

CARDINAL SURVEYS COMPANY

INJECTION PROFILE

Company GANDY CORPORATION		Well NEW MEXICO STATE "T" NO. 2	
Field		County LEA	
Location		State NEW MEXICO	
Permanent Datum Log Measured From		G.L.	
Drilling Measured From		Elevation	
4290' FEL & 500' FWL SEC. 6, TWP 16-E		File Number 16,567	
Date		07-22-2004	
Depth Driller		10,696'	
Plug Back		7722'	
Depth Logger		7393'	
Bottom Logged Interval		7393'	
Top Log Interval		4500'	
Recorded By		NEWMAN	
Witnessed By		MR. GARNER	
Base Location		ODESSA, TX	
Unit No.		8723	
Equipment Operator		FISCHER	
Type Of Well		SMD	
Status		INJECTION	
Type Of Fluid		WATER	
Fluid Level		FULL	
Rate		4 BPM	
Pressure		130 PSI	
Run Number		Borehole Record	
Bit		From	
To		Size	
3 1/2"		Weight	
SURFACE		From	
47'40"		To	
Casing Record		Tubing Record	
Surface String		Size	
Weight		Top	
Bottom		Bottom	
Intermed. String		SURFACE	
Production String		10,696'	

Fold Here >>>

FILE

NO. 2

W MEXICO

File Number

16,567

Elevation

K.B.
D.F.
G.L.

To
4740'

Bottom

10,696'

<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

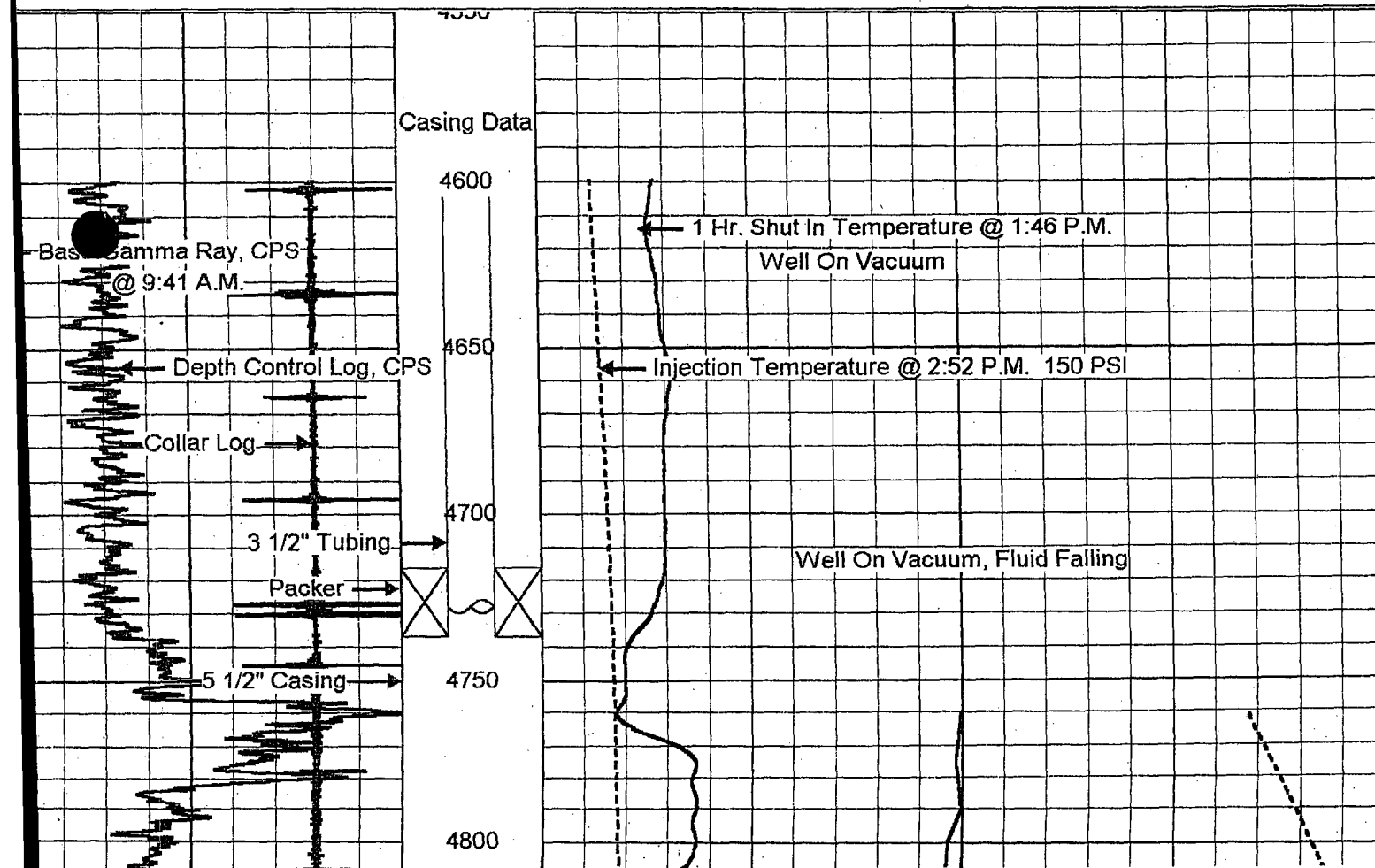
Comments

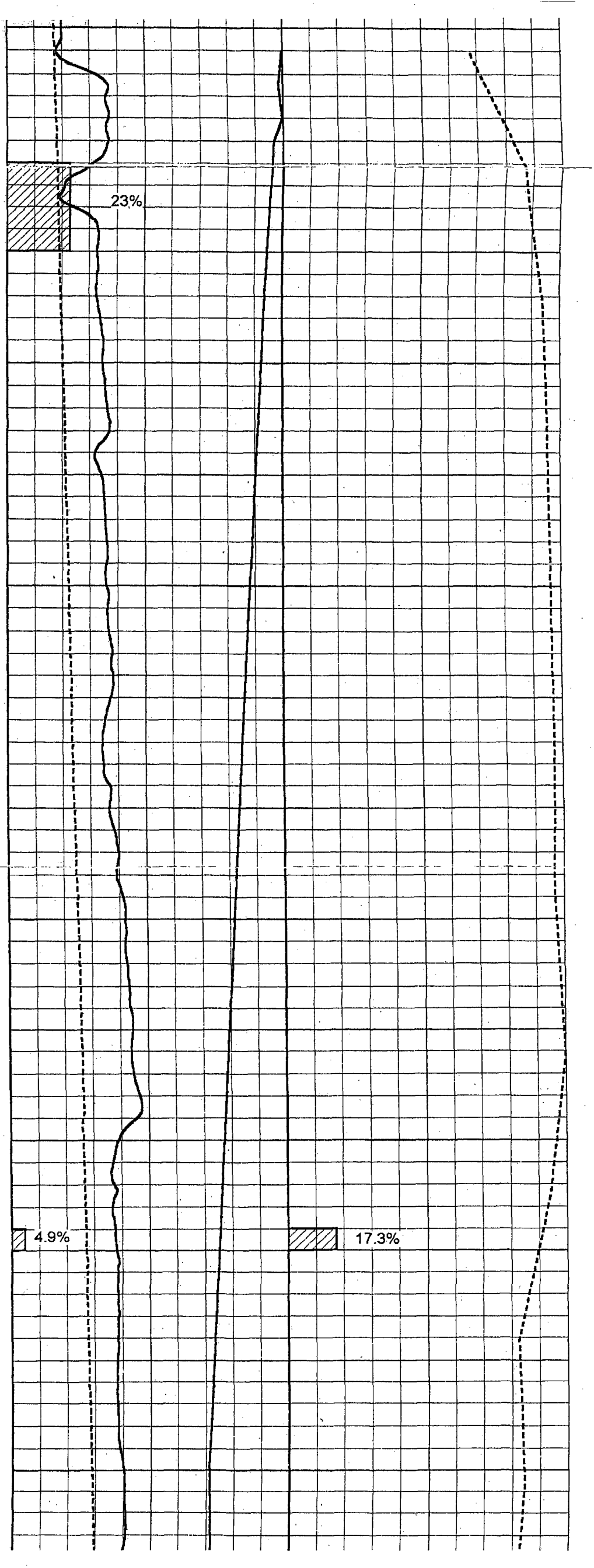
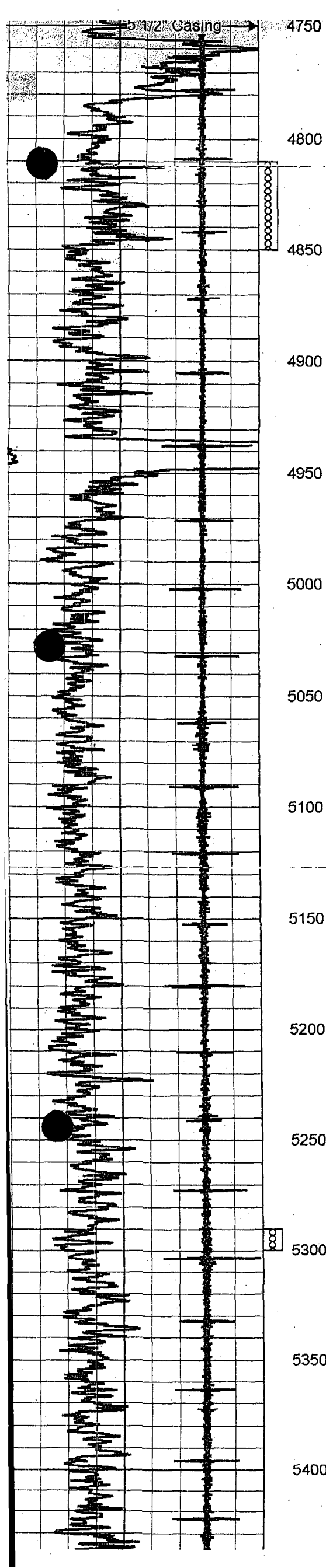
WITNESS BY: DALE GANDY, DEVON GARNER w/ GANDY CORPORATION AND BILL PRICHARD w/ NM OCD
TOOL CONFIGURATION: TEMP, DET, CCL, SB, SB, EJECT. (1 3/8") SCINTILLATION DETECTOR
PERFORATIONS: 4810'-50', 5290'-5300', 6210'-60', 6300'-60', 6440'-55', 6610'-30', 6770'-6880'

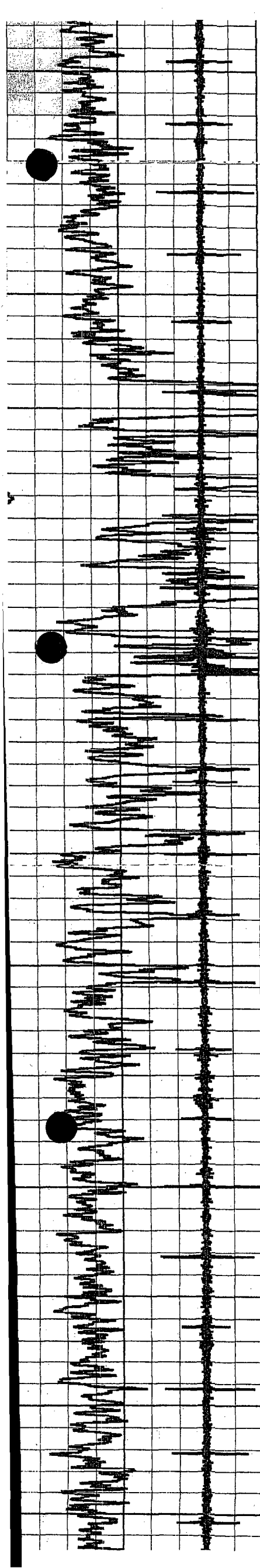
CONCLUSION: Reported injection rate 4 BPM @ 150 PSI.
Averaged slug no's. 12-15 to obtain 100% rate. Used rate obtained, 4179.1 BPD, to calculate velocity profile.
Averaged runs 1 & 2 to obtain 100% area. Used runs 9-13, 16-19, 21 and 23 to plot intensity profile.
Intensity profile and upward channel check do not show a channel above the top perforations @ 4810'-50'.
Intensities indicate movement down from 6260'.
No flow inside pipe @ 6363'. Slug no 2.
Temperatures indicate communication down to 6330'.
No channel up from top of perms indicated. Slug no. 12.
No packer leak indicated. Slug no. 16.

Database File: c:\warrior\data\sc54455.db
Dataset Pathname: merge1
Presentation Format: sc54455.prs
Dataset Creation Date: Tue Jul 20 13:32:53 2004
Charted by: Depth in Feet scaled 1:600

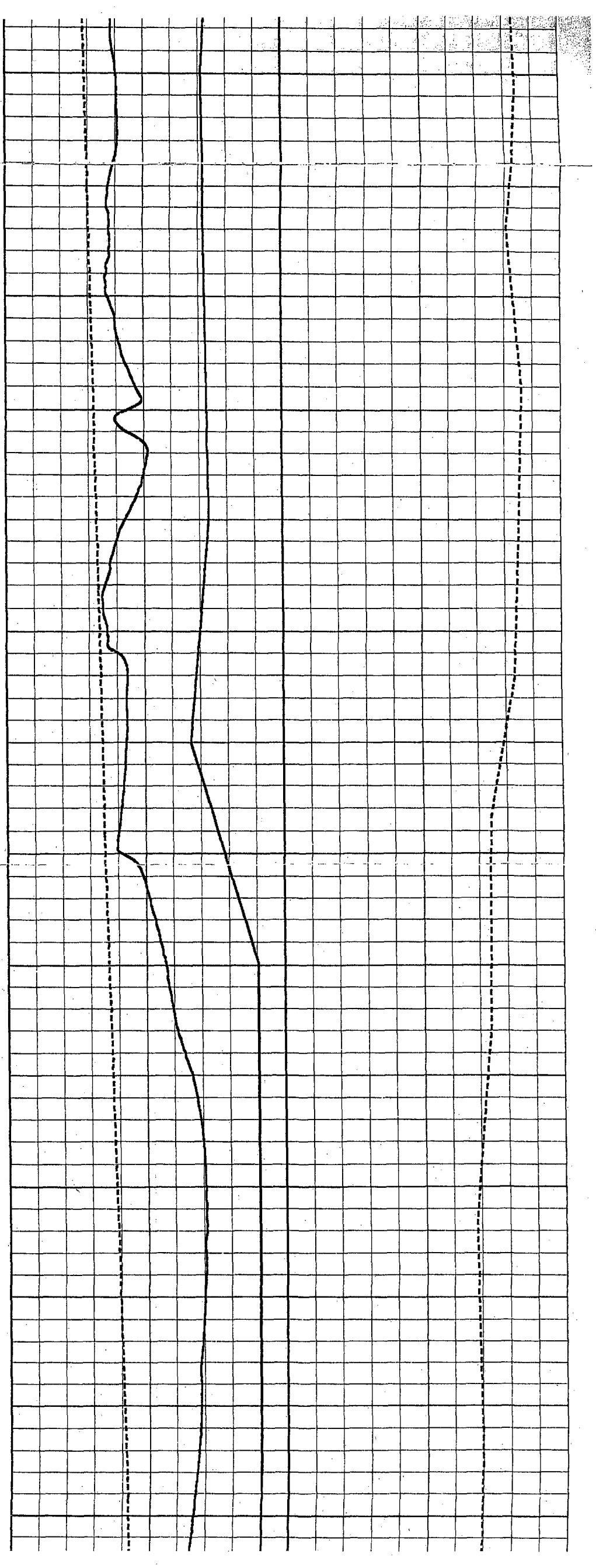
Collar Log	2	0	Velocity Flow, (b/d)	4230	0	Intensity Flow, (%)	100
Base Gamma Ray, CPS	1000	0	Velocity Loss, %	100	0	Intensity Loss, %	100
Depth Control Log, CPS	45	92	1 Hr. Shut In Temperature (degF)				112
		92	Injection Temperature (degF)				112

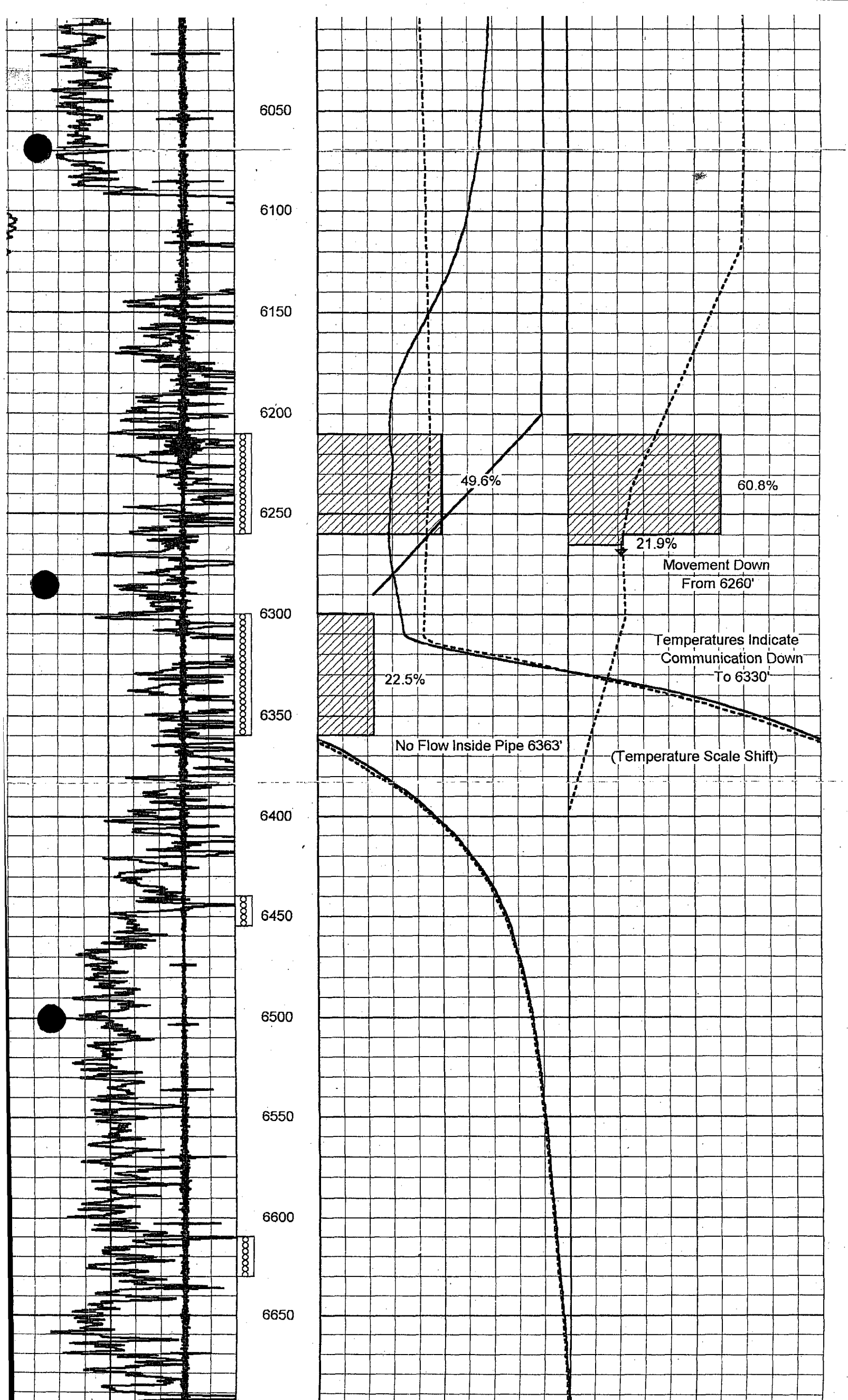


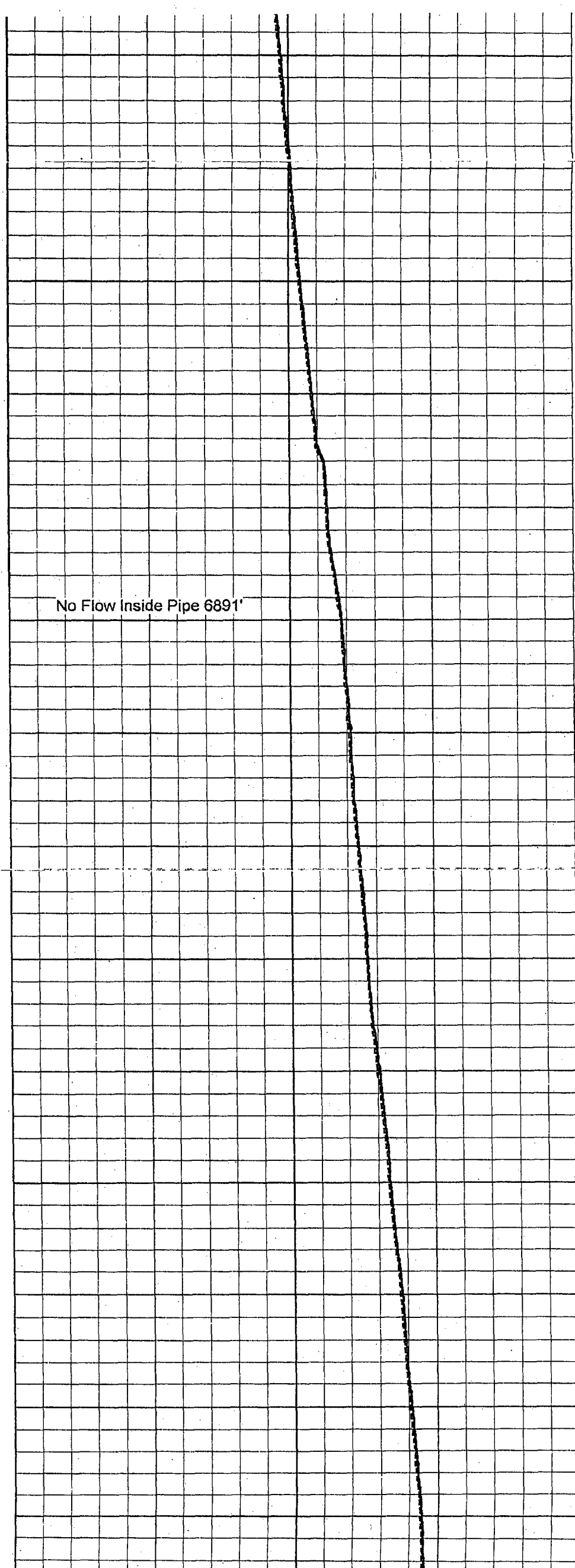
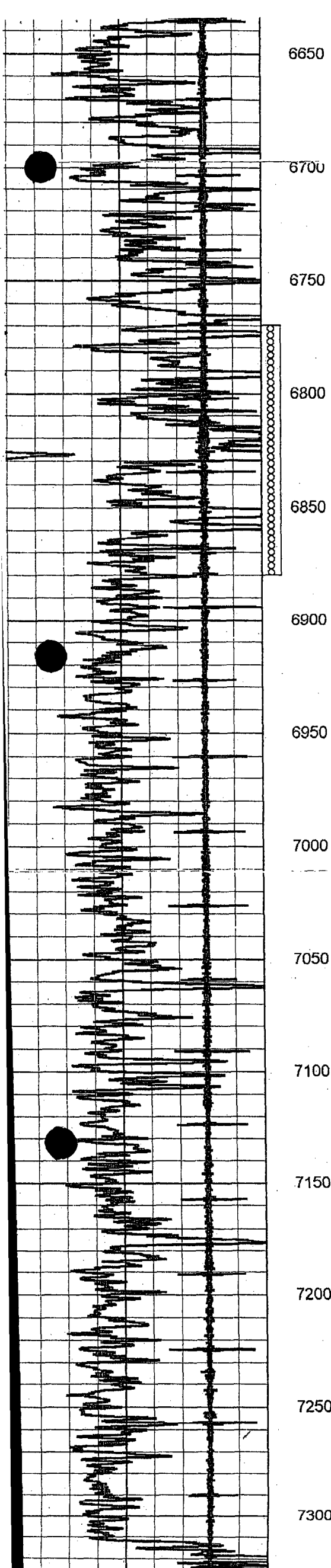


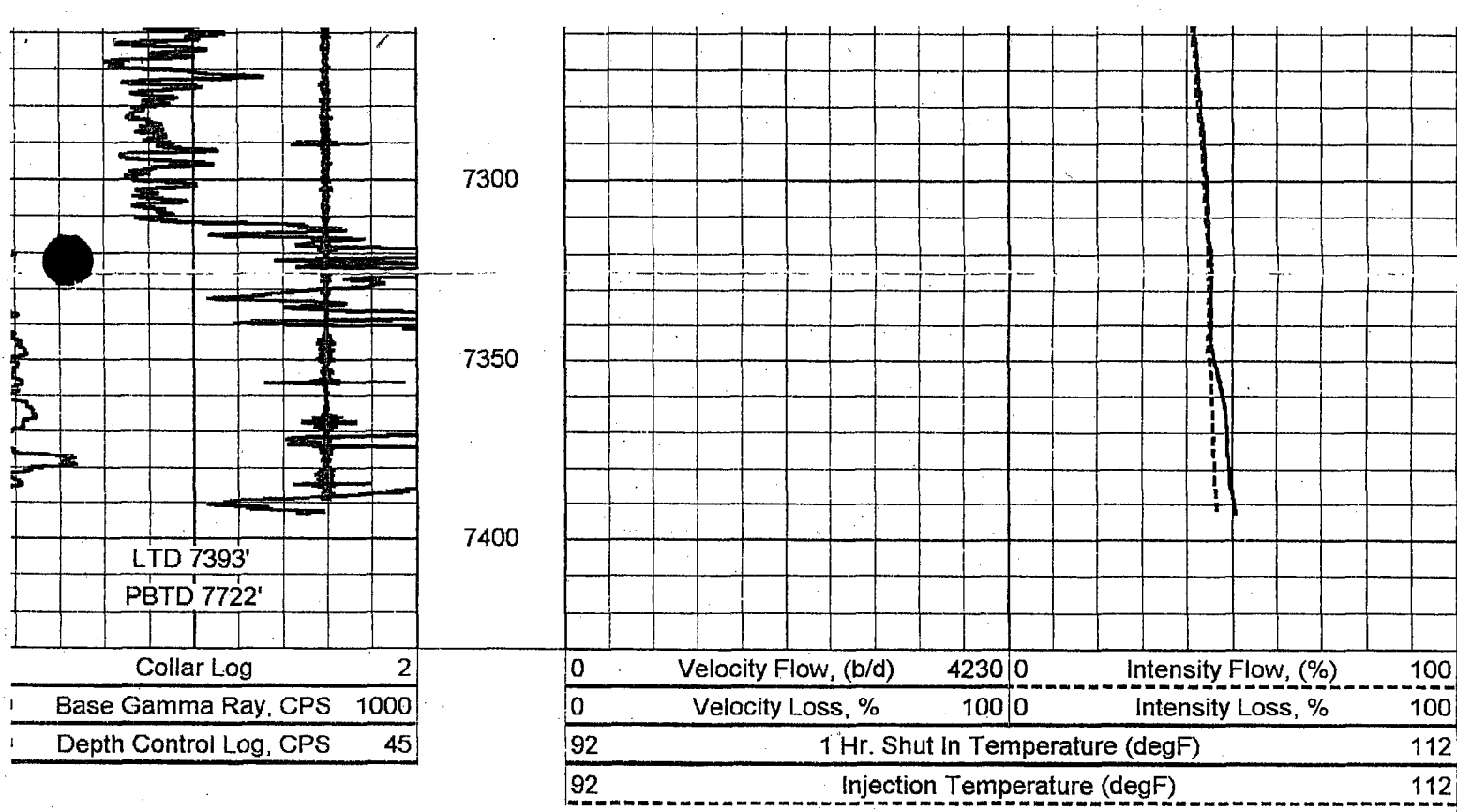


5400
5450
5500
5550
5600
5650
5700
5750
5800
5850
5900
5950
6000
6050









Company:
Well:
File: c:\warrior\data\sc54455.db
Dataset: field/well/run2/_tracer/_shottabl_1
Reference Rate: 4179.1 b/d

VELOCITY RESULTS

Depth (ft)	Time	D Space (ft)	D Time (sec)	Csg ID (in)	Flow (b/d)	Flow (%)	Delta (%)	Comment
4715.35	12:41:07	17.38	2.66	0.00	5570.61	100.00		Slug #17 Pkr. Ck.
4760.23	12:34:59	17.38	7.80	4.95	4226.61	100.00	0.00	Slug #15 100%
4775.44	12:34:02	17.38	7.90	4.95	4172.79	99.85	0.15	Slug #14 100%
4790.33	12:32:49	17.38	7.80	4.95	4226.61	100.00	-0.15	Slug #13 100%
4800.37	12:29:42	17.38	8.06	4.95	4090.38	97.88	2.12	Slug #12 Ch. Ck.
5280.33	12:16:23	17.38	10.24	4.95	3219.62	77.04	20.84	Slug #11
5400.15	12:14:45	17.38	10.94	4.95	3013.30	72.10	4.94	Slug #10
5600.51	12:12:20	17.38	10.60	4.95	3109.89	74.42	-2.31	Slug #9
5700.26	12:11:04	17.38	11.70	4.95	2817.62	67.42	6.99	Slug #8
5800.14	12:09:32	17.38	8.60	4.95	3833.07	91.72	-24.30	Slug #7
6000.43	12:07:46	17.38	8.60	4.95	3833.07	91.72	0.00	Slug #6
6200.47	12:04:40	17.38	8.70	4.95	3789.19	90.67	1.05	Slug #5
6290.35	12:02:45	17.38	35.10	4.95	939.23	22.47	68.20	Slug #4

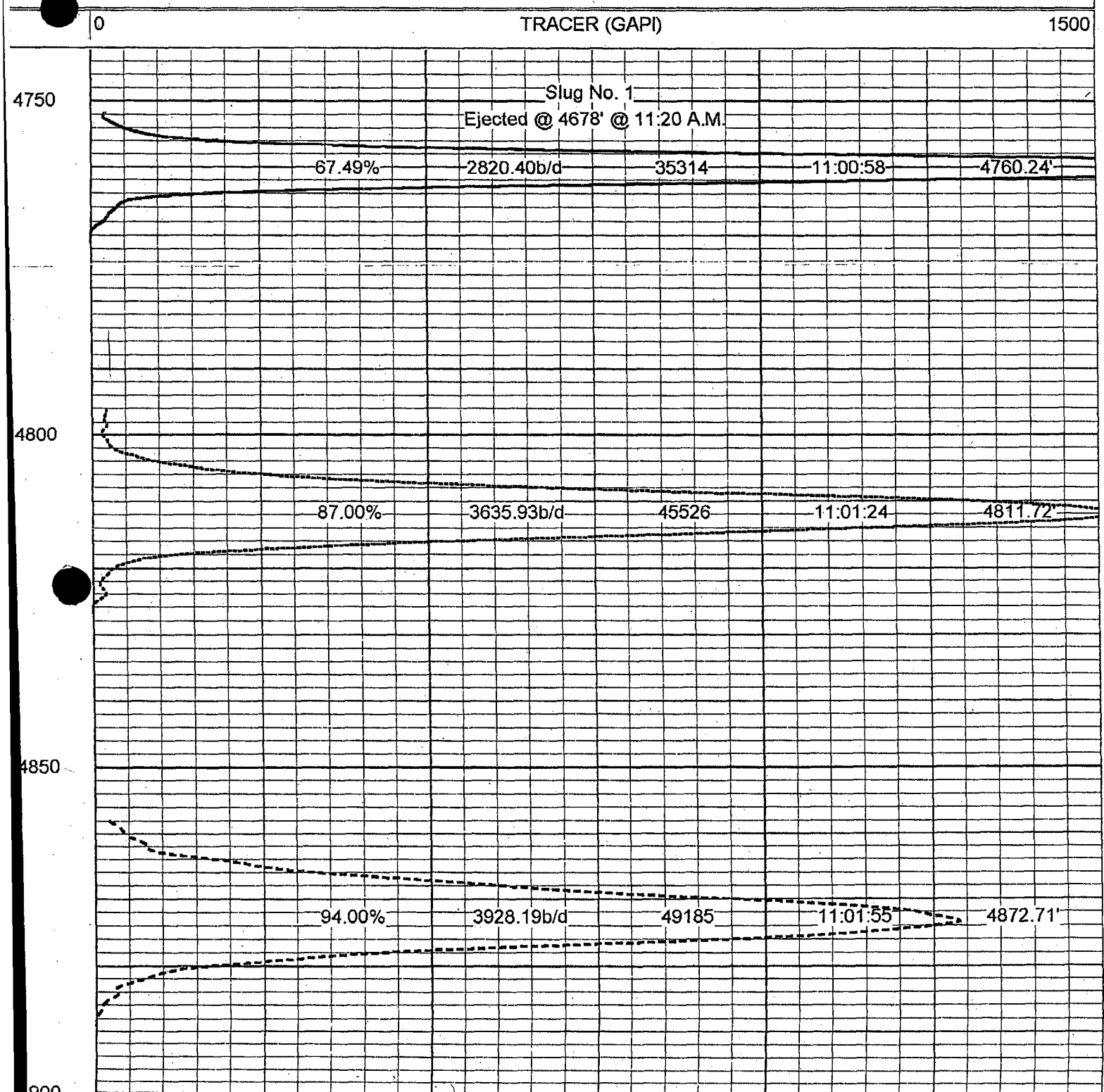
Company:
Well:
File: c:\warrior\data\sc54455.db
Dataset: field/well/run1/_tracer/_shottabl_1
Reference Rate: 4179.1 b/d

TRACER RESULTS

Depth (ft)	Time	Integration	Flow (%)	Delta (%)	Comment
4760.24	11:01:04	35314.30	67.49		
4811.72	11:01:31	45525.60	87.00	-19.51	
4872.71	11:02:01	49185.10	94.00	-6.99	
4930.71	11:02:32	49948.90	95.46	-1.46	
4996.71	11:03:08	50453.70	96.42	-0.96	
5067.96	11:03:44	50796.50	97.08	-0.66	
5136.45	11:04:20	50586.00	96.67	0.40	
5210.98	11:04:59	52326.70	100.00	-3.33	
5272.72	11:05:40	40287.70	84.28	5.60	

4972.71	11:02:31	49948.90	94.00	-0.99	
4930.71	11:02:32	49948.90	95.46	-1.46	
4996.71	11:03:08	50453.70	96.42	-0.96	
5067.96	11:03:44	50796.50	97.08	-0.66	
5136.45	11:04:20	50586.00	96.67	0.40	
5210.98	11:04:59	52326.70	100.00	-3.33	
5273.73	11:05:40	49387.70	94.38	5.62	
5311.71	11:06:23	43280.40	82.71	11.67	
5405.99	11:07:06	44208.50	84.49	-1.77	
5469.96	11:07:47	42378.10	80.99	3.50	
5540.45	11:08:34	45141.60	86.27	-5.28	
5603.70	11:09:18	44608.10	85.25	1.02	
5671.74	11:10:03	43620.90	83.36	1.89	
5734.49	11:10:47	38852.20	74.25	9.11	
5828.49	11:11:38	38675.10	73.91	0.34	
5916.23	11:12:25	35730.90	68.28	5.63	
6014.99	11:13:18	36587.70	69.92	-1.64	
6116.95	11:14:16	36279.80	69.33	0.59	
6237.21	11:15:41	13199.90	25.23	44.11	
6262.49	11:16:40	11464.00	21.91	3.32	
6301.47	11:18:06	12040.00	23.01	-1.10	
6397.00	11:19:31	232.57	0.44	22.56	

Database File: c:\warrior\data\sc54455.db
 Dataset Pathname: _profile2_
 Presentation Format: tropro1.prs
 Dataset Creation Date: Thu Jul 22 16:19:31 2004
 Charted by: Depth in Feet scaled 1:240



49

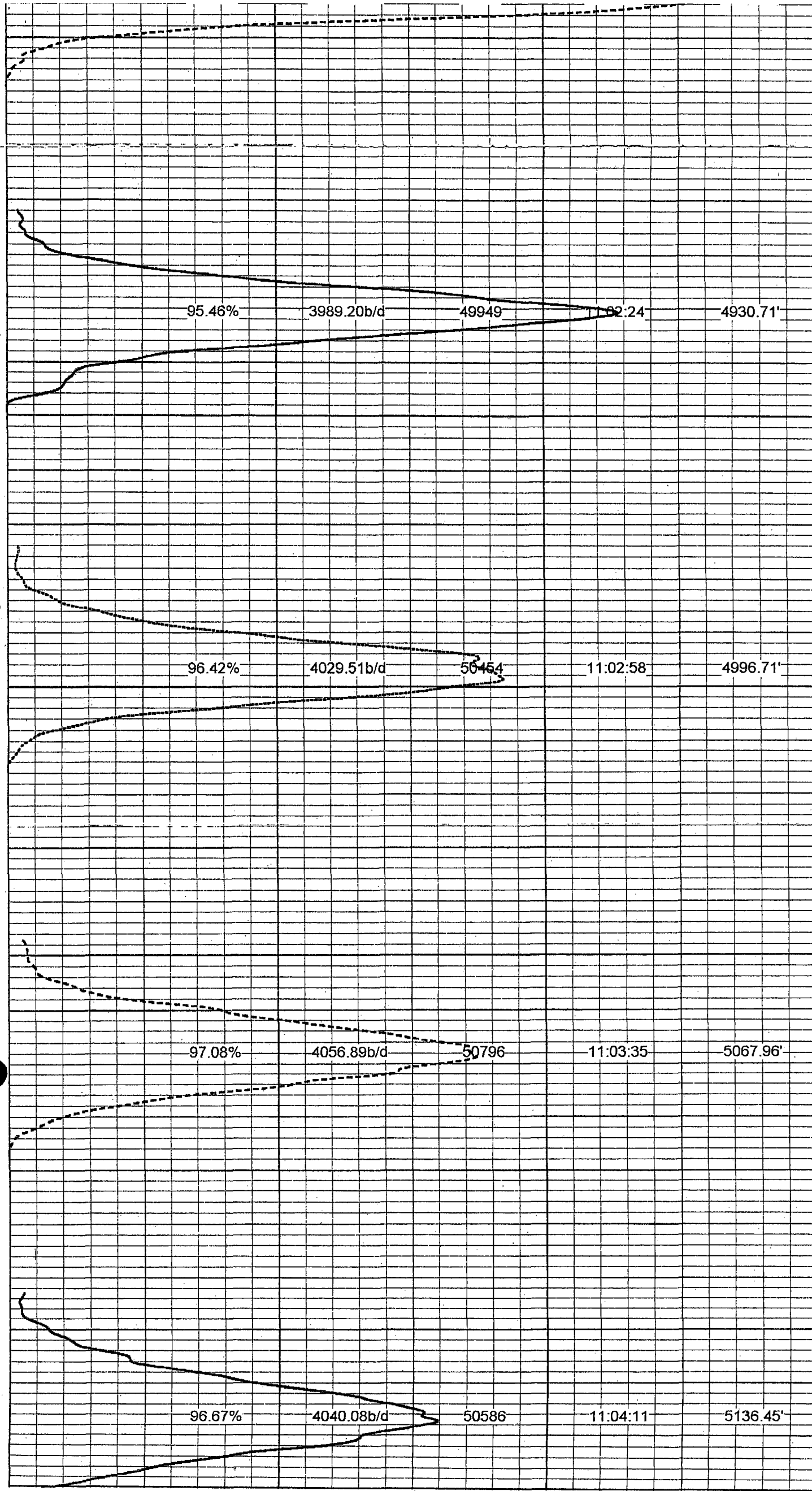
4950

5000

5050

5100

5150



51

96.67%

4040.08b/d

50586

11:04:11

5136.45'

5200

100.00%

4179.10b/d

52327

11:04:50

5210.98'

5250

94.38%

3944.38b/d

49388

11:05:28

5273.73'

5300

82.71%

3456.61b/d

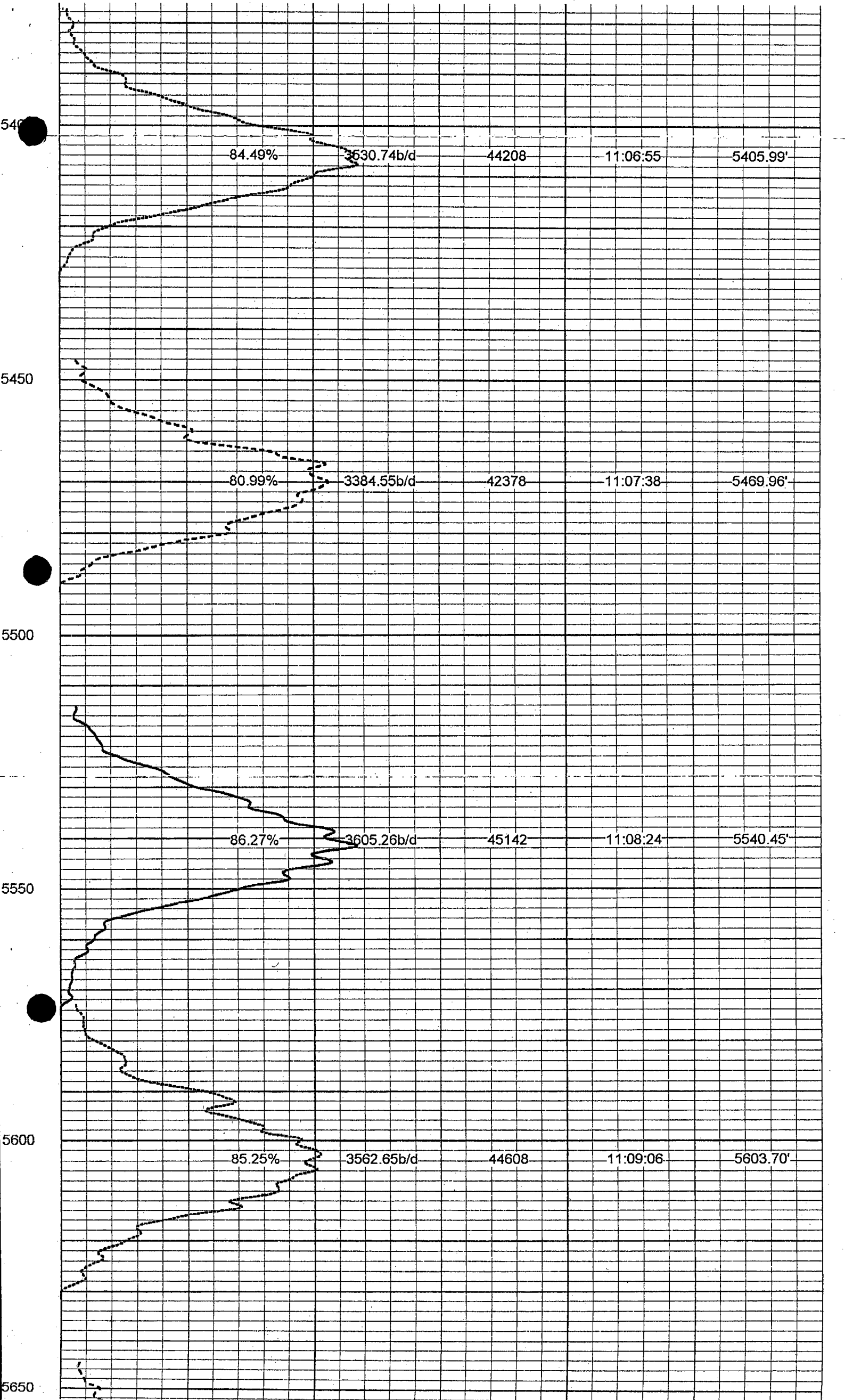
43280

11:06:12

5341.71'

5350

400



5650

83.36%

3483.81b/d

43621

11:09:53

5671.74'

5700

74.25%

3102.95b/d

38852

11:10:34

5734.49'

5750

5800

73.91%

3088.81b/d

38675

11:11:27

5828.49'

5850

5900

5900

5950

6000

6050

6100

6150

68.28%

2853.67b/d

35731

11:12:13

5916.23'

69.92%

2922.10b/d

36588

11:13:05

6014.99'

69.33%

2897.51b/d

36280

11:14:02

6116.95'

150

200

250

300

350

400

25.23%

1054.22b/d

13200

11:15:33

6237.21'

Movement Down From 6260'

21.91%

915.58b/d

11464

11:16:26

6262.49'

23.01%

961.58b/d

12040

11:17:54

6301.47'

0.44%

18.57b/d

233

11:19:08

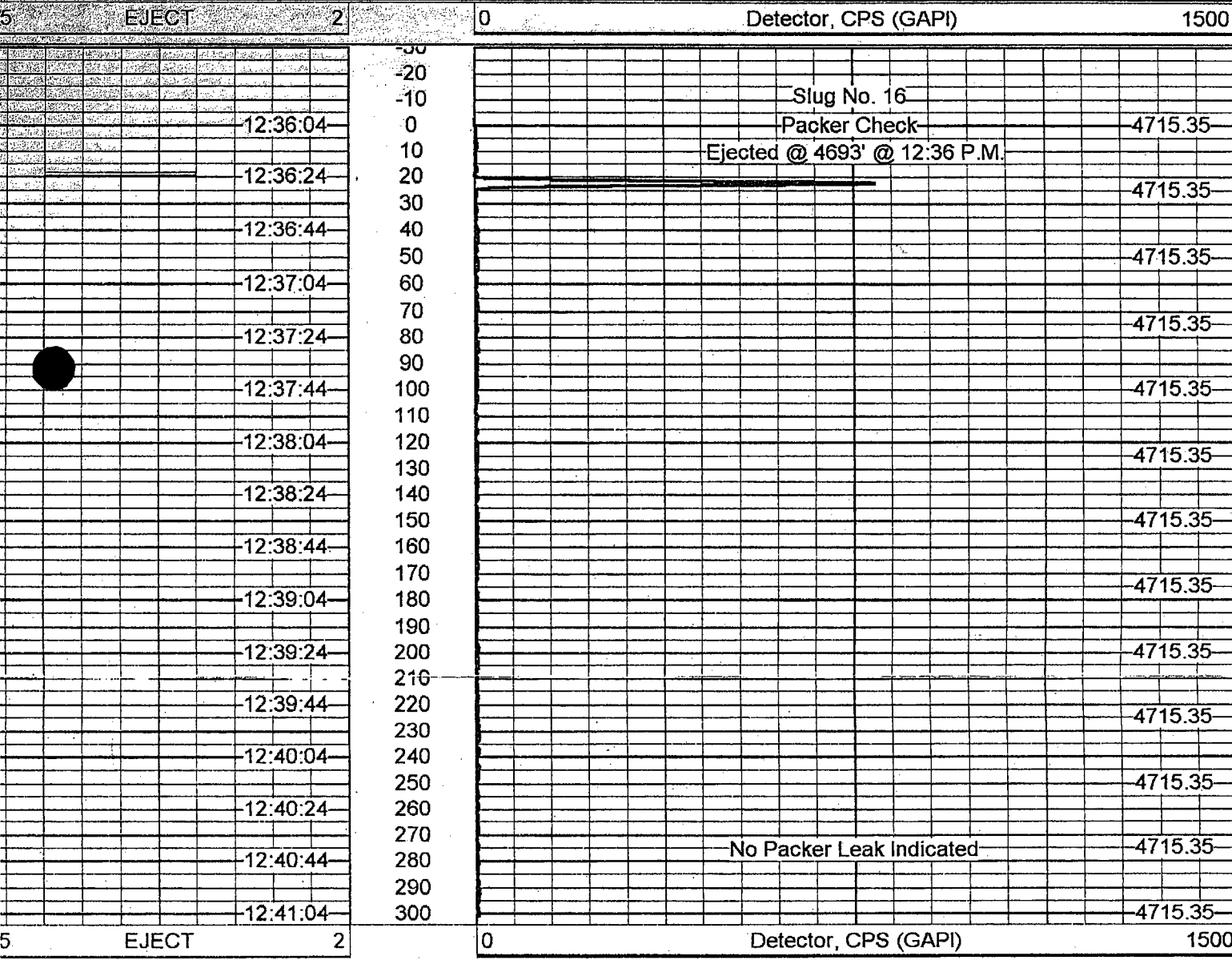
6397.00'

6400

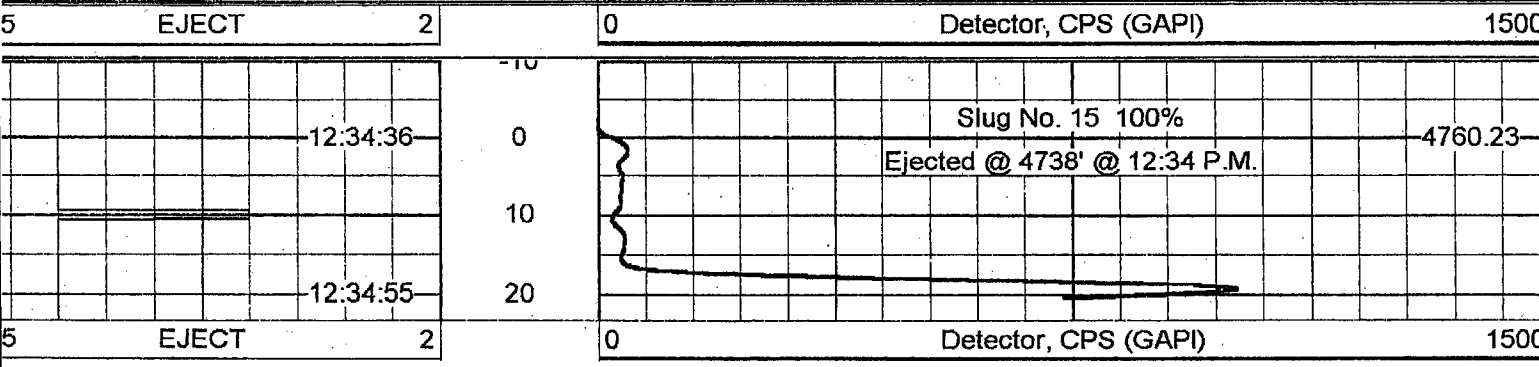
0.44% 18.57b/d 233 11:19:08 6397.00'

0 TRACER (GAPI) 1500

Database File: c:\warrior\data\sc54455.db
Dataset Pathname: run2\vel14
Presentation Format: tracer.prs
Dataset Creation Date: Tue Jul 20 12:36:03 2004
Charted by: Time scaled 60"/hour



Database File: c:\warrior\data\sc54455.db
Dataset Pathname: run2\vel13
Presentation Format: tracer.prs
Dataset Creation Date: Tue Jul 20 12:34:36 2004
Charted by: Time scaled 144"/hour



Database File: c:\warrior\data\sc54455.db
Dataset Pathname: run2\vel12

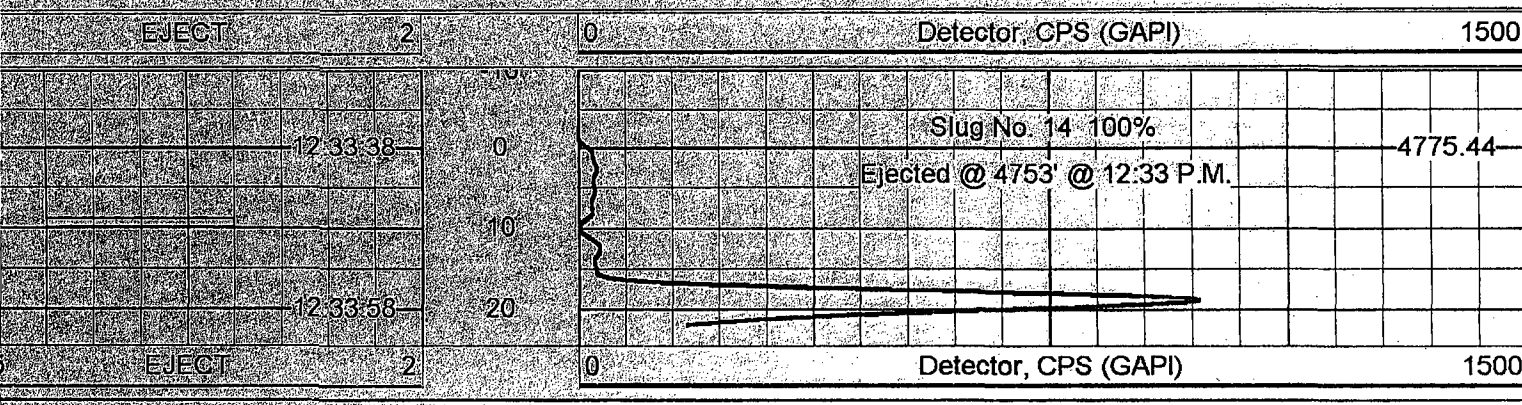
Database File: c:\warrior\data\sc54455.db

Dataset Pathname: run2\vel12

Representation Format: tracer.prs

Dataset Creation Date: Tue Jul 20 12:33:37 2004

Started by: Time scaled 144"/hour



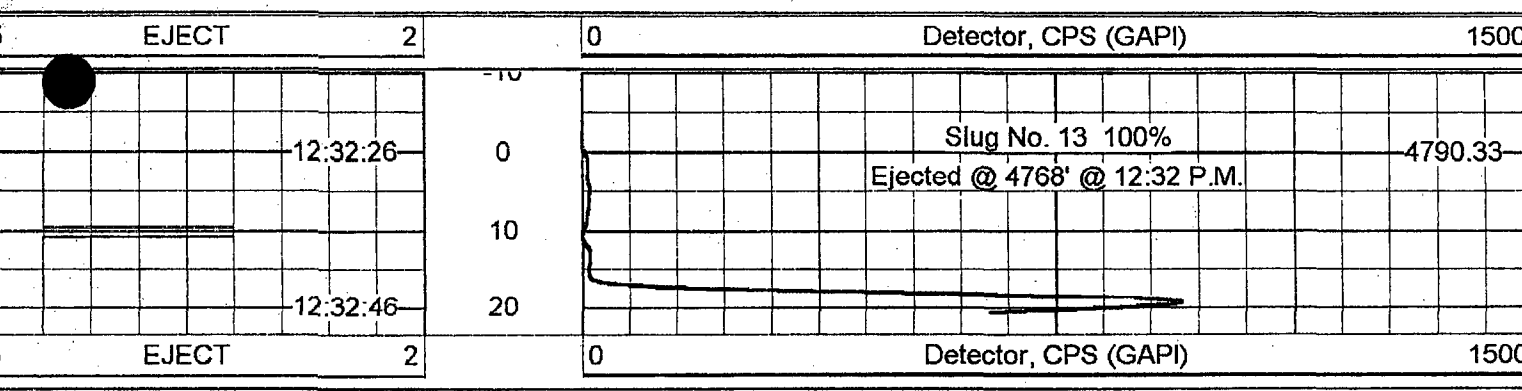
Database File: c:\warrior\data\sc54455.db

Dataset Pathname: run2\vel11

Representation Format: tracer.prs

Dataset Creation Date: Tue Jul 20 12:32:26 2004

Started by: Time scaled 144"/hour



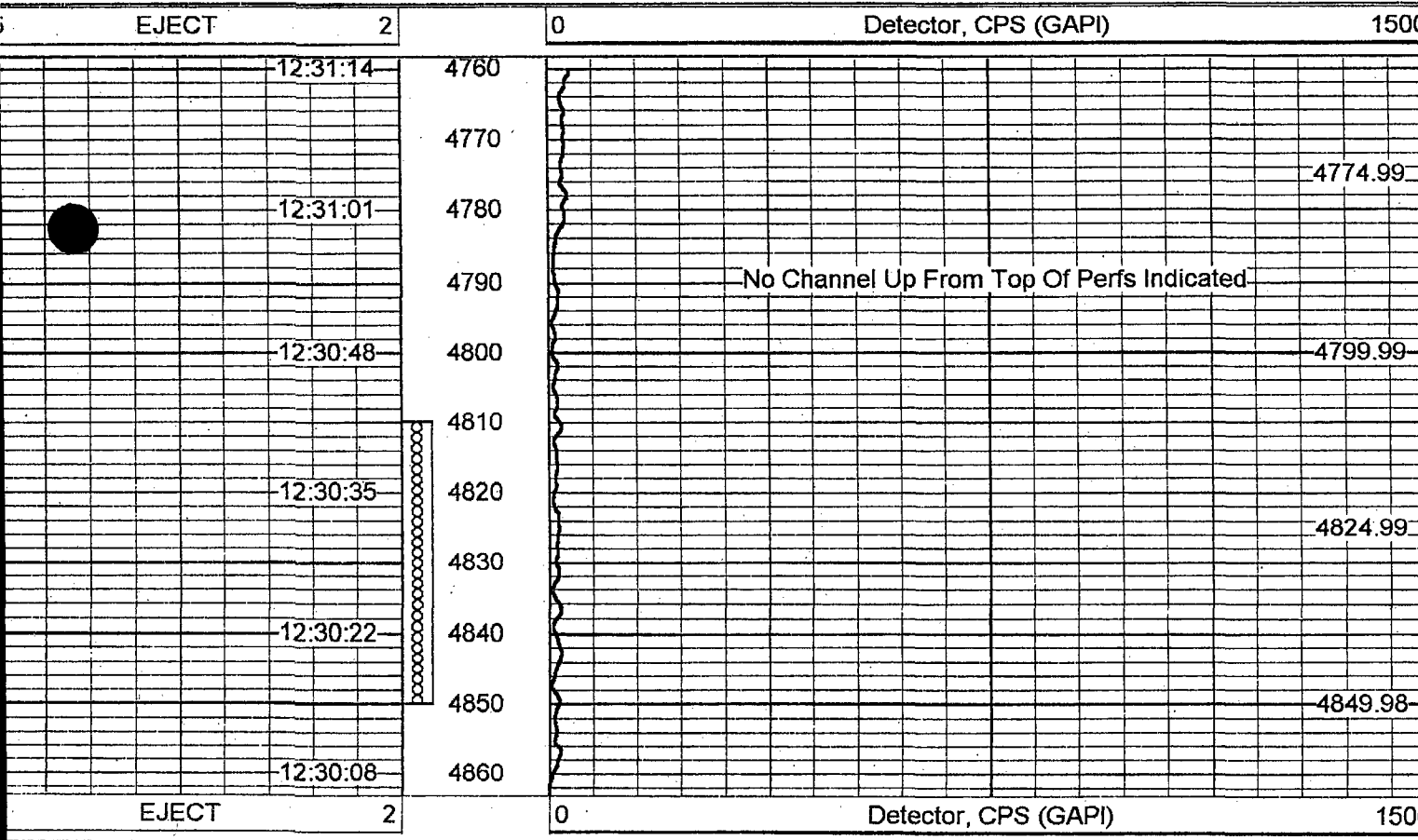
Database File: c:\warrior\data\sc54455.db

Dataset Pathname: run2\vel10

Representation Format: tracer.prs

Dataset Creation Date: Tue Jul 20 12:30:07 2004

Started by: Depth in Feet scaled 1:300



12:30:08			4850	4849.98									
-0.5	EJECT	2	4860	0									
				Detector, CPS (GAPI)									
				1500									

```
Database File:      c:\warrior\data\sc54455.db
Dataset Pathname:  run2\vel9
Presentation Format: tracer.prs
Dataset Creation Date: Tue Jul 20 12:19:38 2004
Charted by:        Time scaled 60"/hour
```

-0.5	EJECT	2	0	Detector, CPS (GAPI)	1500
				Slug No. 12	
				Upward Channel Check	4800.37
				Ejected @ 4778' @ 12:19 P.M.	
	12:19:39	0			4800.37
	12:19:59	10			4800.37
	12:20:19	20			4800.37
	12:20:39	30			4800.37
	12:20:59	40			4800.37
	12:21:19	50			4800.37
	12:21:39	60			4800.37
	12:21:59	70			4800.37
	12:22:19	80			4800.37
	12:22:39	90			4800.37
	12:22:59	100			4800.37
	12:23:19	110			4800.37
	12:23:39	120			4800.37
	12:23:59	130			4800.37
	12:24:19	140			4800.37
	12:24:39	150			4800.37
	12:24:59	160			4800.37
	12:25:19	170			4800.37
	12:25:39	180			4800.37
	12:25:59	190			4800.37
	12:26:19	200			4800.37
	12:26:39	210			4800.37
	12:26:59	220			4800.37
	12:27:19	230			4800.37
	12:27:39	240			4800.37
	12:27:59	250			4800.37
	12:28:19	260			4800.37
	12:28:39	270			4800.37
	12:28:59	280			4800.37
	12:29:19	290			4800.37
	12:29:39	300			4800.37
		310			4800.37
		320			4800.37
		330			4800.37
		340			4800.37
		350			4800.37
		360			4800.37
		370			4800.37
		380			4800.37
		390			4800.37
		400			4800.37
		410			4800.37
		420			4800.37
		430			4800.37
		440			4800.37
		450			4800.37
		460			4800.37
		470			4800.37
		480			4800.37
		490			4800.37
		500			4800.37
		510			4800.37
		520			4800.37
		530			4800.37
		540			4800.37
		550			4800.37
		560			4800.37
		570			4800.37
		580			4800.37
		590			4800.37
		600			4800.37

Database File:	c:\warrior\data\sc54455.db
Asset Pathname:	run2\vel8
Sentimentation Format:	tracer.prs
Asset Creation Date:	Tue Jul 20 12:15:57 2004
Traced by:	Time scaled 144"/hour

EJECT	2	0	Detector, CPS (GAPI)	1500
EJECT	2	0	Detector, CPS (GAPI)	1500

Database File:	c:\warrior\data\sc54455.db
Database Pathname:	run2/vel7
Representation Format:	tracer.prs
Dataset Creation Date:	Tue Jul 20 12:14:14 2004
Started by:	Time scaled 144"/hour

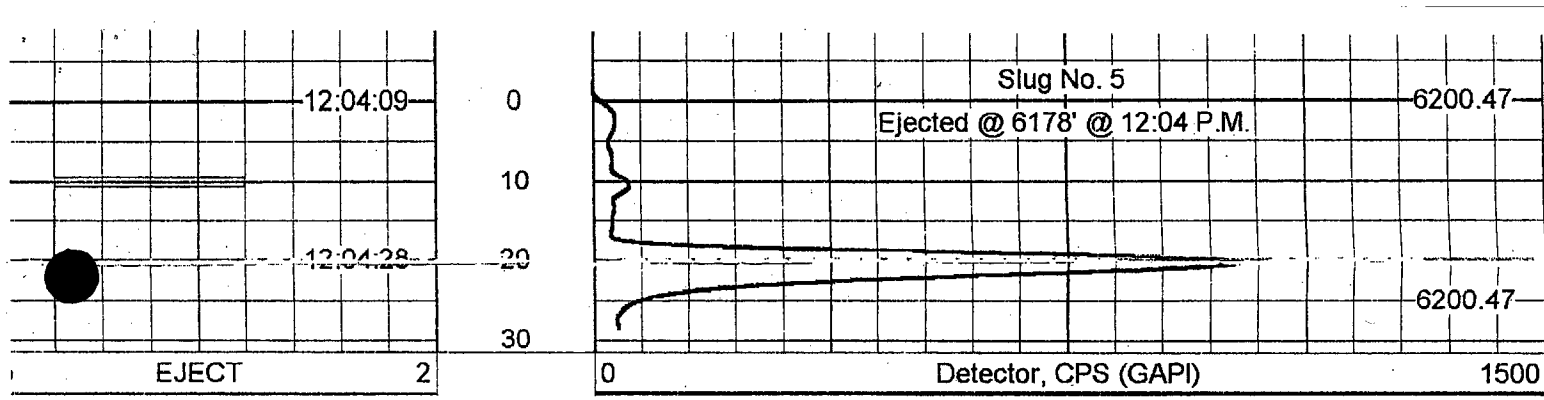
EJECT	2	0	Detector, CPS (GAPI)	1500
12:14:15 0 10 20 30 0 1500 Detector, CPS (GAPI) Slug No. 10 Ejected @ 5378' @ 12:14 P.M. 5400.15 5400.15				

Database File:	c:\warrior\data\sc54455.db
Dataset Pathname:	run2\vel6
Presentation Format:	tracer.prs
Dataset Creation Date:	Tue Jul 20 12:11:54 2004
Started by:	Time scaled 144"/hour

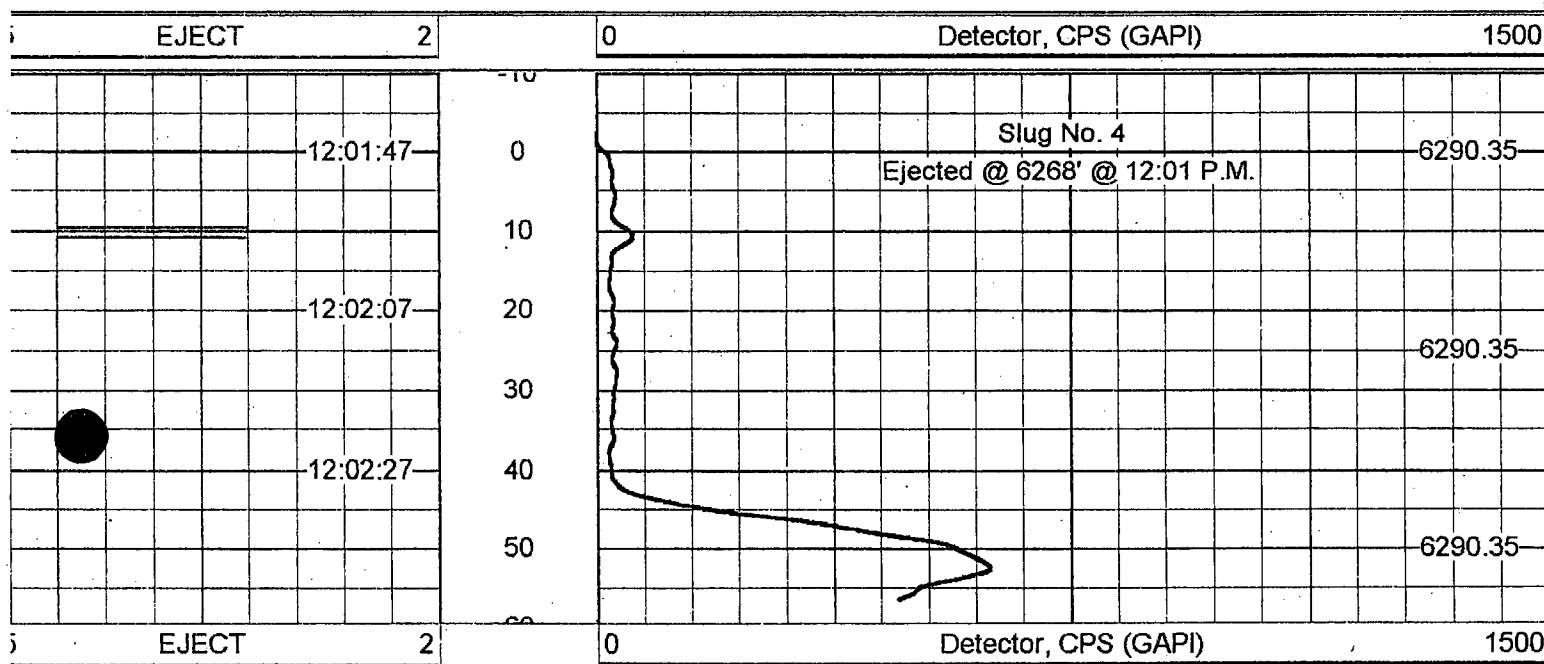
EJECT	2	0	Detector, CPS (GAPI)	150
12:11:54 12:12:14		Slug No. 9 Ejected @ 5578' @ 12:11 P.M. 5600.51- 5600.51-		
EJECT	2	0	Detector, CPS (GAPI)	150

Database File:		c:\warrior\data\sc54455.db	
Dataset Pathname:		run2\vel5	
Presentation Format:		tracer.prs	
Dataset Creation Date:		Tue Jul 20 12:10:37 2004	
Started by:		Time scaled 144"/hour	

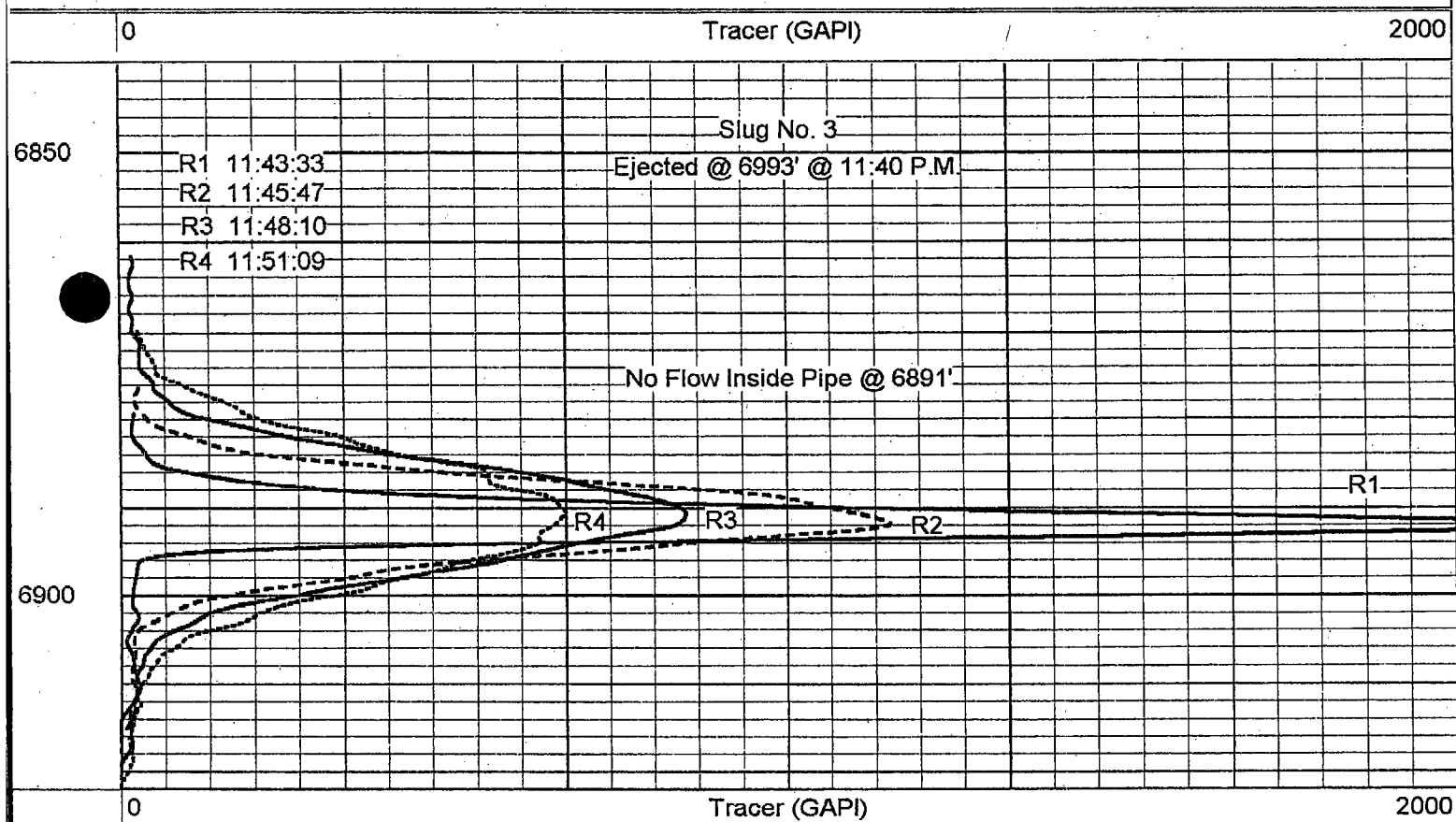
EJECT	2	0	Detector, CPS (GAPI)	150
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Database File: c:\warrior\data\sc54455.db
Dataset Pathname: run2\vel1
Presentation Format: tracer.prs
Dataset Creation Date: Tue Jul 20 12:01:46 2004
Started by: Time scaled 144"/hour

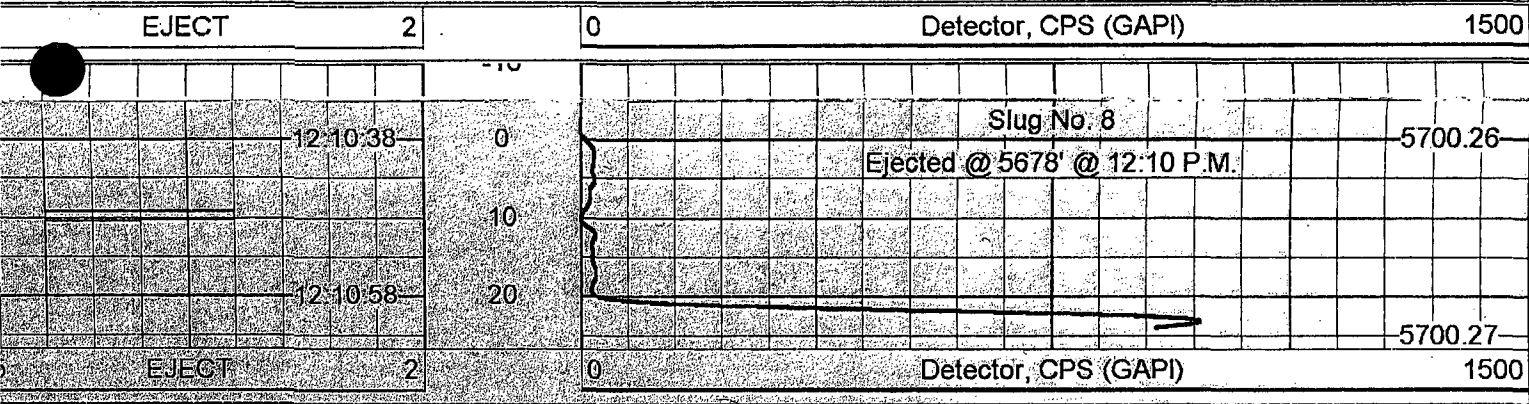


Database File: c:\warrior\data\sc54455.db
Dataset Pathname: run2_profile3_
Presentation Format: trcprof.prs
Dataset Creation Date: Tue Jul 20 11:51:57 2004
Started by: Depth in Feet scaled 1:240

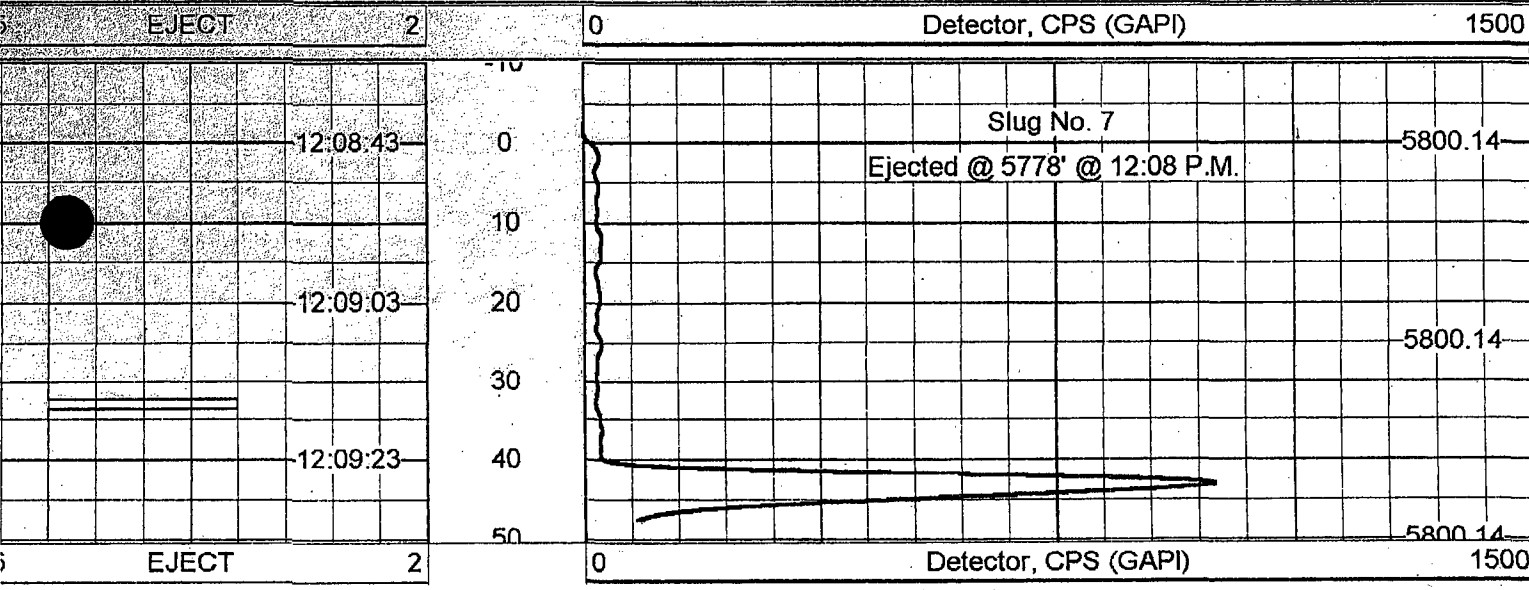


Database File: c:\warrior\data\sc54455.db
Dataset Pathname: run2_profile3_

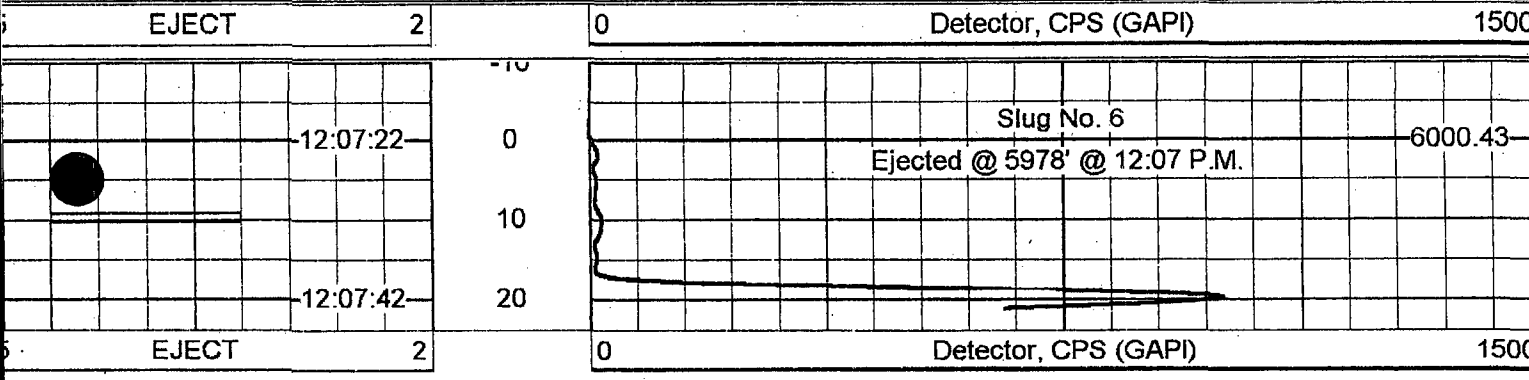
Database File: c:\warrior\data\sc54455.db
Dataset Pathname: run2\vel5
Presentation Format: tracer.prs
Dataset Creation Date: Tue Jul 20 12:10:37 2004
Started by: Time scaled 144"/hour



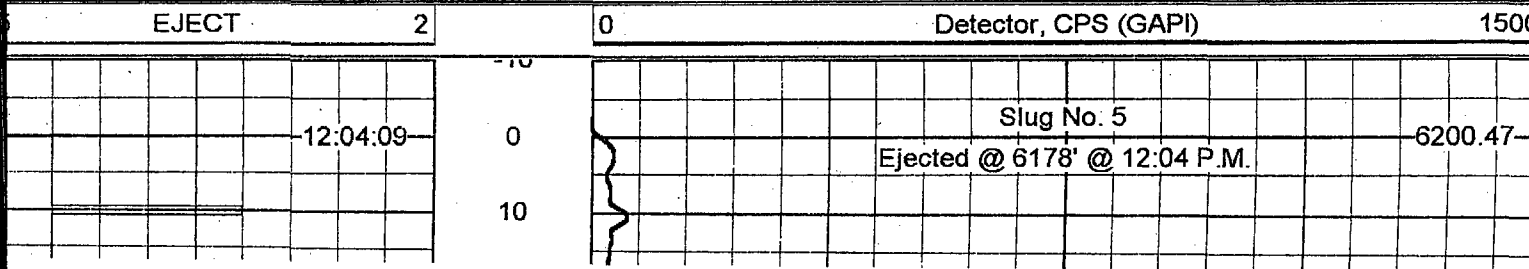
Database File: c:\warrior\data\sc54455.db
Dataset Pathname: run2\vel4
Presentation Format: tracer.prs
Dataset Creation Date: Tue Jul 20 12:08:42 2004
Started by: Time scaled 144"/hour

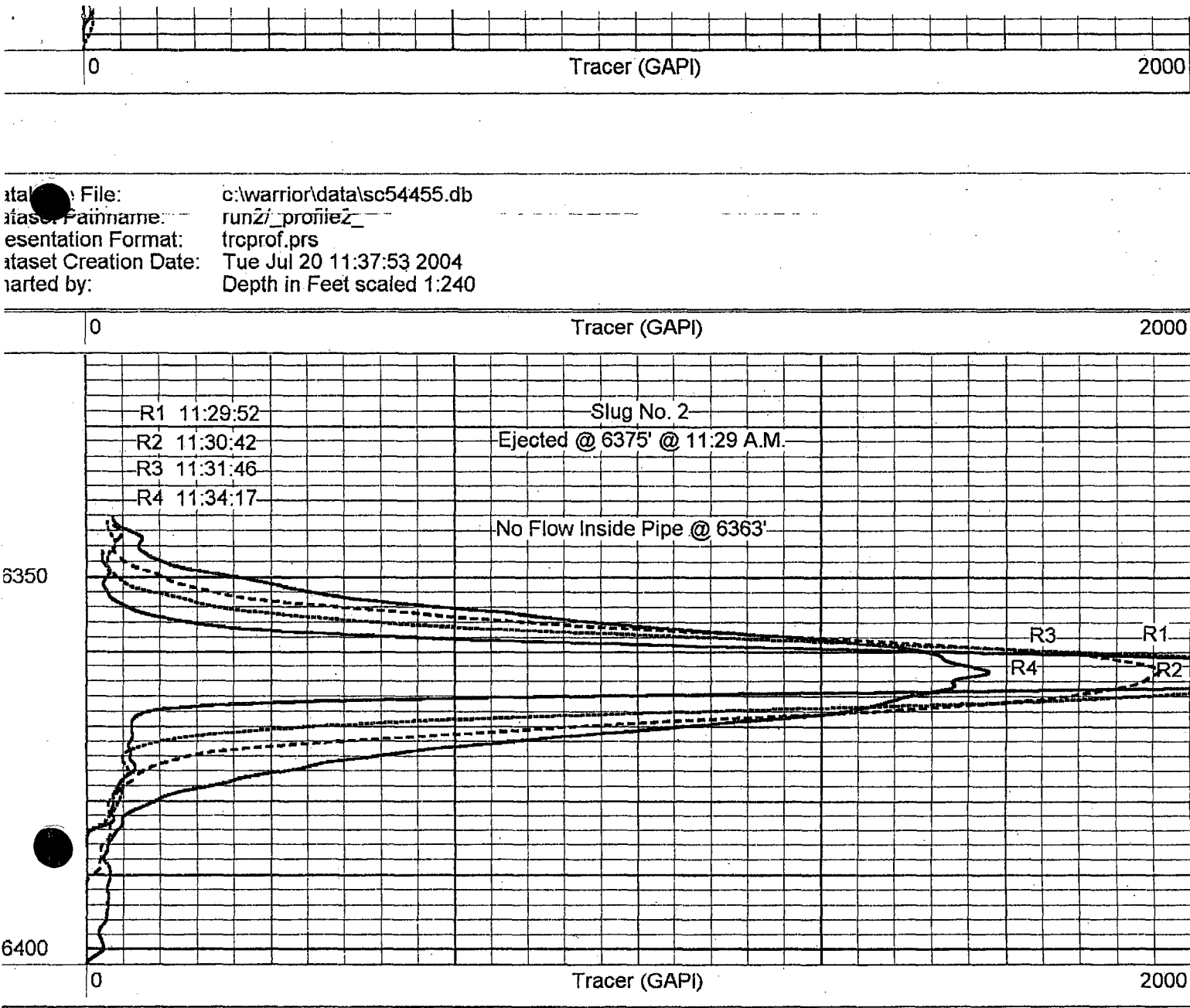


Database File: c:\warrior\data\sc54455.db
Dataset Pathname: run2\vel3
Presentation Format: tracer.prs
Dataset Creation Date: Tue Jul 20 12:07:22 2004
Started by: Time scaled 144"/hour



Database File: c:\warrior\data\sc54455.db
Dataset Pathname: run2\vel2
Presentation Format: tracer.prs
Dataset Creation Date: Tue Jul 20 12:04:08 2004
Started by: Time scaled 144"/hour





Tracer profile raw data (Velocity Profile):

o	Depth	Rate	Slug No
1	4,760.0	A 4226.6	15 100%
2	4,775.4	A 4172.8	14 100%
3	4,790.3	A 4226.6	13 100%
4	4,800.3	A 4090.4	12 100% Channel Check
5	5,280.3	* 3219.6	11
6	5,400.1	* 3013.3	10
7	5,600.5	* 3110.0	9 (Assumed to be 3013.3)
8	5,700.3	* 2817.6	8
9	5,800.1	D 3833.1	7
0	5,900.4	D 3833.1	6
1	6,200.4	* 3789.2	5 (Assumed to be 2817.6)
2	6,290.3	* 939.2	4
3	6,363.0	* .0	2 No Flow
4	6,891.0	* .0	3 No Flow

- Used to plot profile A - Averaged D - Do not use

Average 100% rate = 4,179.1

Losses/entries versus depth corrected
for material balance inconsistency:

Depth From	Depth To	Rate Loss/Entry
4,800.3	5,280.3	23.0
5,280.3	5,400.1	4.9
5,400.1	5,600.5	4.7
5,600.5	5,700.3	44.9
5,700.3	5,800.1	22.5

Losses/entries assigned to open intervals:

Depth From	Depth To	Rate Loss/Entry
4,810.0	4,850.0	23.0
5,290.0	5,300.0	4.9
6,210.0	6,260.0	49.6
6,300.0	6,360.0	22.5

D - Do not use

Tracer profile raw data (Intensity Profile):

No	Depth		Rate	
1	4,760.0	A	100.0	(Changed to 100%)
2	4,805.0	A	100.0	(Changed to 100%)
3	4,811.6	D	87.0	
4	4,872.6	D	94.0	
5	4,930.6	D	95.5	
6	4,996.6	D	96.4	
7	5,067.9	D	97.1	
8	5,136.4	D	96.7	
9	5,210.9	*	100.0	
10	5,273.6	*	94.4	
11	5,341.6	*	82.7	
12	5,405.9	*	84.5	(Assumed to be 82.7)
13	5,469.9	*	81.0	
14	5,540.4	D	86.3	
15	5,603.6	D	85.2	
16	5,671.6	*	83.4	(Assumed to be 81.0)
17	5,734.4	*	74.2	
18	5,828.4	*	73.9	
19	5,916.1	*	68.3	
20	6,014.9	D	69.9	
21	6,116.9	*	69.3	(Assumed to be 68.3)
22	6,237.1	D	25.2	
23	6,262.4	*	21.9	

- Used to plot profile A - Averaged D - Do not use

Average 100% rate = 100.0

Losses/entries versus depth corrected
for material balance inconsistency:

Depth From	Depth To	Rate Loss/Entry
5,210.9	5,273.6	5.6
5,273.6	5,341.6	11.7
5,405.9	5,469.9	1.7
5,671.6	5,734.4	6.7
5,734.4	5,828.4	.3
5,828.4	5,916.1	5.6
6,116.9	6,262.4	46.4

Losses/entries assigned to open intervals:

Depth From	Depth To	Rate Loss/Entry
5,290.0	5,300.0	17.3
6,210.0	6,260.0	60.8
Remaining:		21.9%

D- Do not use

