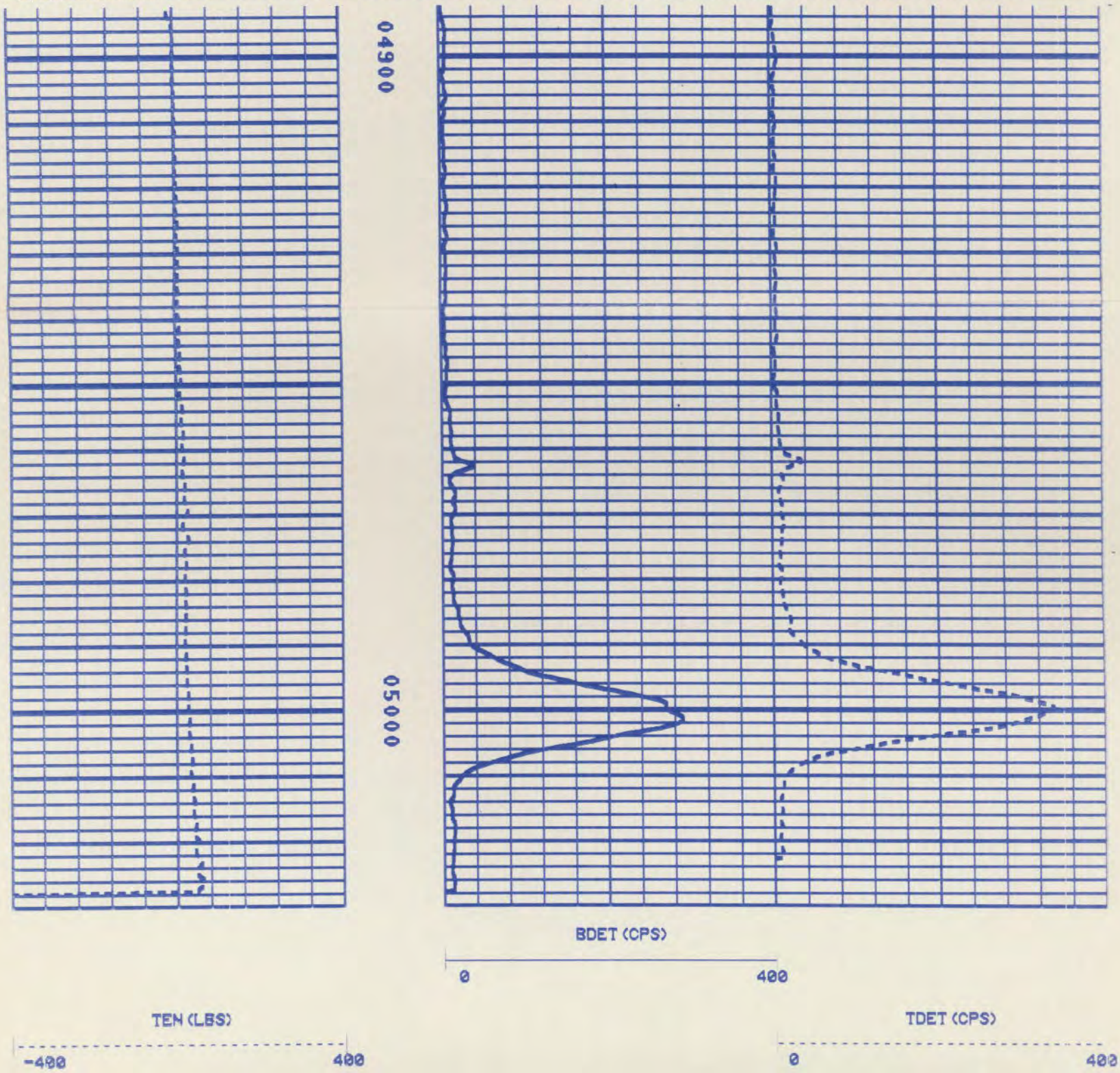


FILE: 17





FILE: 16

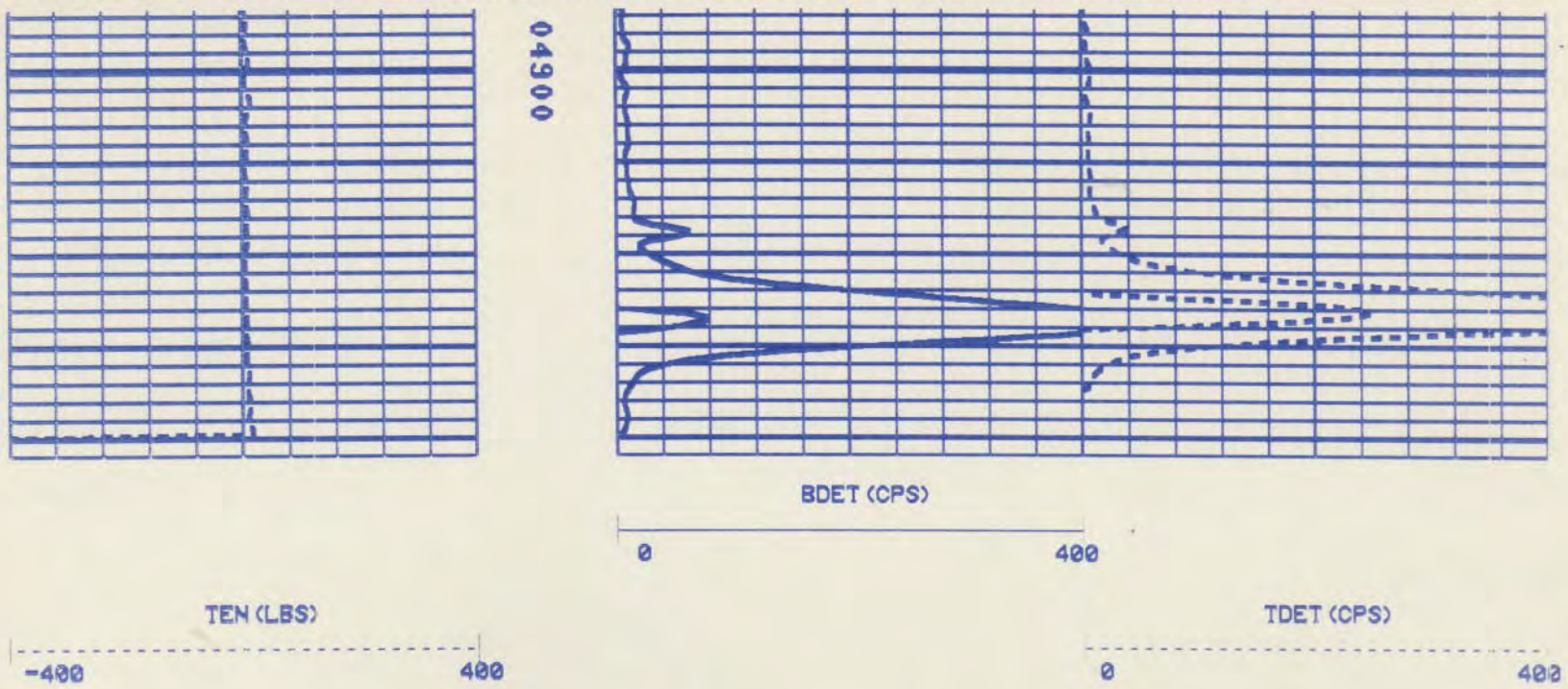


FILE: 15

-400 400 0 400

FILE: 15

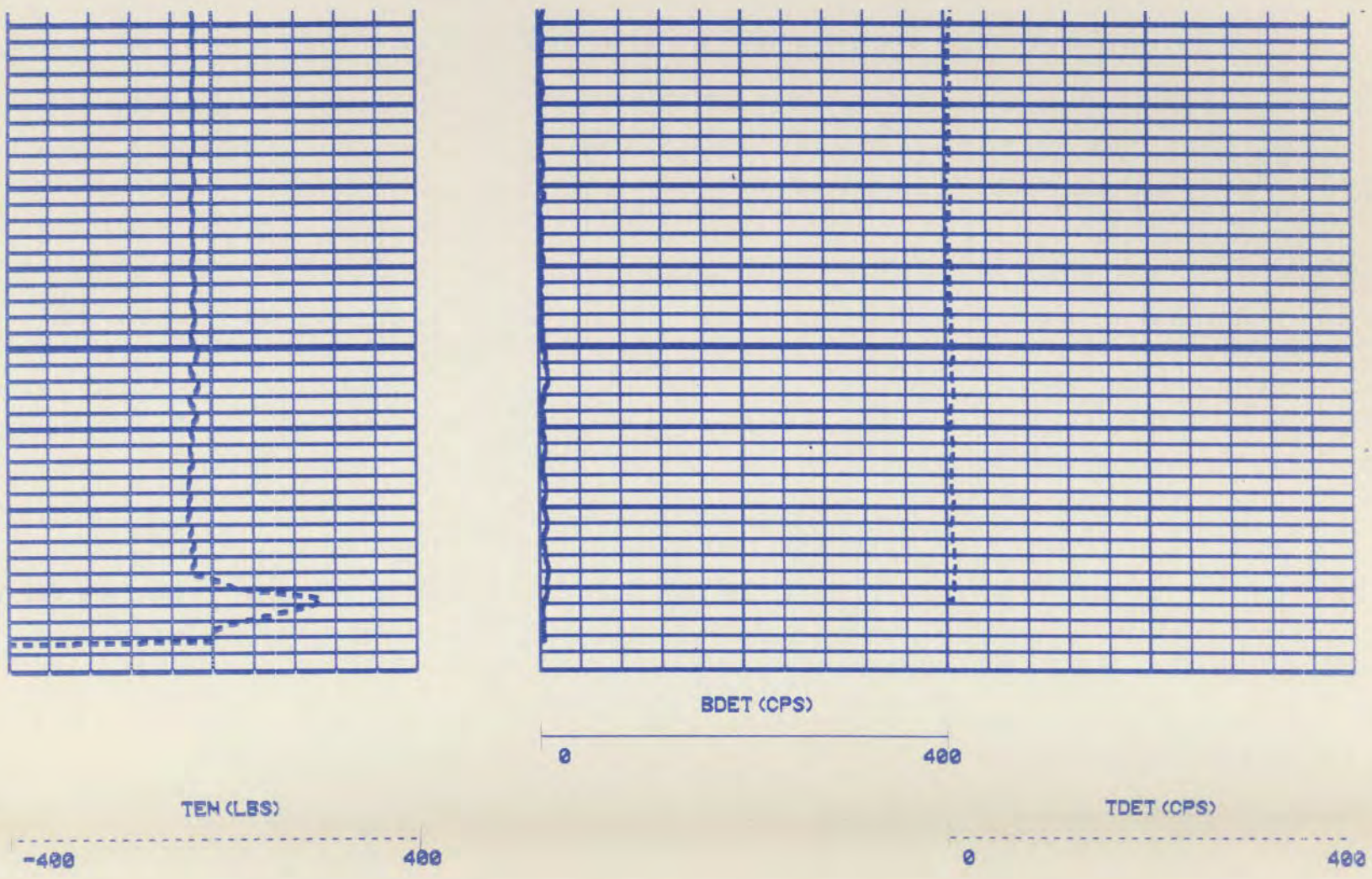
****



FILE: 14

****

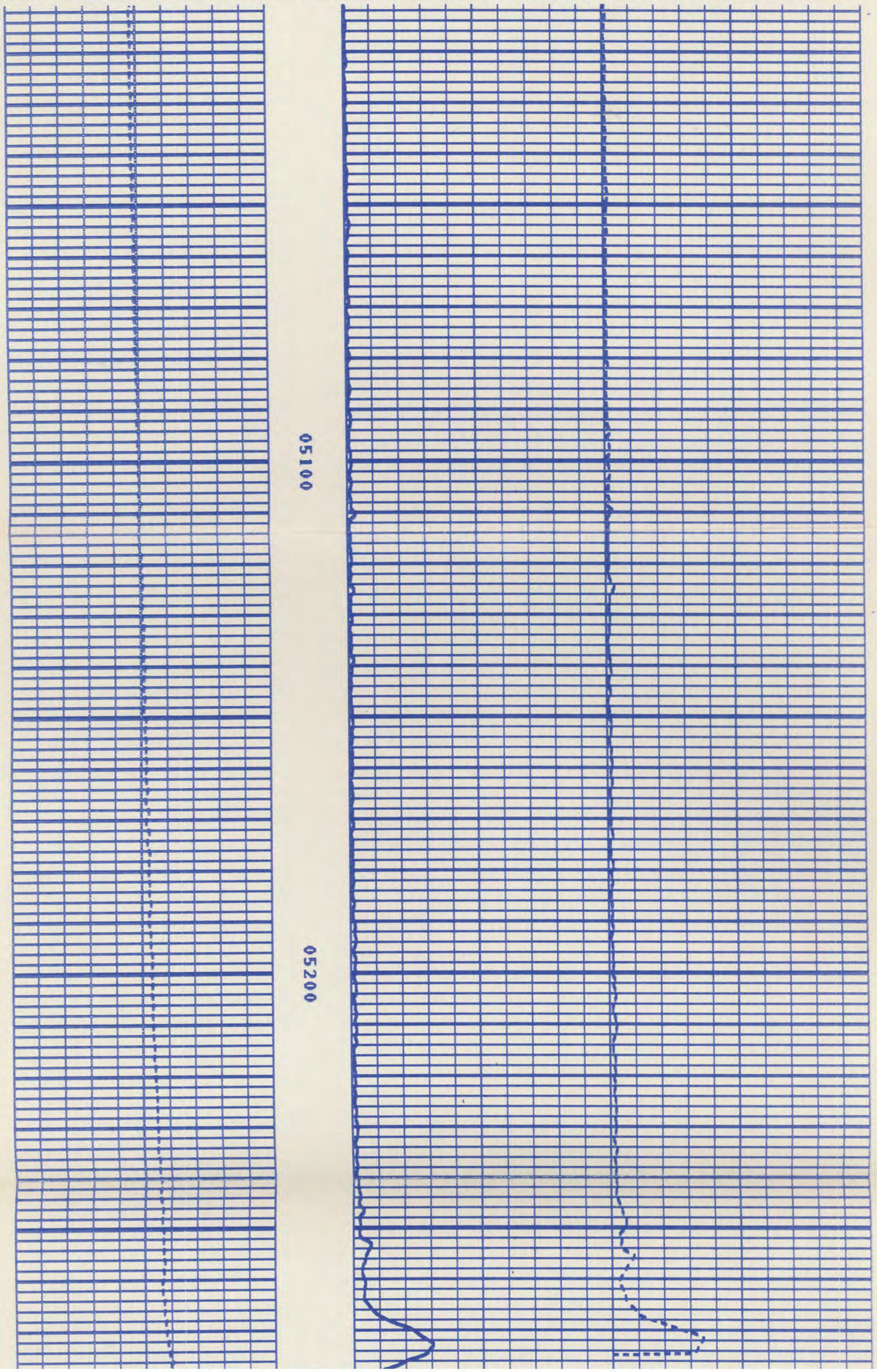
FILES BELOW REPRESENT FIRST SLUG
AND 6 PASSES/ FILES ABOVE ARE FOR
SECOND SLUG & REPEAT PASSES.
TIME IS 1:55

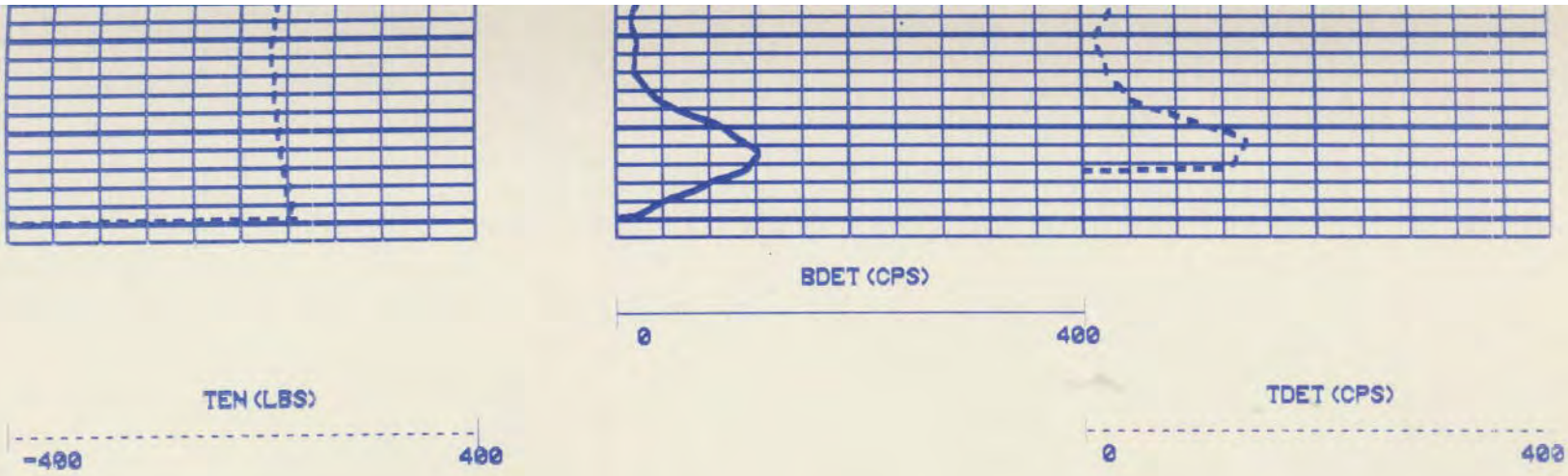


FILE: 13

-400 400 0 400

FILE: 13





FILE: 12

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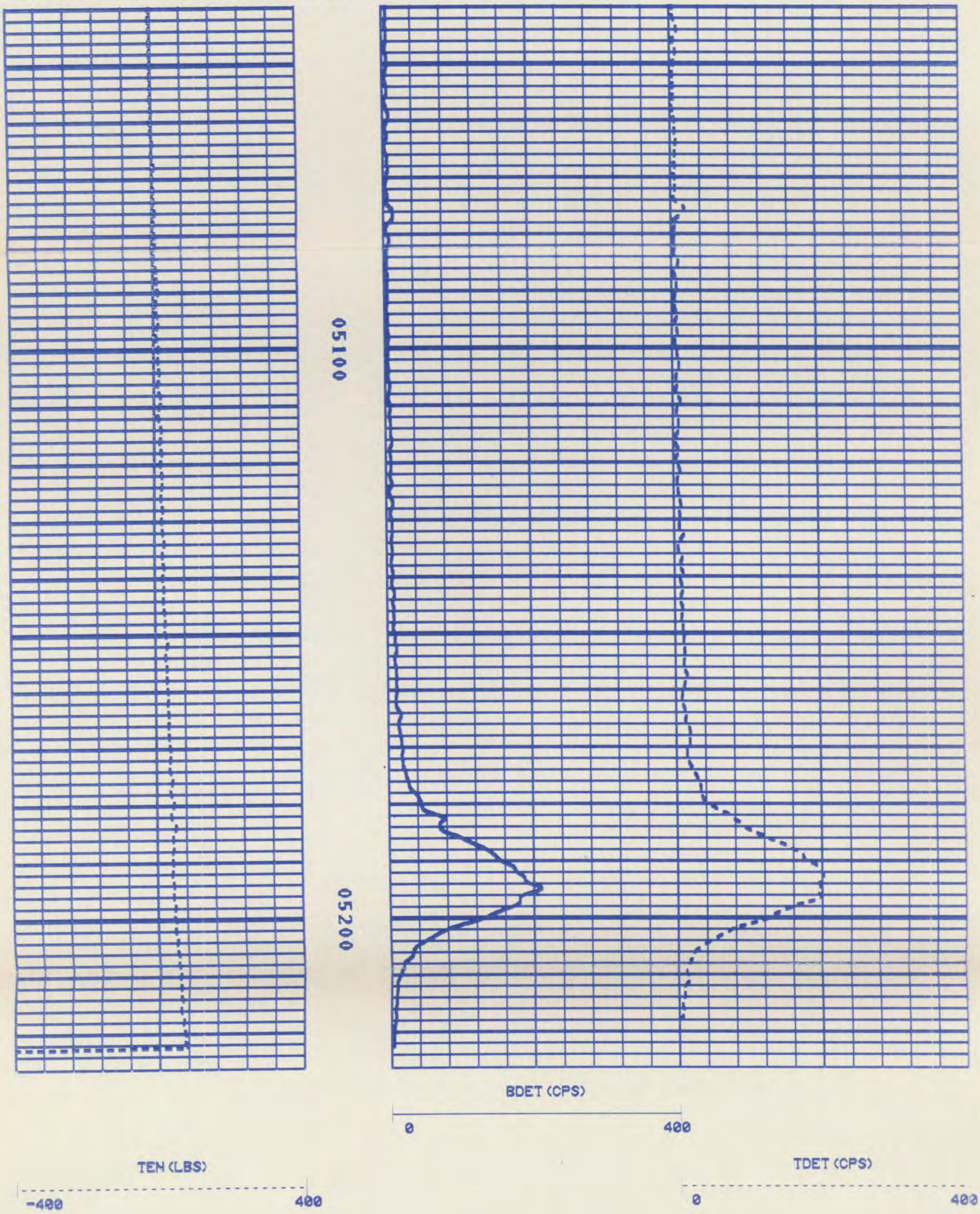
05100

05200



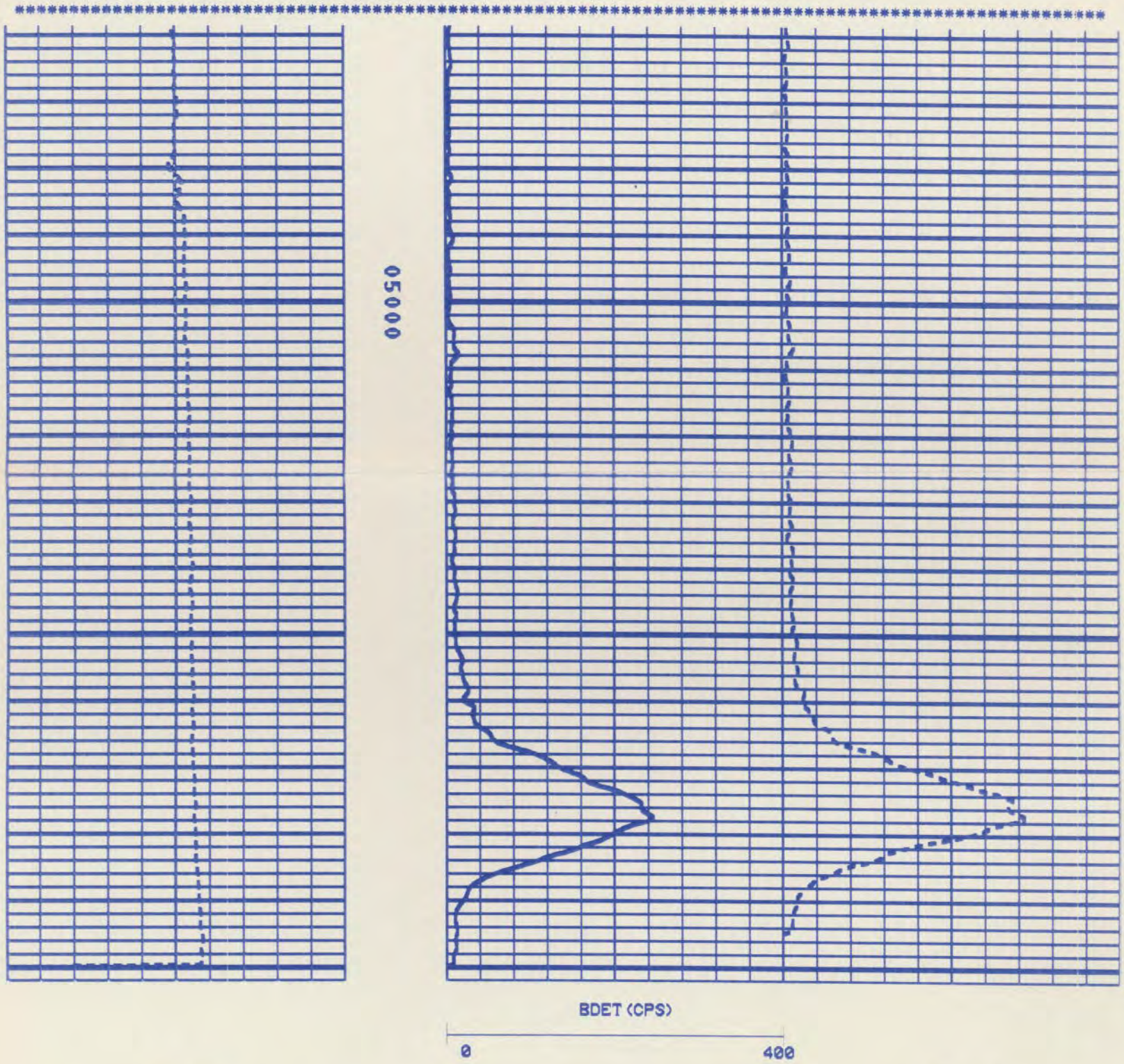
TEN (LBS)

-400 400

TDET (CPS)

0 400

FILE: 11



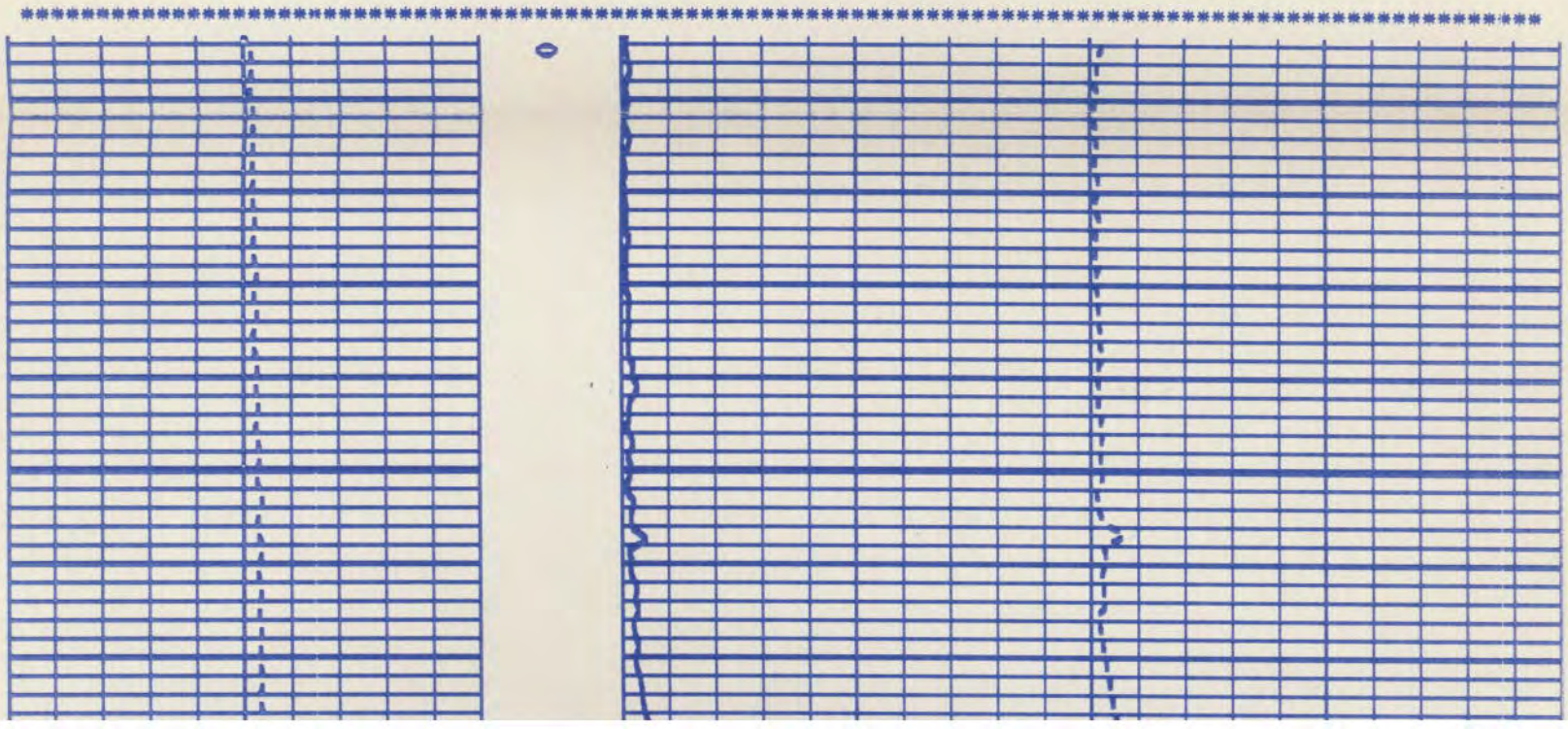
TEN (LBS)

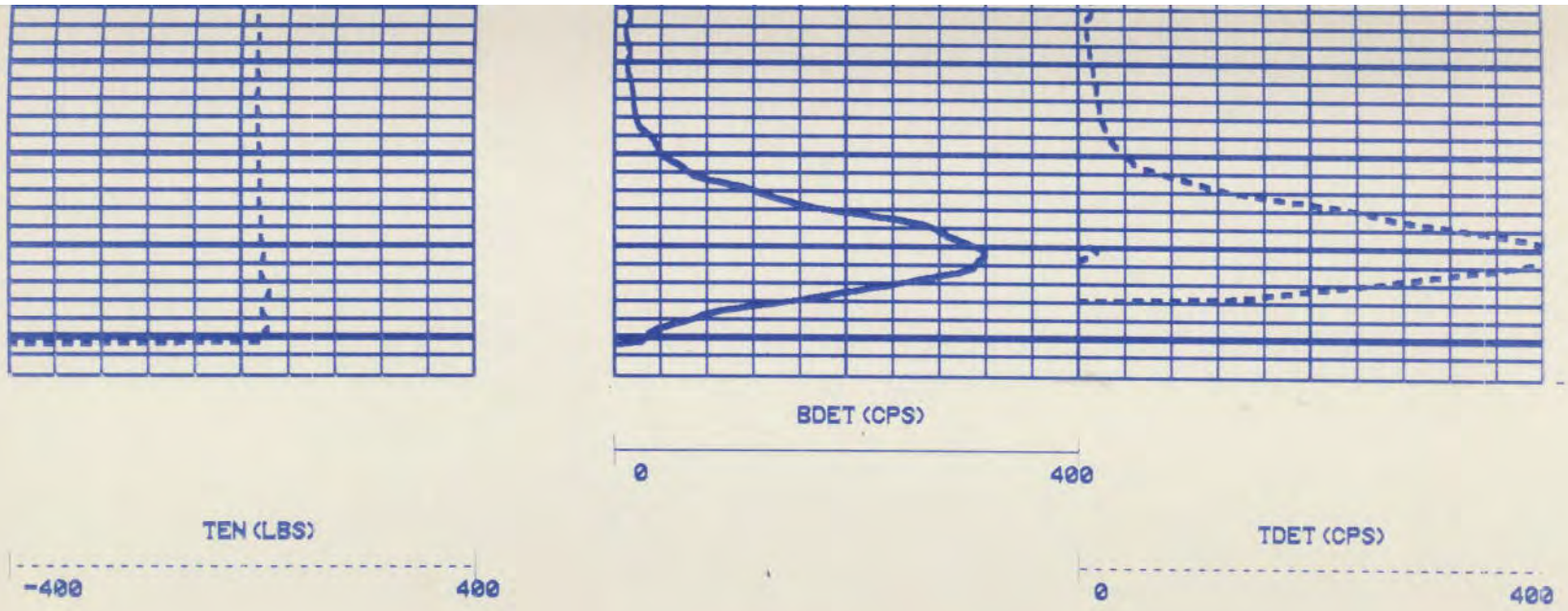
-400 400

TDET (CPS)

0 400

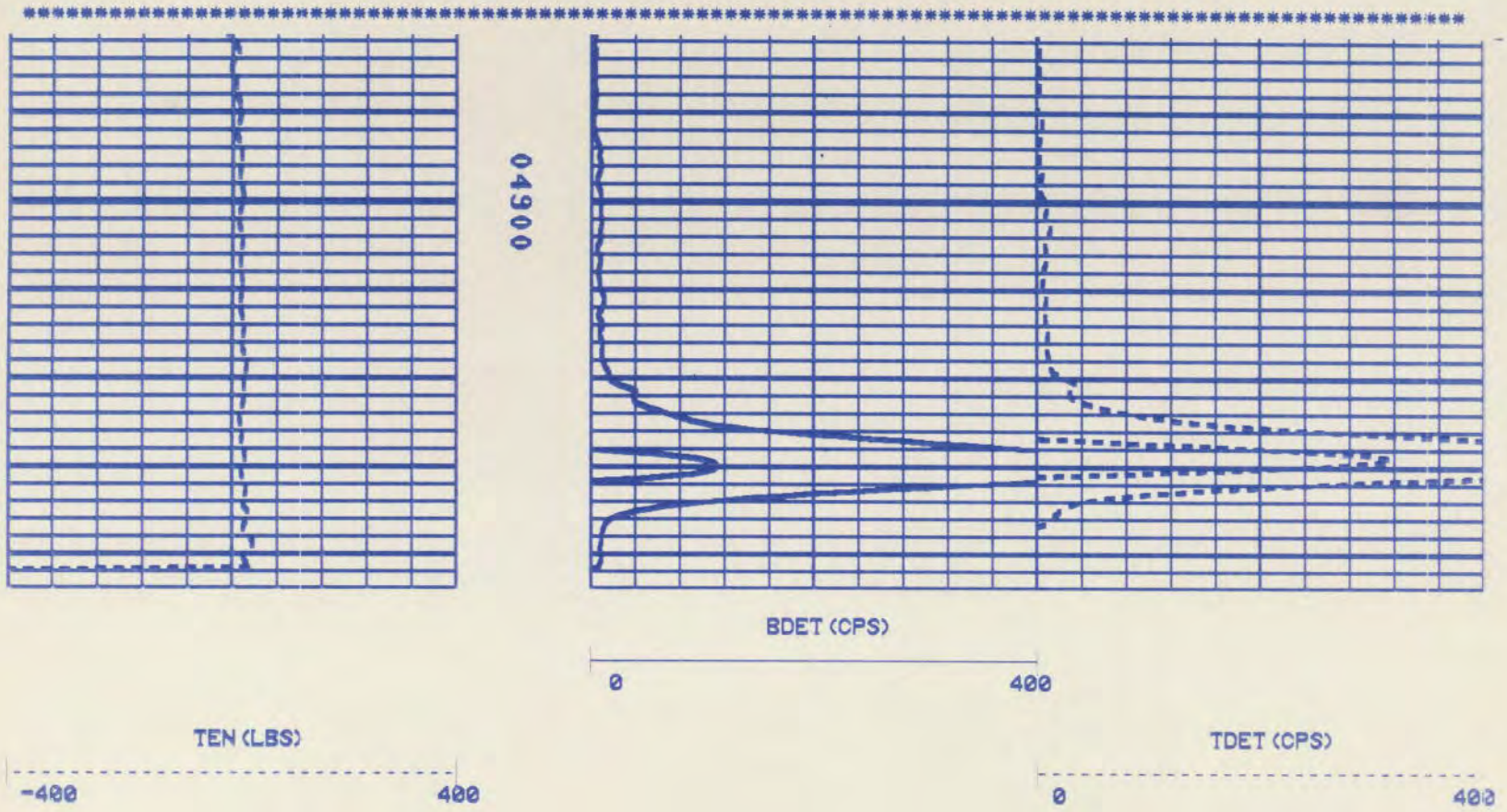
FILE: 10





FILE: 9

****



FILE: 8

****

RATE IS 20 GPM, & FIRST SLUG IS RELEASED AT 4900.

FIRST SLUG FILES BEGIN ABOVE.

FIRST SLUG FILES BEGIN ABOVE.

SECOND R.A.T. BACKGROUND LOG
PRIOR TO FIRST SLUG/ TME IS
1:05

****

FILE: 3

CURVE DELAY REPORT

CURVE	PHYS. DELAY	UNITS
TDET	5,0	FT,IN
BDET	0	FT,IN
CCL	8,0	FT,IN

PARAMETERS

*** NONE ***

DISPLAY SCALE CHANGES

*** NONE ***

COMPANY: GOLDEN STRATA
WELL NAME: WDW-45
SERVICE: F 150C FILE: 3 DATE: 11/20/92
REVISION: FSYS256 REV:G002 VER:2.0

RUN: 1
TRIP: 1
TIME: 12:47:07
MODE: RECORD

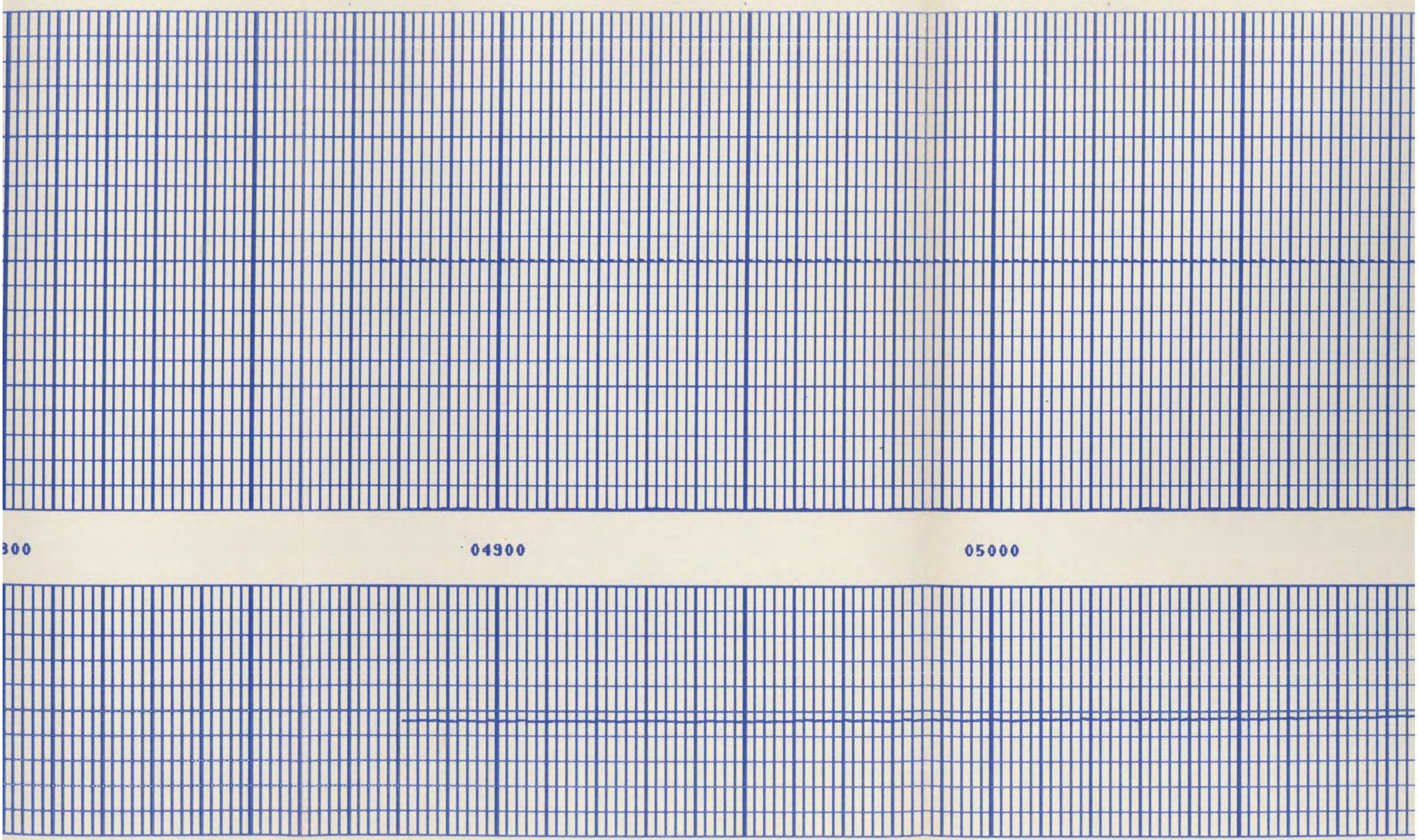
TEN (LBS)
-400 400

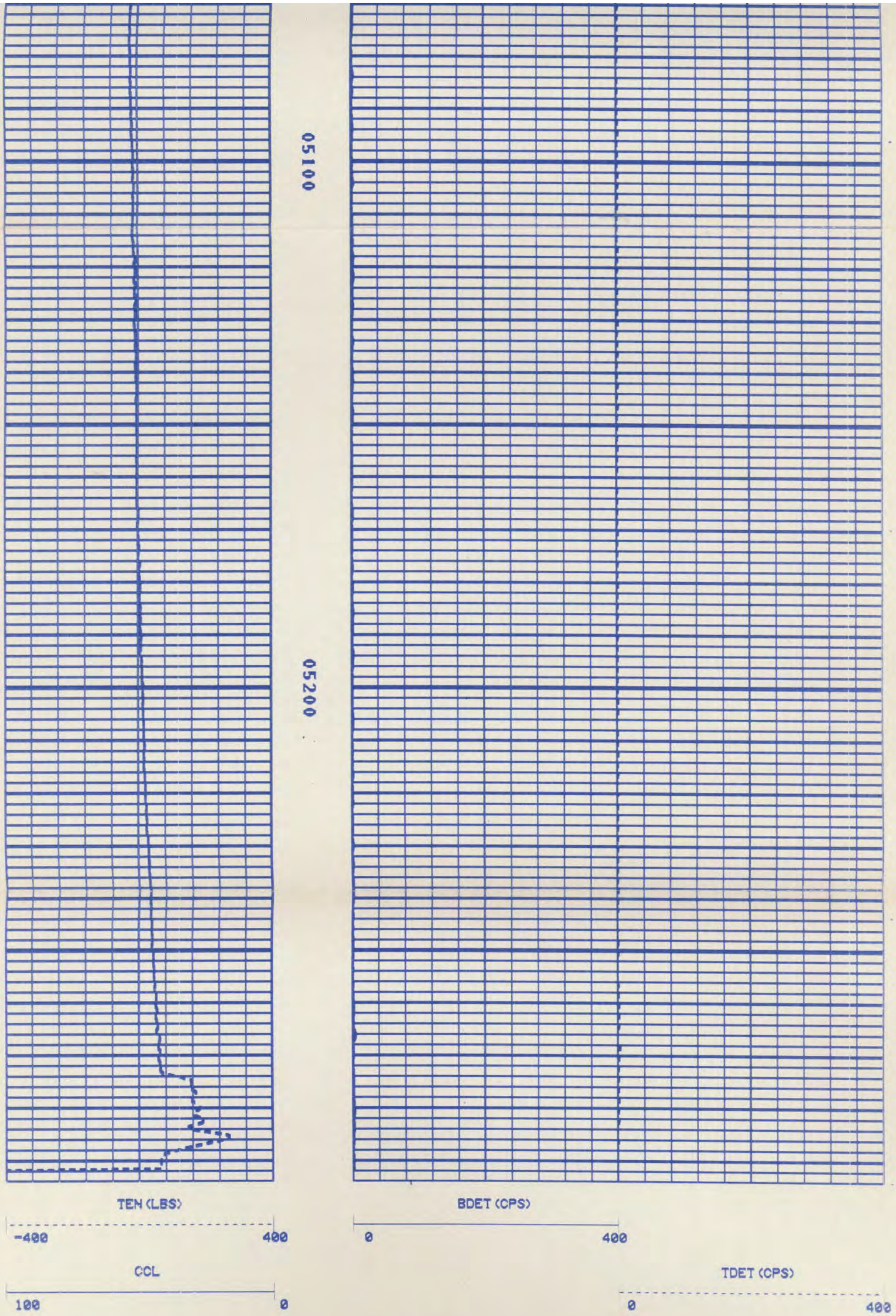
BDET (CPS)
0 400

CCL
100 0

TDET (CPS)
0 400

04800


300
04900
05000



FILE: 3 .

****

FIRST R.A.T. BASE LOG BELOW

FIRST R.A.T. BASE LOG BELOW
TIME IS 12:50

****

FILE: 2

CURVE DELAY REPORT

CURVE	PHYS. DELAY	UNITS
TDET	5,0	FT,IN
BDET	0	FT,IN
CCL	8,0	FT,IN

PARAMETERS

*** NONE ***

DISPLAY SCALE CHANGES

*** NONE ***

COMPANY: GOLDEN STRATA
WELL NAME: WDW-45
SERVICE: F 150C FILE: 2 DATE: 11/20/92
REVISION: FSYS256 REV:G002 VER:2.0

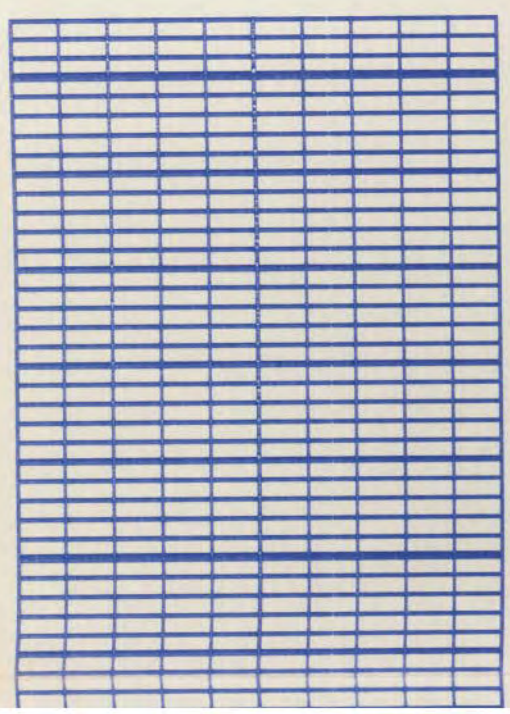
RUN: 1
TRIP: 1
TIME: 12:30:56
MODE: RECORD

TEN (LBS) -400 400

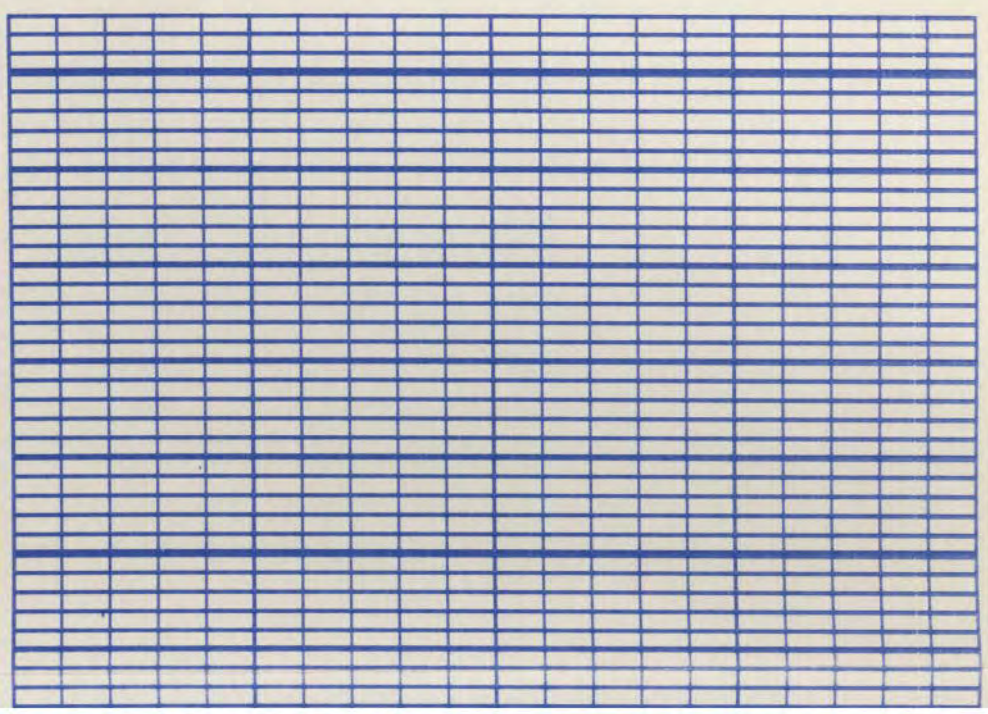
BDET (CPS) 0 400

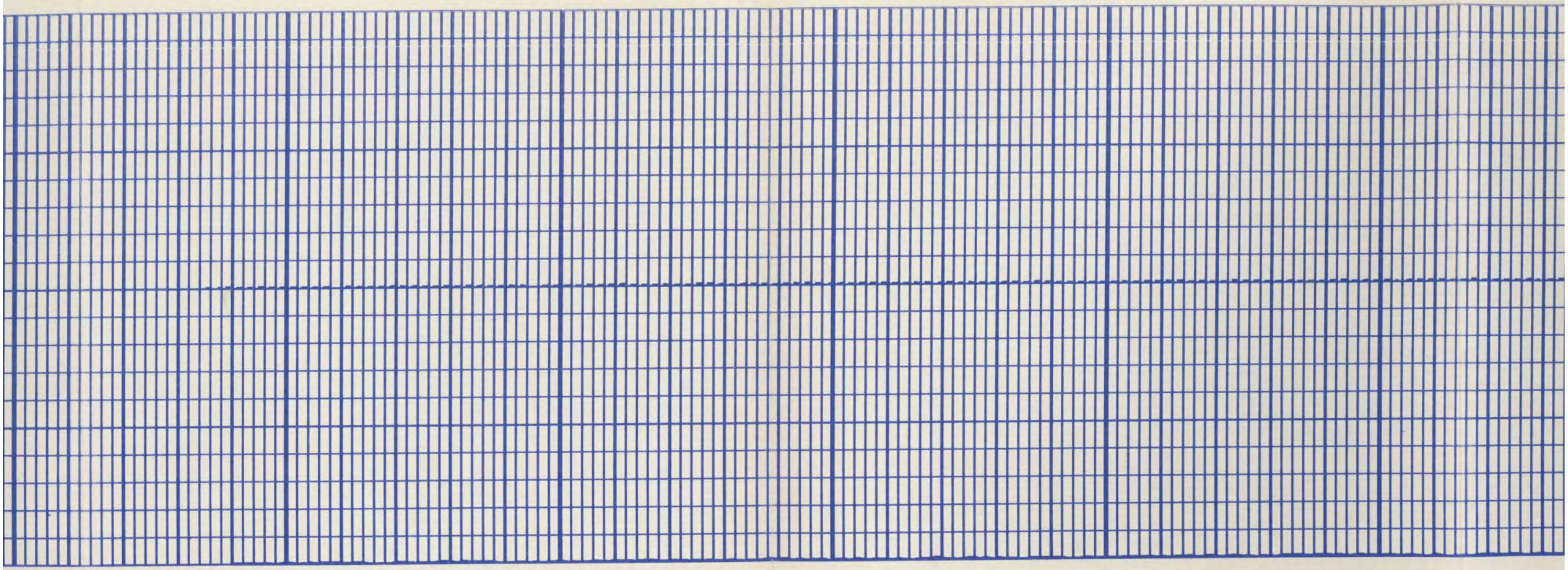
CCL 100 0

TDET (CPS) 0 400

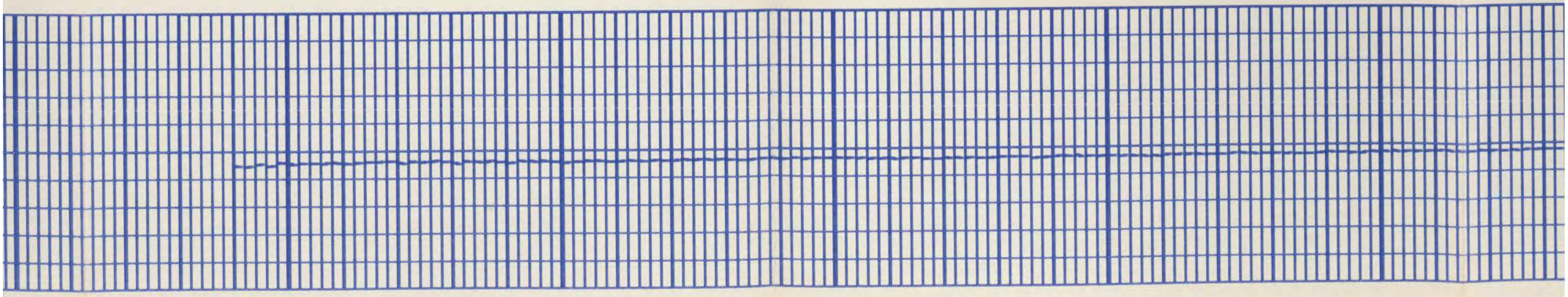


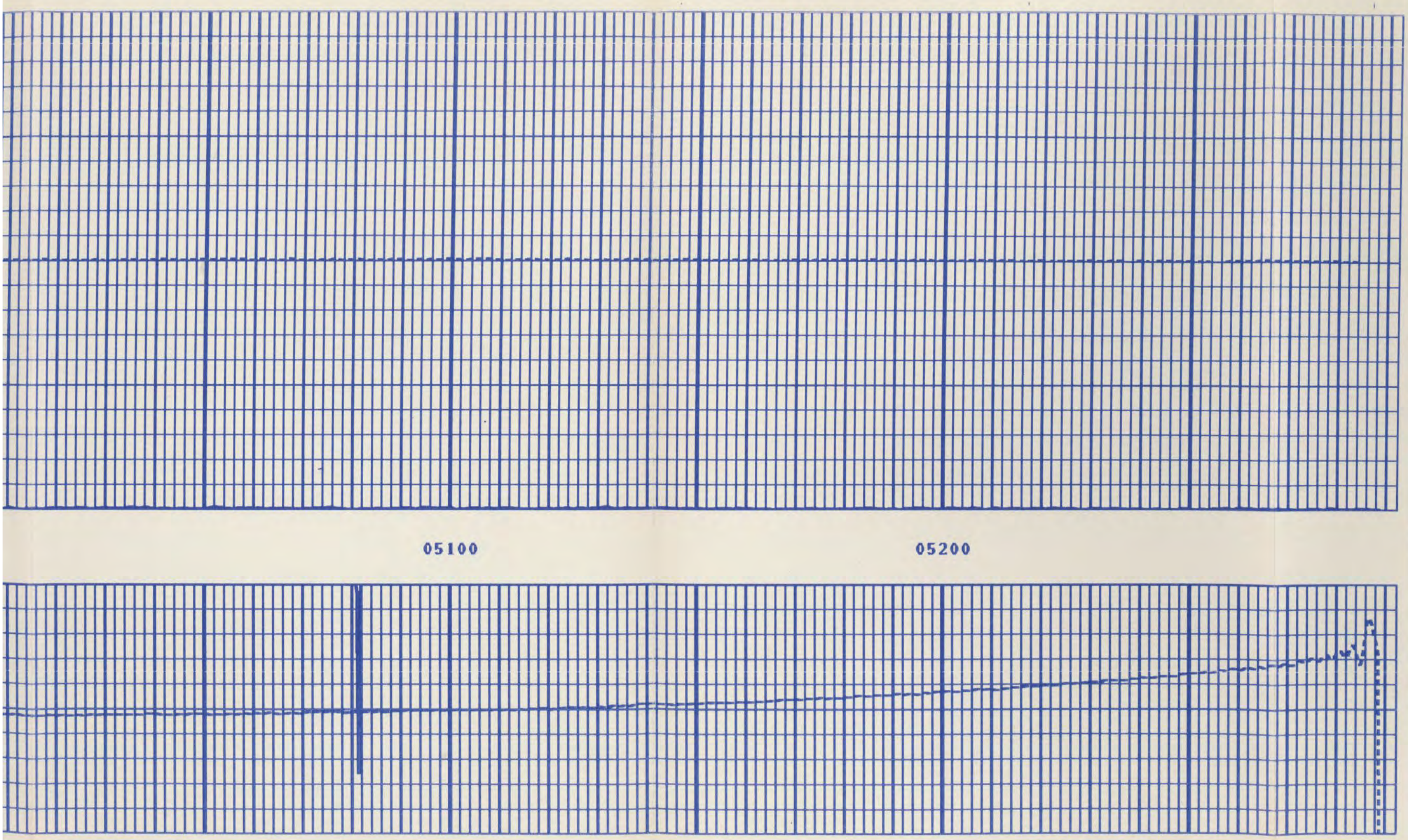
04700

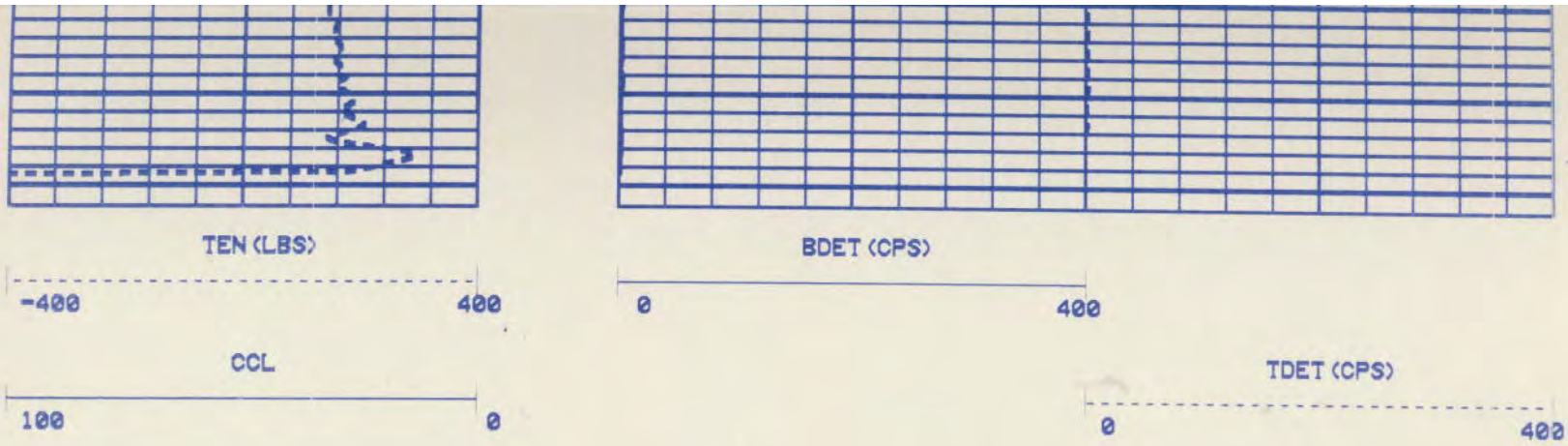




04800 04900 05000




05100
05200



FILE: 2

FILE: 1

****

A.P.I. GR TIE-IN BELOW
IDENTICAL WITH PRIOR
GR OF OCT. 91.

****

FILE: 4

CURVE DELAY REPORT

PARAMETERS

*** NONE ***

DISPLAY SCALE CHANGES

*** NONE ***

RUN: 1

TRIP: 1

SERVICE: F 159P FILE: 4 DATE: 11/20/92 TIME: 12:02:12

RUN: 1

TRIP: 1

SERVICE: F 159P FILE: 4 DATE: 11/20/92 TIME: 12:02:12

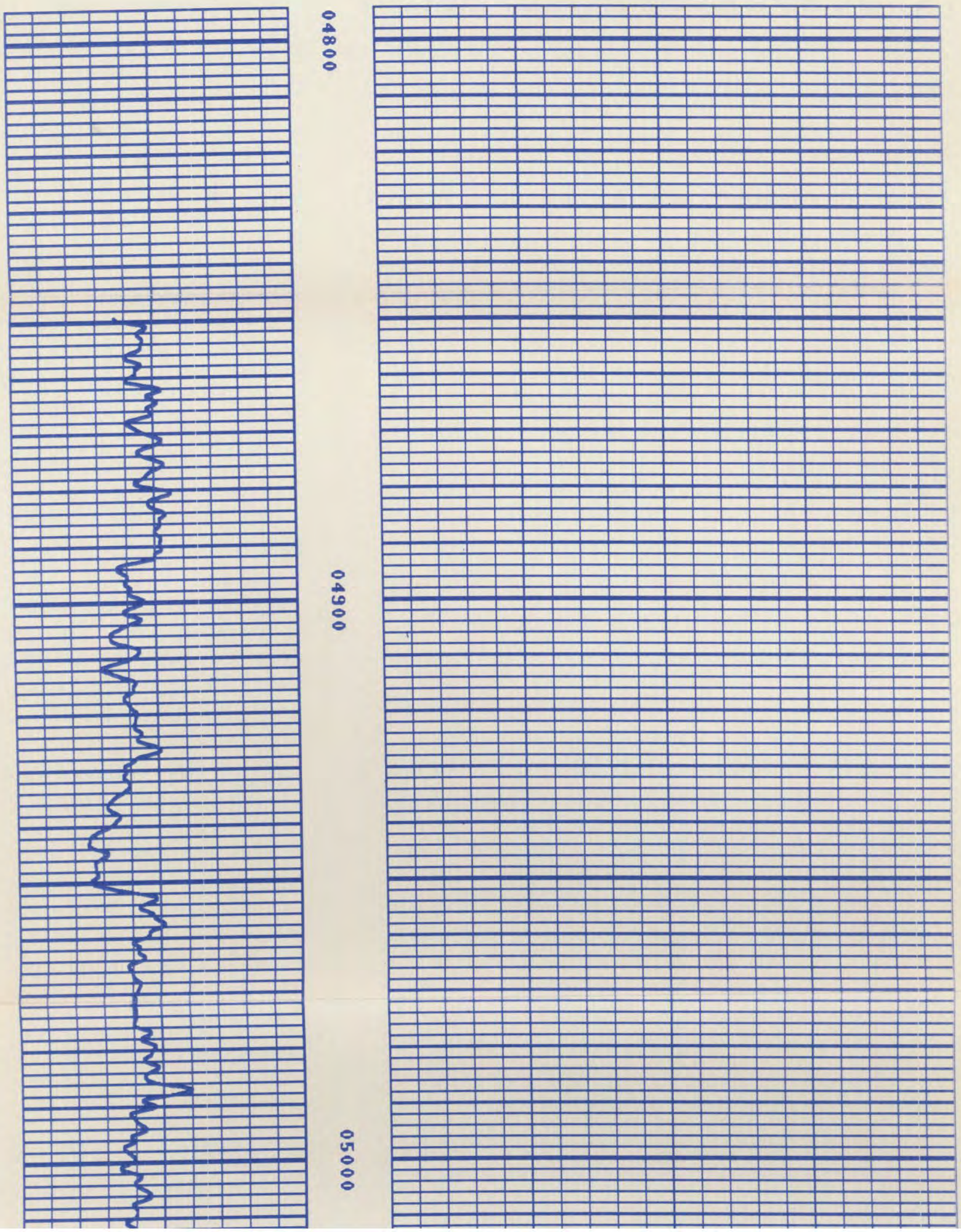
REVISION: FSYS256 REV:G002 VER:2.0 MODE: RECORD

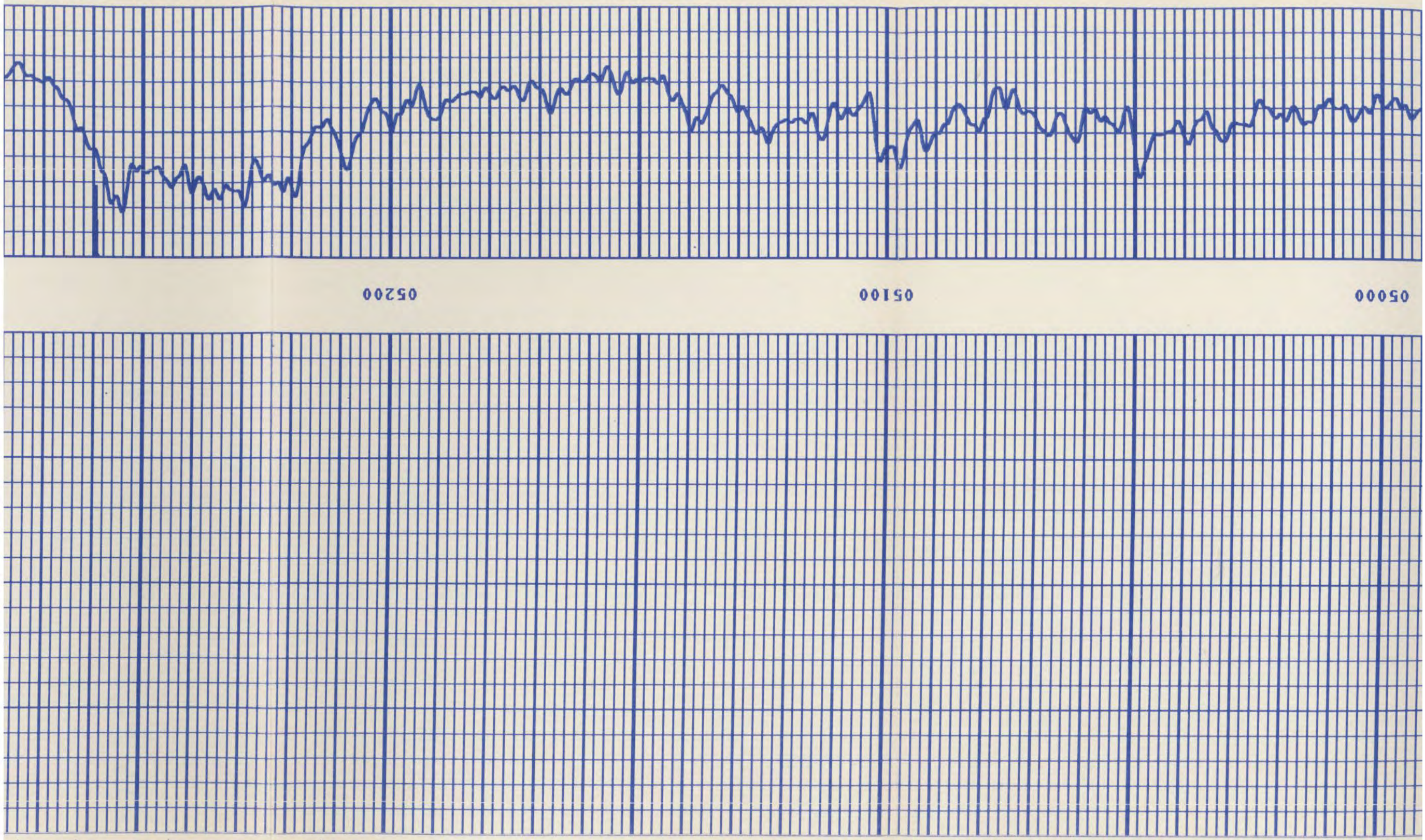
CCL

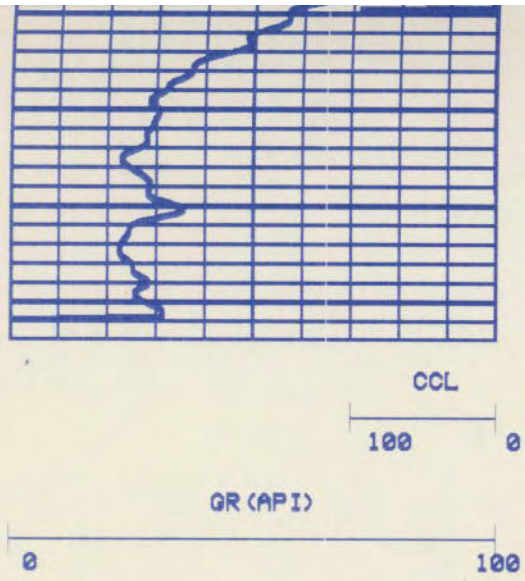
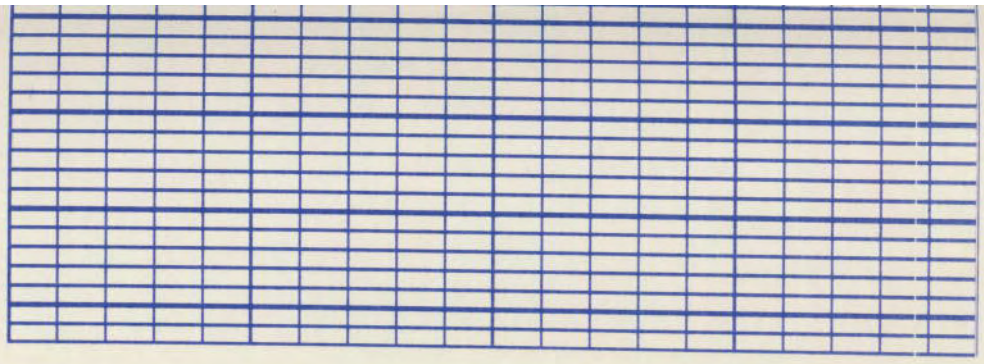
100 0

GR (API)

0 100




05000
05100
05200


CCL
100
0
GR (API)
0
100