



QES WIRELINE LLC

RADIOACTIVE TRACER SURVEY

Company
Well
Field
County
State

WESTERN REFINING
SHELL STATE "13" SWD # 1
LANGLIE MATTIX
LEA
NM

Company WESTERN REFINING
Well SHELL STATE "13" SWD # 1
Field LANGLIE MATTIX
County LEA State NM

Location: API # :
NW1/4 & SW1/4
SEC 32 TWP 23-S RGE 37-E
Other Services
NONE
Elevation
Permanent Datum
Log Measured From
Drilling Measured From
K.B. N/A
D.F. N/A
G.L. 3304'

Date	07/09/2019		
Run Number	1		
Depth Driller	3998		
Depth Logger	3924		
Bottom Logged Interval	3923		
Top Log Interval	2500		
Open Hole Size	N/A		
Type Fluid	FSW		
Density / Viscosity	N/A		
Max. Recorded Temp.	N/A		
Estimated Cement Top	N/A		
Time Well Ready	0800		
Time Logger on Bottom	1030		
Equipment Number	101		
Location	LAND		
Recorded By	DEWAR		
Witnessed By	STRONG		

Borehole Record				Casing Record			
Run Number	Bit	From	To	Size	Weight	From	To

<<< 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

THANKS FOR USING QES WIRELINE!
YOUR CREW WAS K.DEWAR & G. CASTRO
WELL HEAD CONNECTION 2" LP



R/A TRACER LOG INTERPRETATION

07/17/2019

PLANT: WESTERN REFINING
C/O: LONQUIST
WELL NAME: SHELL STATE 13 SWD # 1

RE: Radioactive Tubing & Packer Survey ran on 07/09/2019

A Pre Base Log was run from 3933' to 2500' to detect and record background gamma counts.

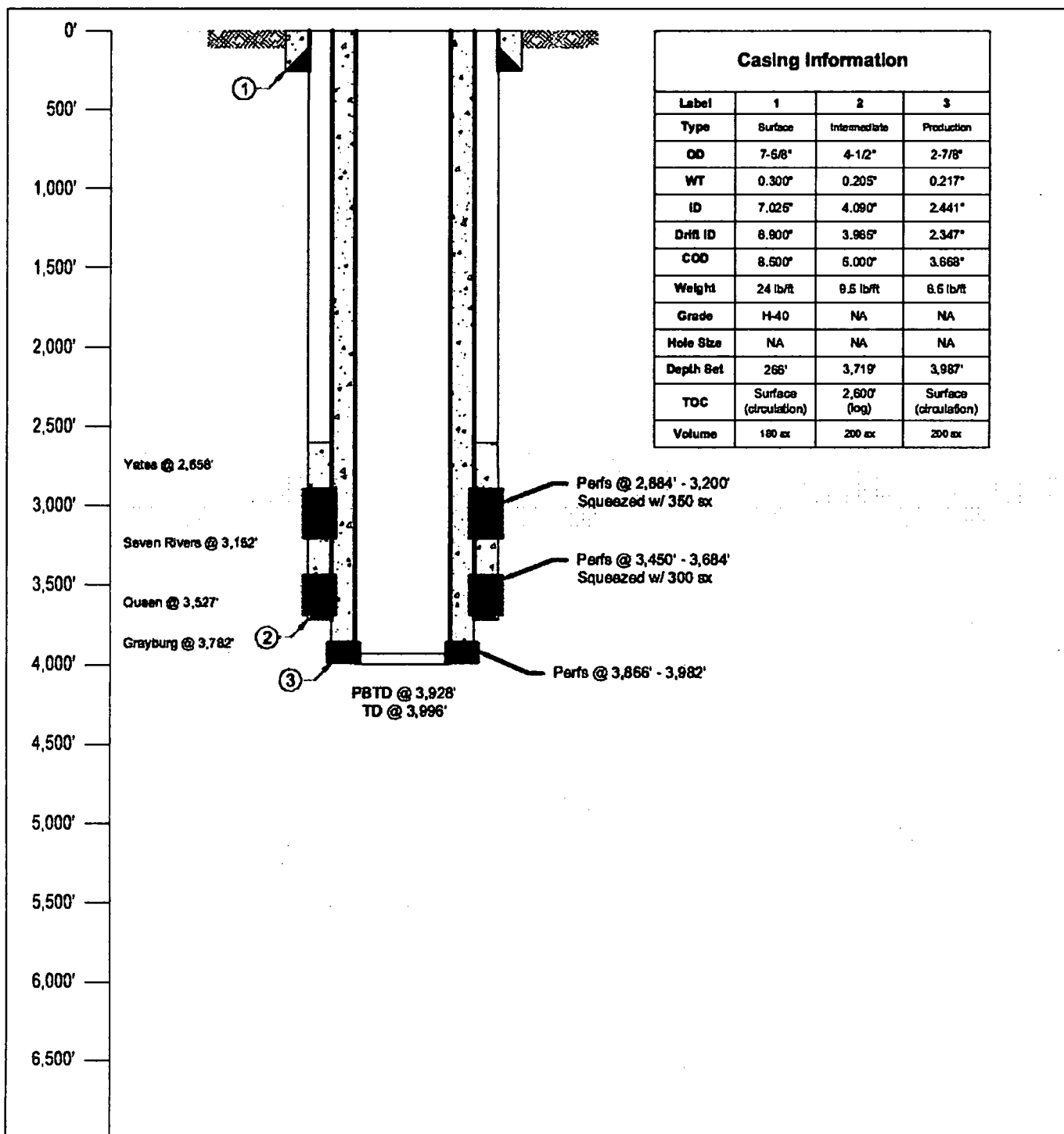
Iodine 131 was then ejected at a depth of 2650' and pumped down the 2 7/8" Slimhole casing and into the permitted interval. Overlapping logging passes tracked the R/A tracer material as it moved down in the wellbore.

The flow profile log was then repeated and this survey also showed R/A material going out into the permitted interval.

A Stationary Time Drive surveys were run with the tool at 3850'. No indications of upward migration were recorded.

A Post Base log was then run from 3940' to 2500' and noted that all R/A material was flushed out of the wellbore into the permitted interval.

John Croce
Industrial Logging Department
4119 Chance Ln.
Rosharon, TX 77583



Casing Information			
Label	1	2	3
Type	Surface	Intermediate	Production
OD	7-6/8"	4-1/2"	2-7/8"
WT	0.300"	0.205"	0.217"
ID	7.025"	4.090"	2.441"
Drift ID	6.900"	3.965"	2.347"
COD	8.500"	6.000"	3.668"
Weight	24 lb/ft	9.5 lb/ft	6.6 lb/ft
Grade	H-40	NA	NA
Hole Size	NA	NA	NA
Depth Set	266'	3,719'	3,987'
TOC	Surface (circulation)	2,600' (log)	Surface (circulation)
Volume	180 sx	200 sx	200 sx

LONQUIST FIELD SERVICE AUSTIN HOUSTON WICHITA CALGARY Texas License F-9147 3345 Bee Cave Road, Suite 201 Austin, Texas 78746 Tel: 512.732.9812 Fax: 512.732.9816	Western Refining Company, LP		Shell State No. 13	
	Country: USA		State/Province: New Mexico	County/Parish: Lea
	Location:		Site:	Survey/STR: 32, 23-S, 37-E
	API No: 30-025-10920		Field: Langlie Matlbr	Well Type/Status: SWD
	State ID No:		Project No:	Date: 11/16/17
	Drawn: WHG		Reviewed: ETB	Approved: ETB
	Rev No: 1		Notes:	

C:\Users\wweber\Documents\11. WELL DOCS\F310 WESTERN REFINING - SHELL STATE No. 13 3WD\WBS\WBS SHELL STATE No. 13 2017116.dwg, 11/16/2017 10:20:06 AM, Wweber, AUTOCAD PDF (GENERAL DOCUMENTATION).PCL

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)

			5ft 1.437-Tungsten 1 7/16" Tungsten Weight Bar	5.00	1.44	40.00
			TRDET-Titan (TitanP) Titan 1.38 Detector	3.88	1.38	11.00
DET	9.31					
			TREJCT-ARTEX_1.5_20CC (Attex_20cc)	3.06	1.38	11.00
			CCL-1.38_TitanLoggingCCL (1.38_TitanC1.79 1 3/8" Titan CCL HT		1.38	5.00
CCL	4.57					
			TRDET #2 -Titan (TitanN) Titan 1.38 Detector	3.88	1.38	11.00
DET#2	0.58					

Dataset:	shellstate13swd1 rat 2019.db: field/well/pstbse/pass1
Total length:	17.60 ft
Total weight:	78.00 lb
O.D.:	1.44 in

Radioactive Tracer Summary Sheet

WELL INFORMATION

DATE:	7/9/19
COMPANY:	WESTERN REFINING
WELL NAME:	SHELL STATE 13 SWD 1
PLANT LOCATION:	LANGUE MATTIX
COUNTY or PARISH:	LEA
STATE of TEST:	NEW MEXICO
EQUIPMENT LOCATION:	ROSHARON
LOGGING ENGINEER:	KURT DEWAR



WELL CONNECTION
2" LP

[illegible]



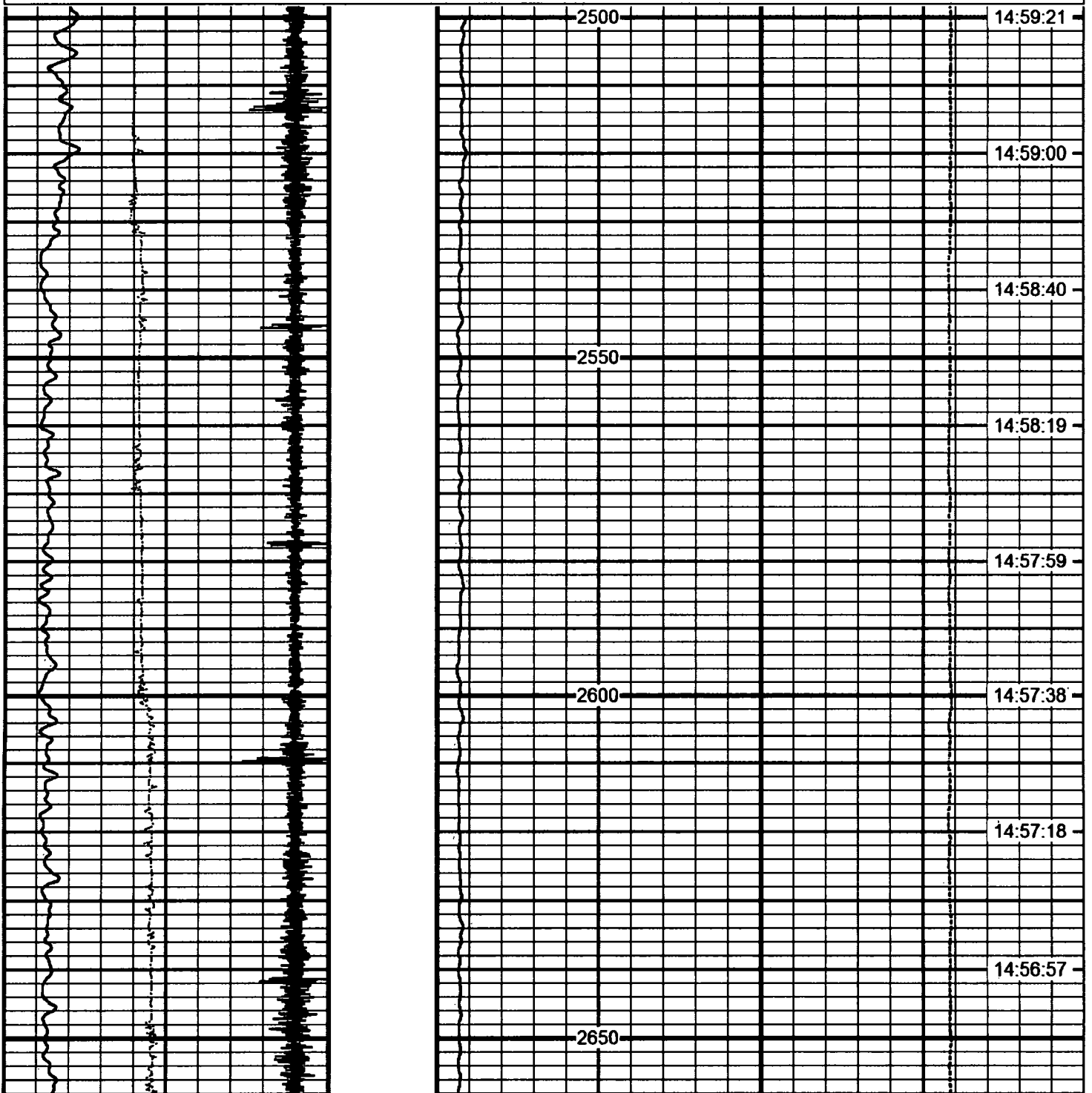
QES WIRELINE LLC

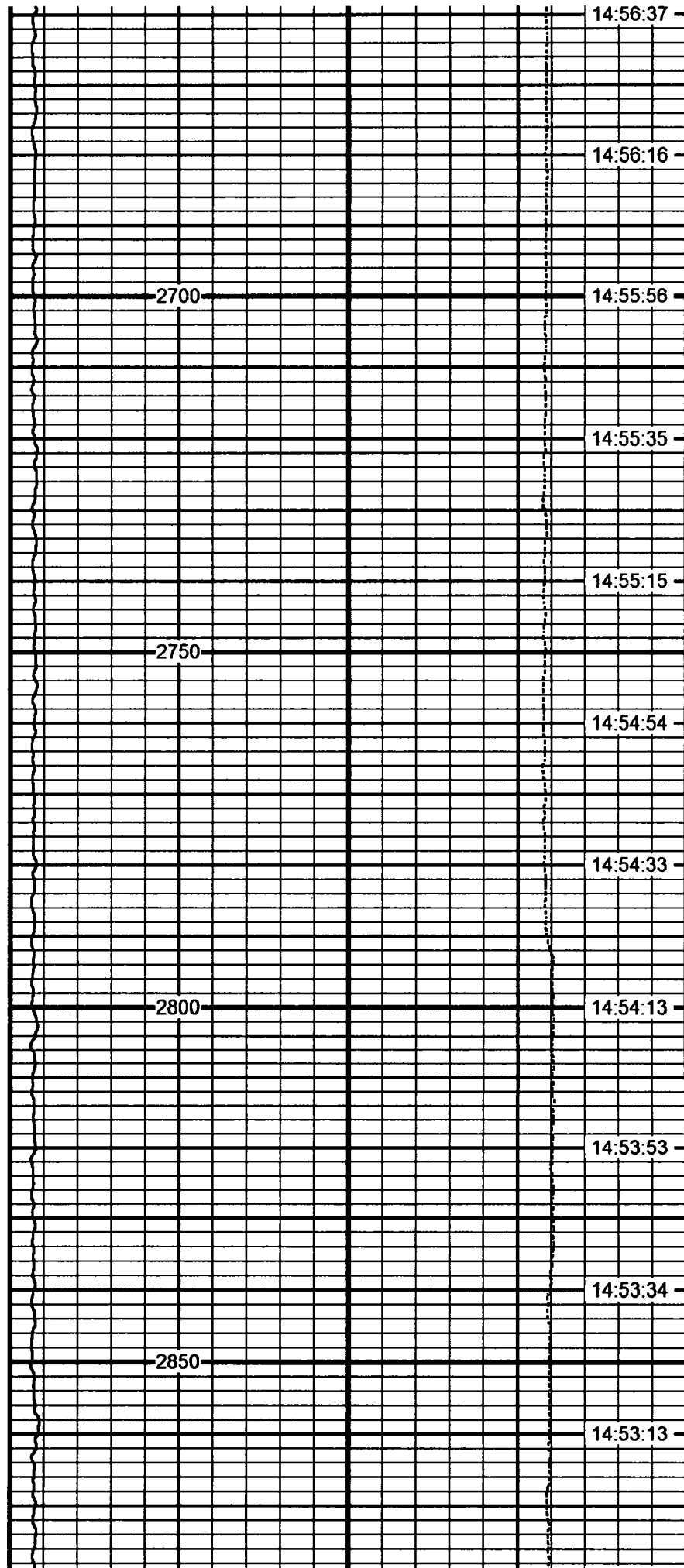
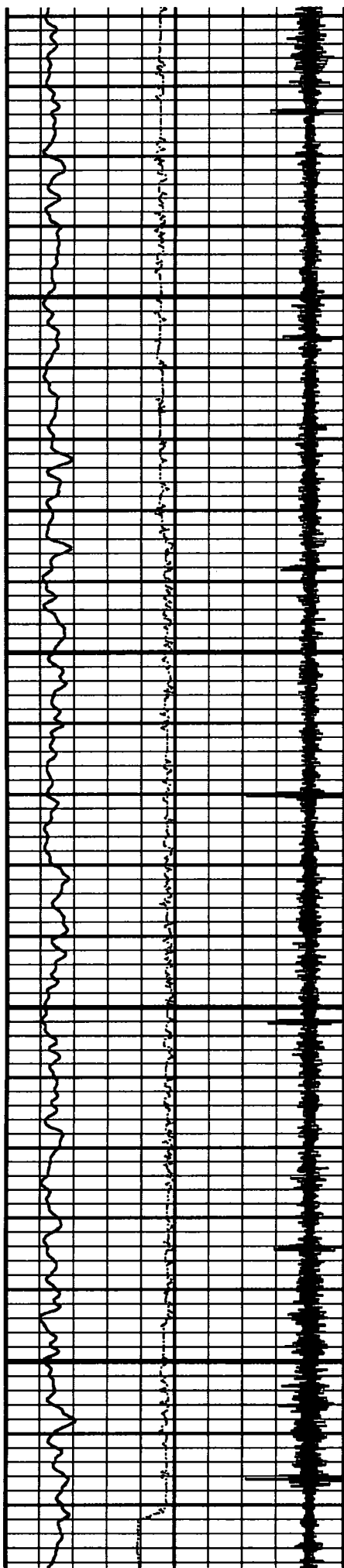
RUN # 1

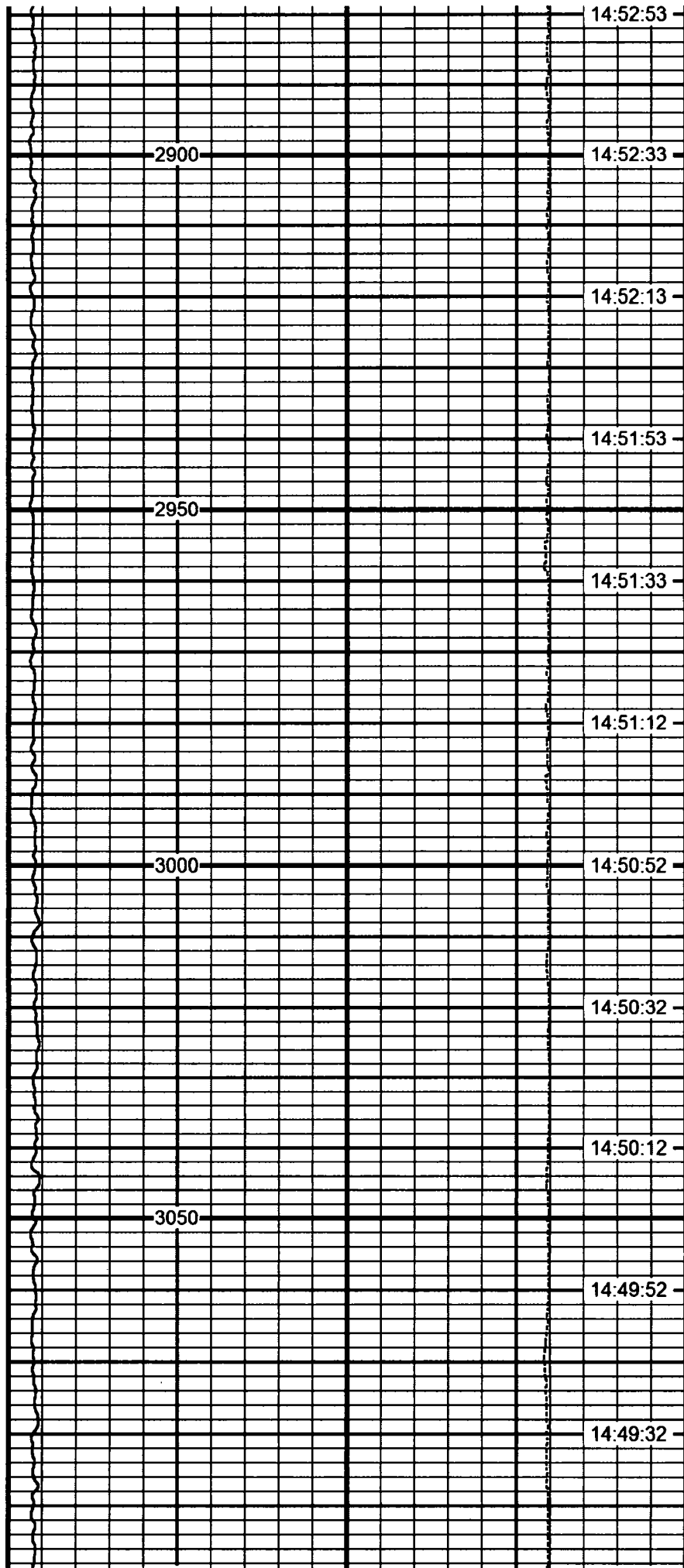
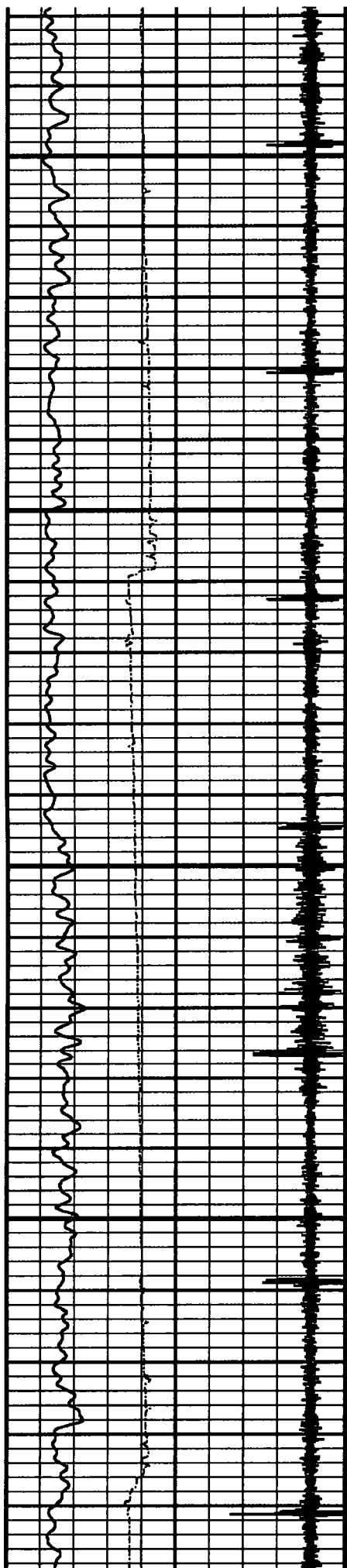
PRE SURVEY BASE LOG
0 GPM @ 0 PSI

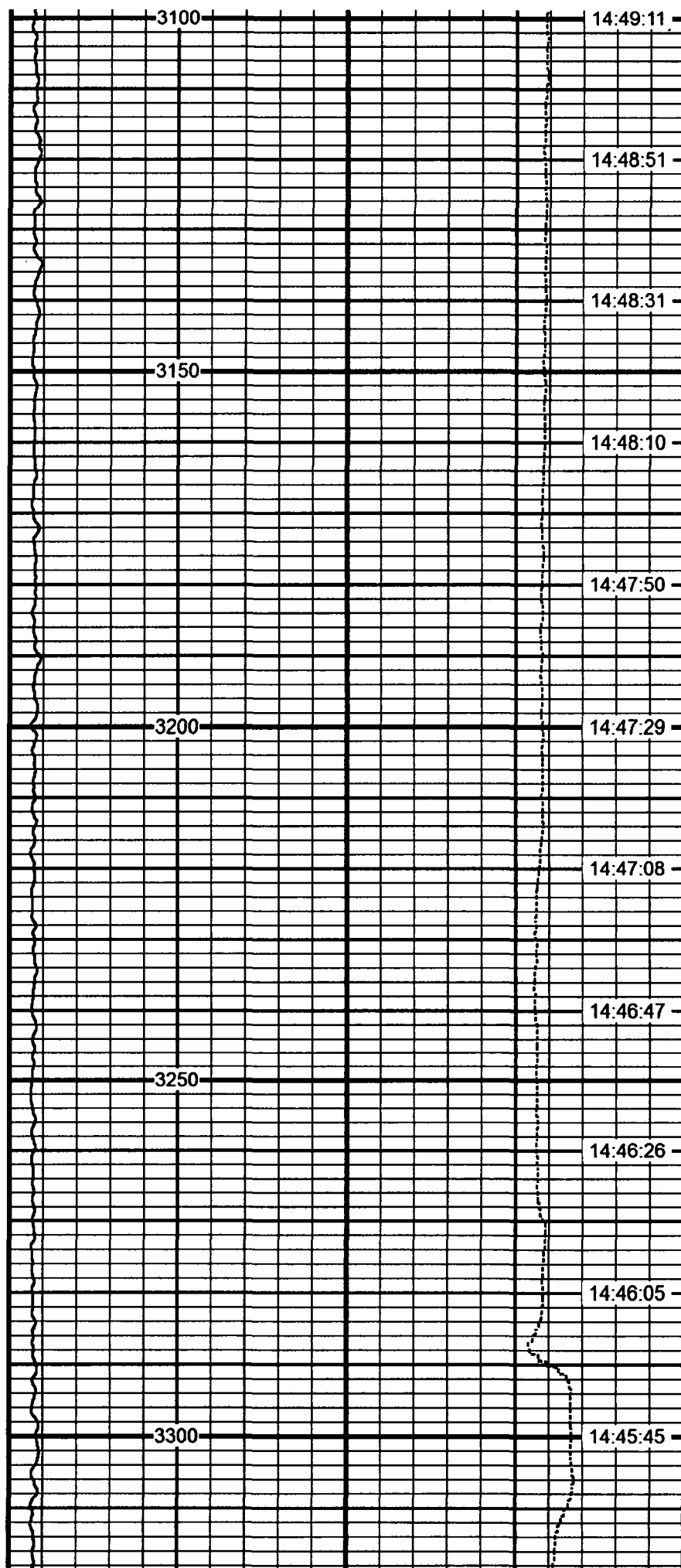
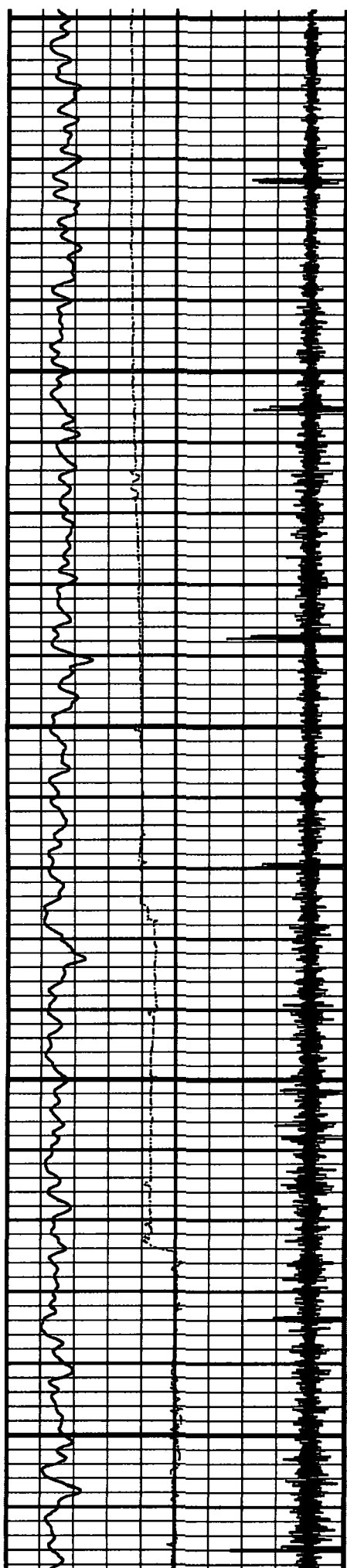
Database File western refshellstate13swd1 rat 2019.db
Dataset Pathname prebse/pass1
Presentation Format tracergw
Dataset Creation Tue Jul 09 14:34:33 2019
Charted by Depth in Feet scaled 1:240

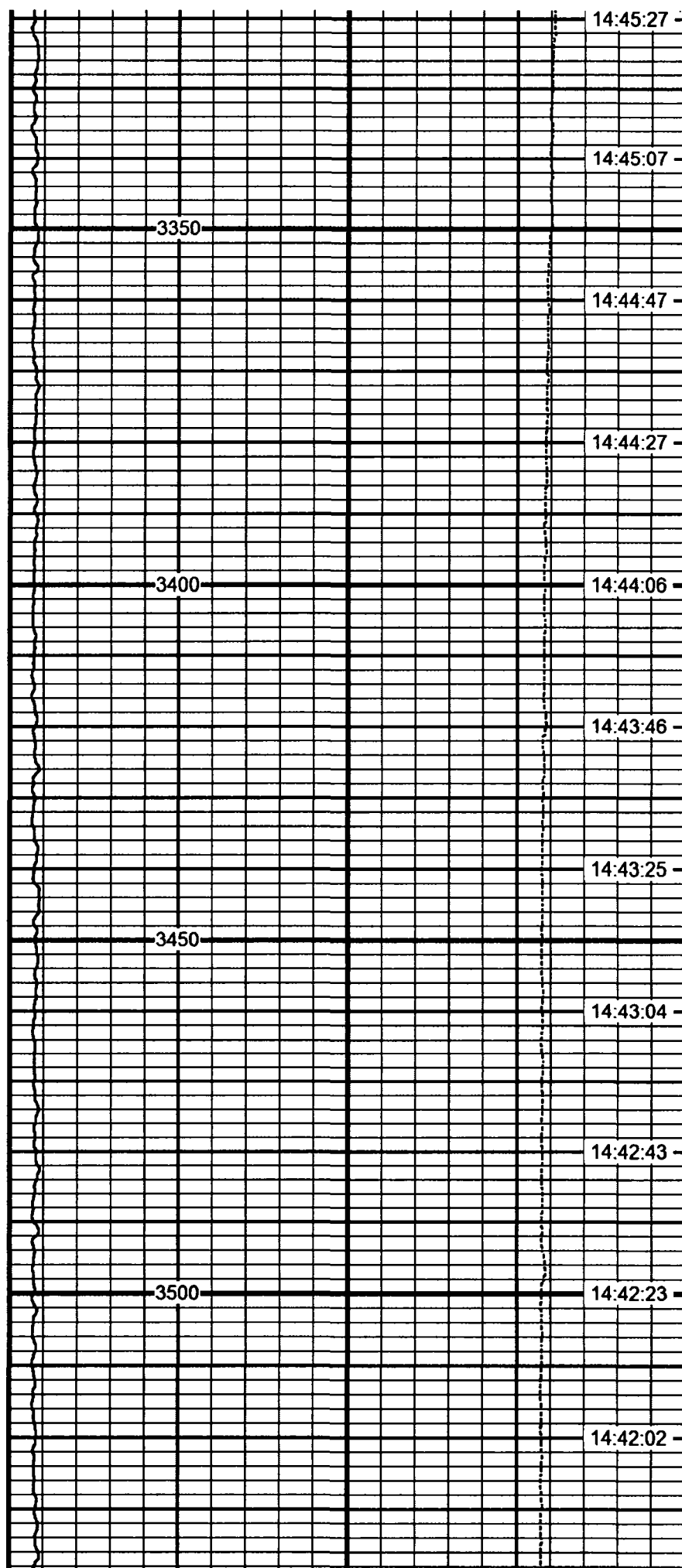
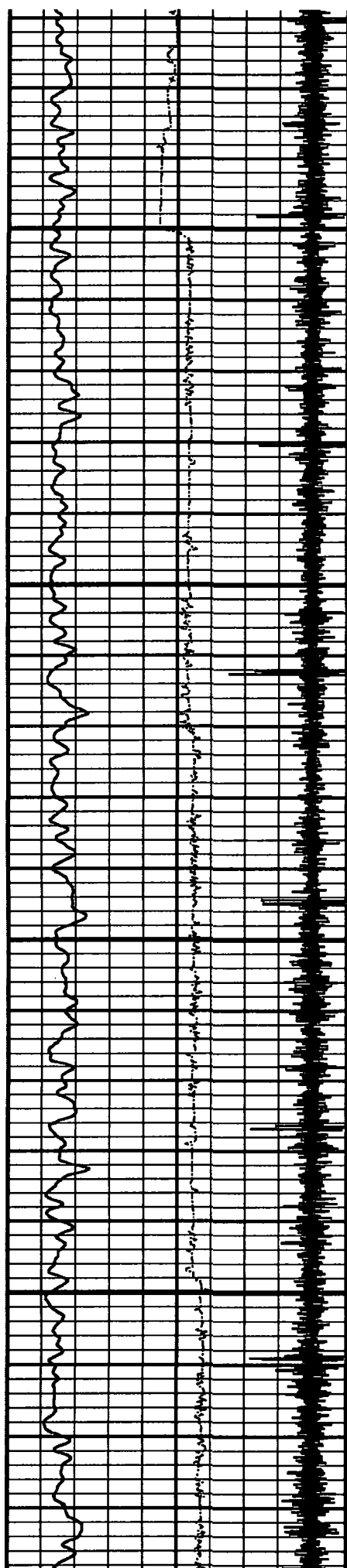
-18	CCL	2	0	Lower Det. (GAPI)	1000
0	LTEN (lb)	1000	0	LSPD (ft/min)	-100
0	UPPER DET. (GAPI)	100			TOD (sec)

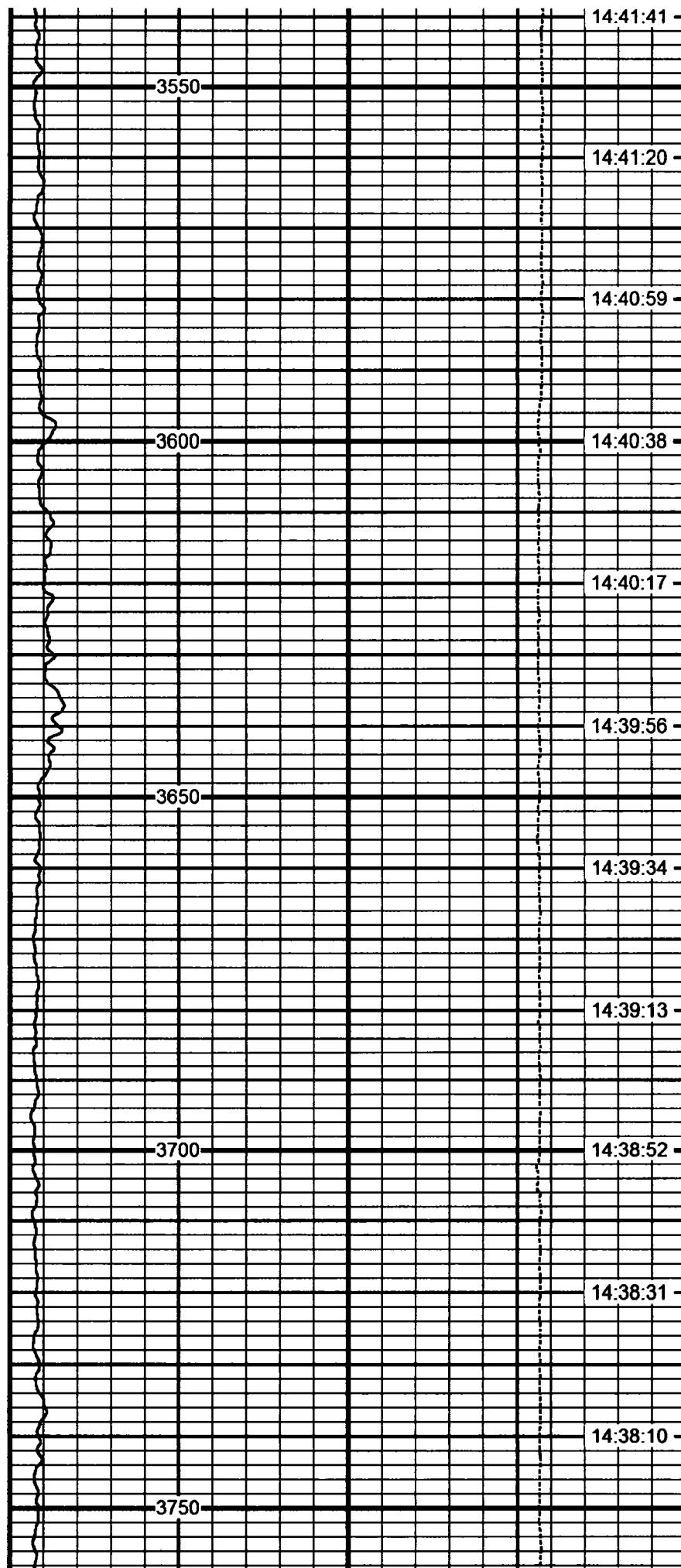
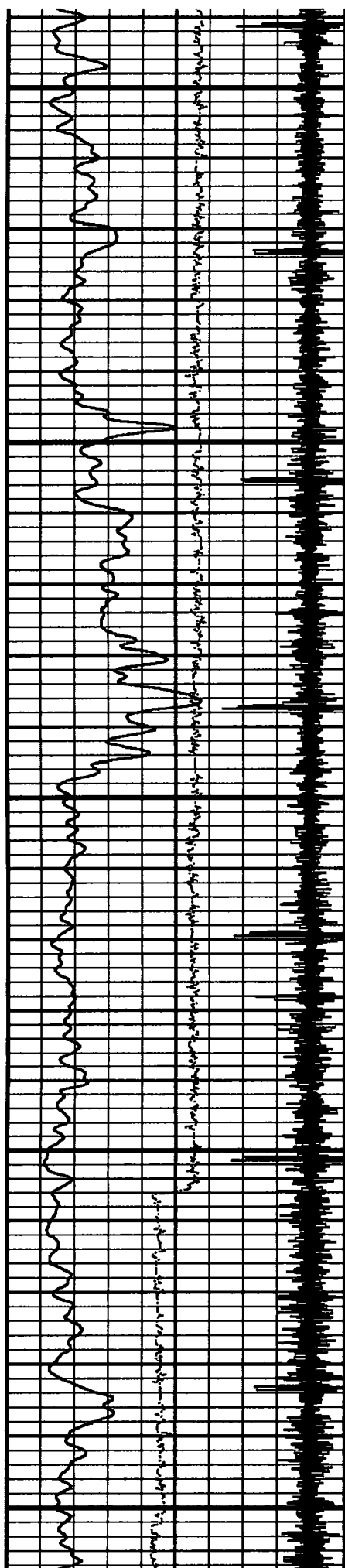


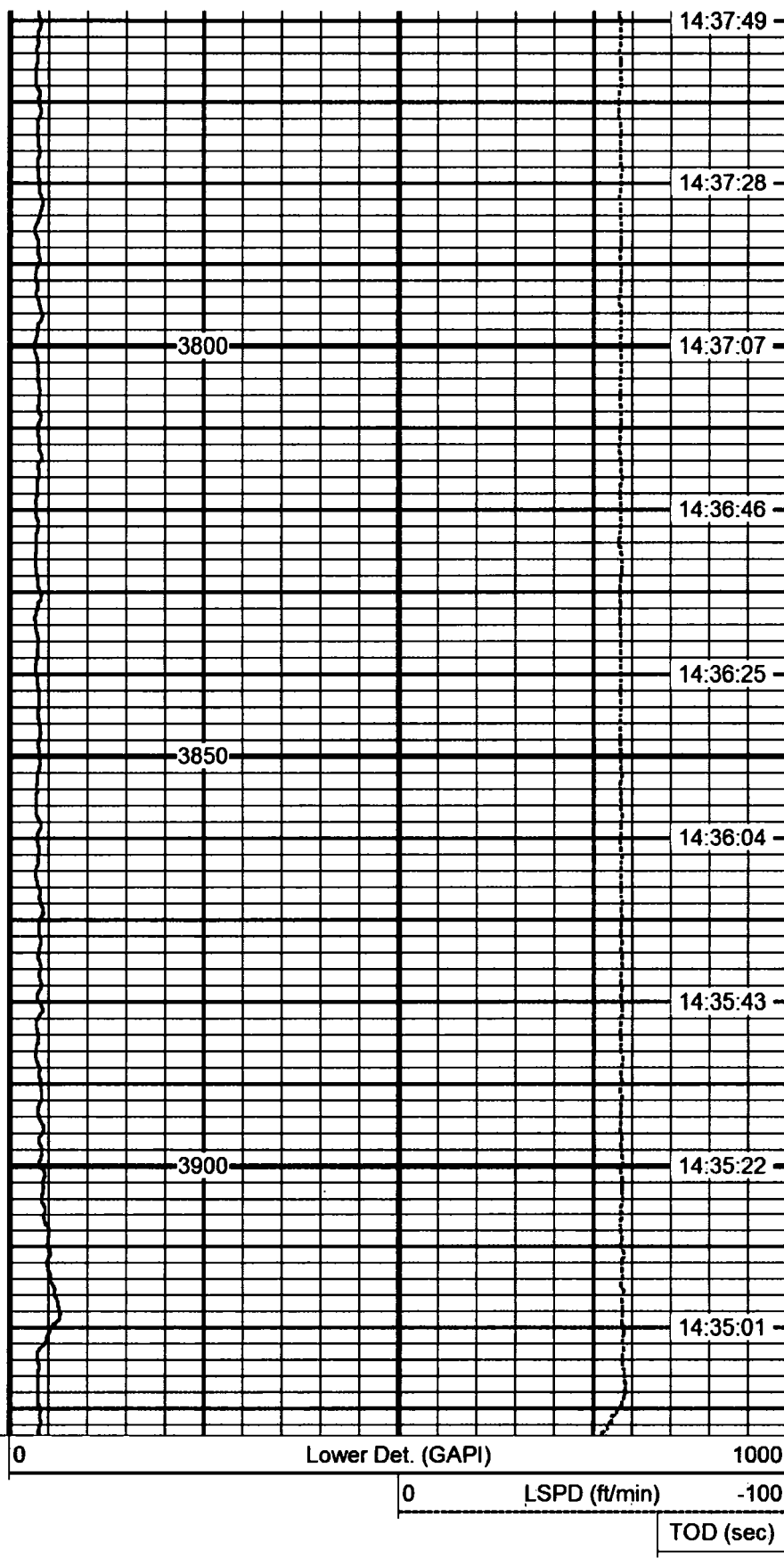
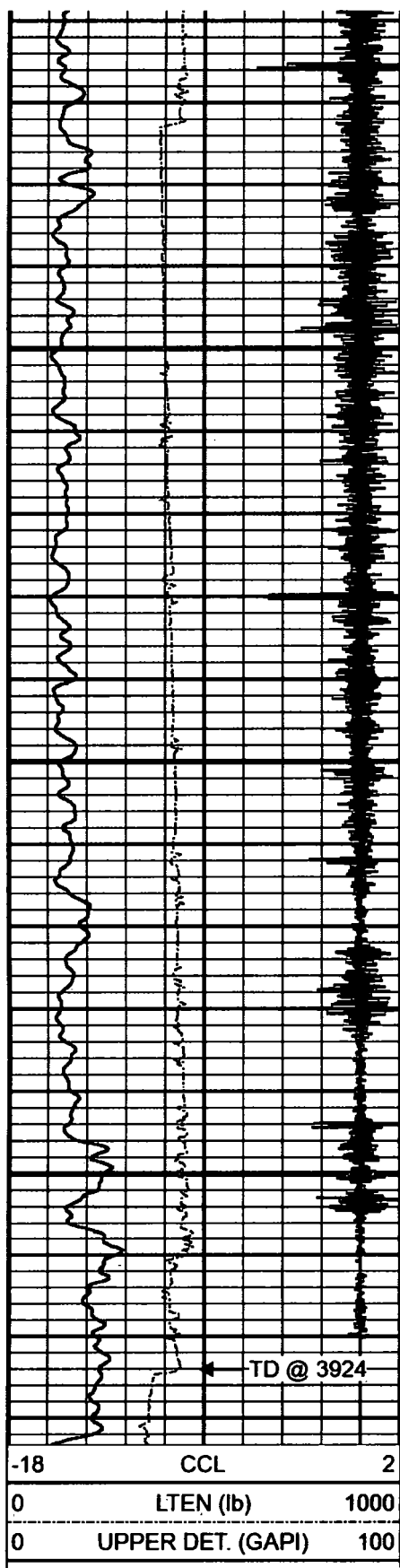












RUN # 2

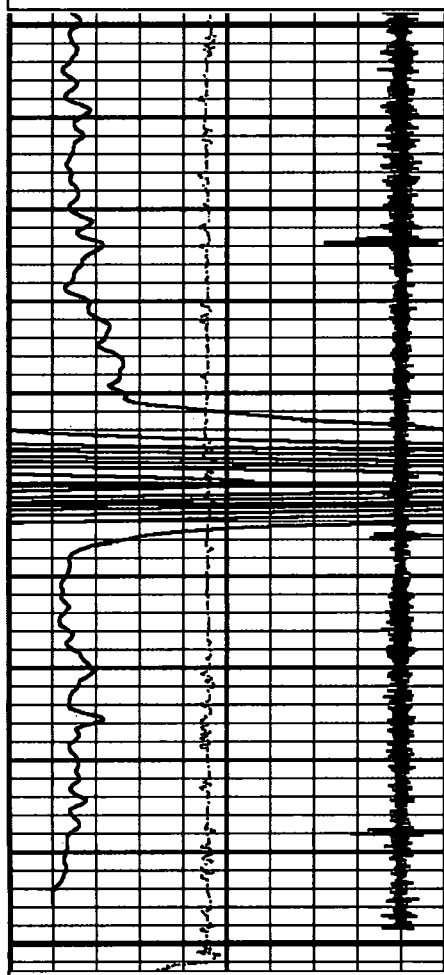
SLUG # 1 CHASE # 1 EJECT @ 2650
16 GPM @ 0 PSI

Database File

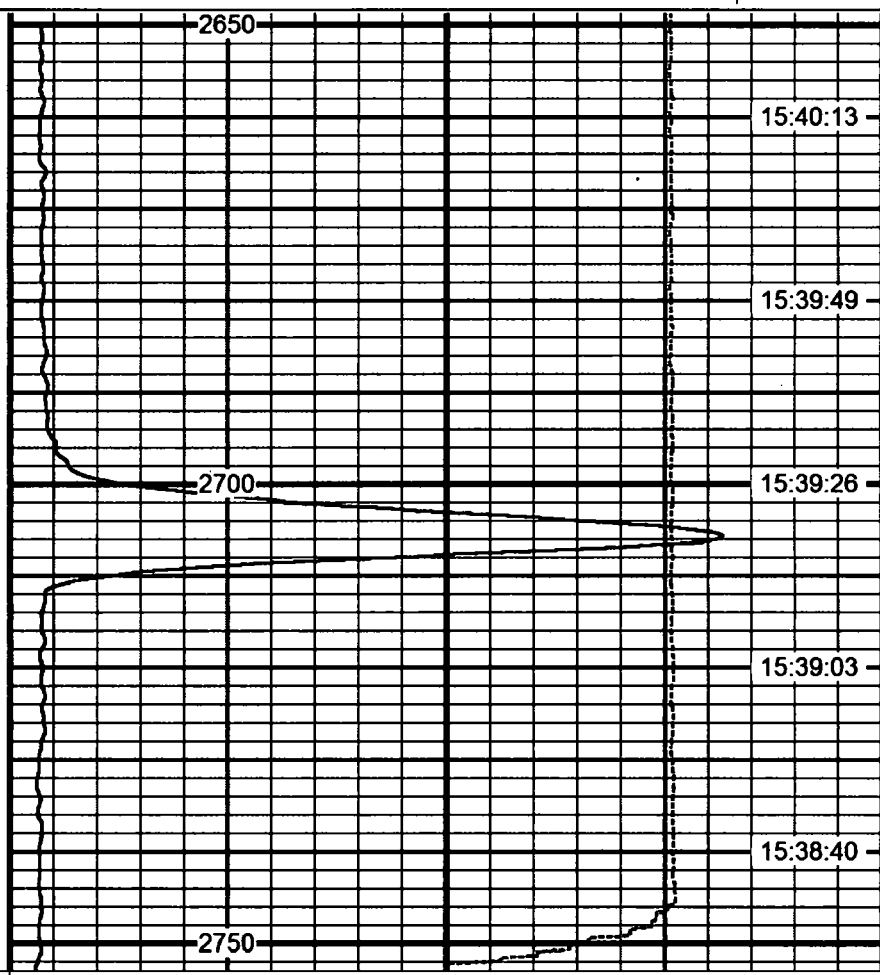
western ref\shellstate13swd1 rat 2019.db

Dataset Pathname slug1/pass1
 Presentation Format tracergw
 Dataset Creation Tue Jul 09 15:38:23 2019
 Charted by Depth in Feet scaled 1:240

-18	CCL	2	0	Lower Det. (GAPI)	1000
0	LTEN (lb)	1000	0	LSPD (ft/min)	-100
0	UPPER DET. (GAPI)	100			TOD (sec)



-18	CCL	2
0	LTEN (lb)	1000
0	UPPER DET. (GAPI)	100



0	Lower Det. (GAPI)	1000
0	LSPD (ft/min)	-100
		TOD (sec)



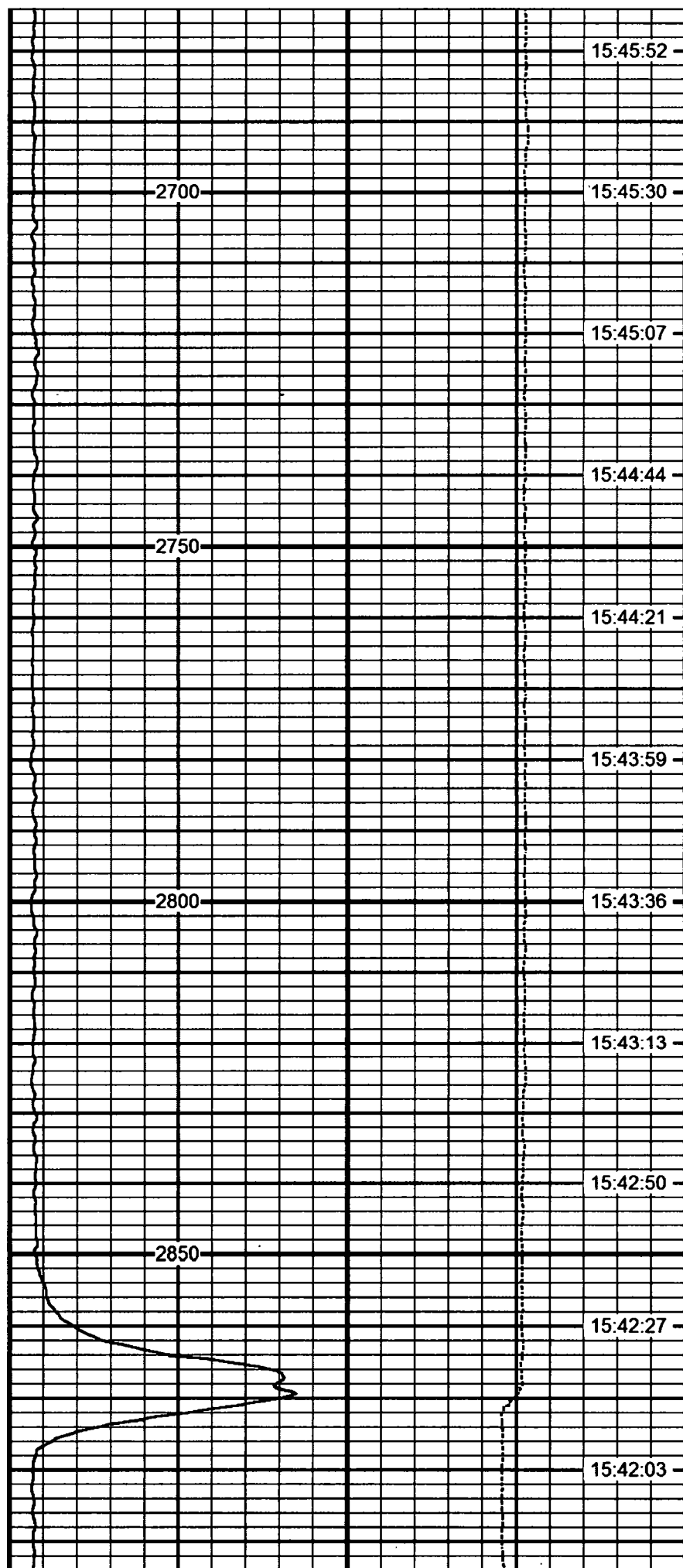
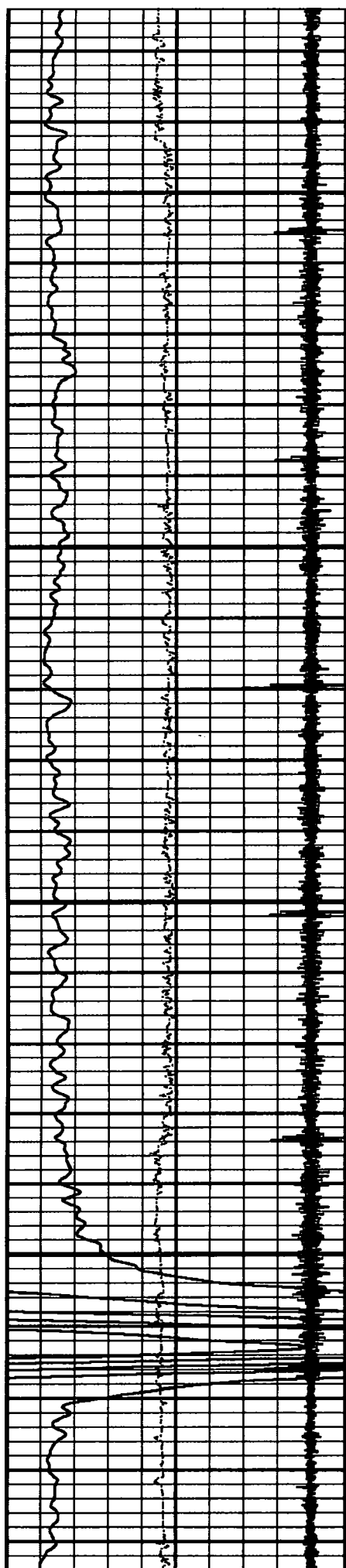
RUN # 3

SLUG # 1 CHASE # 2
 16 GPM @ 0 PSI

Database File western refshellstate13swd1 rat 2019.db
 Dataset Pathname slug1/pass2
 Presentation Format tracergw
 Dataset Creation Tue Jul 09 15:41:32 2019
 Charted by Depth in Feet scaled 1:240

-18	CCL	2	0	Lower Det. (GAPI)	1000
0	LTEN (lb)	1000	0	LSPD (ft/min)	-100
0	UPPER DET. (GAPI)	100			TOD (sec)





-18	CCL	2
0	LTEN (lb)	1000
0	UPPER DET. (GAPI)	100

0	Lower Det. (GAPI)	1000	15:41:37
0	LSPD (ft/min)	-100	
		TOD (sec)	



QES WIRELINE LLC

RUN # 4

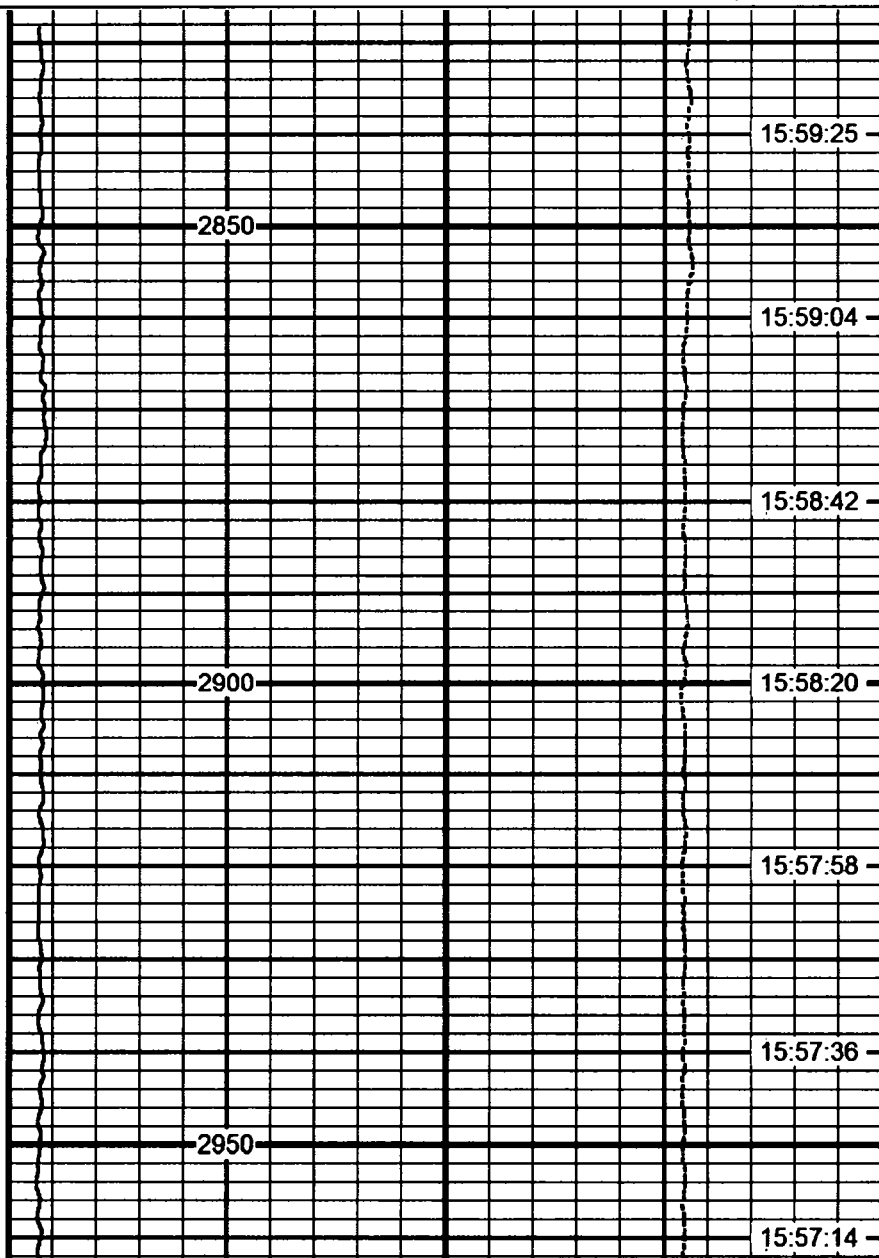
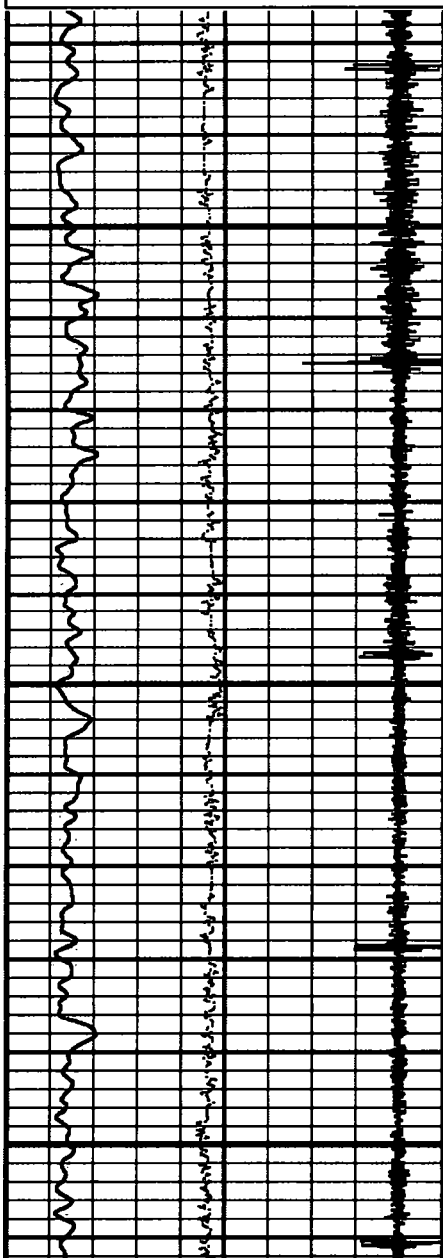
SLUG # 1 CHASE # 3

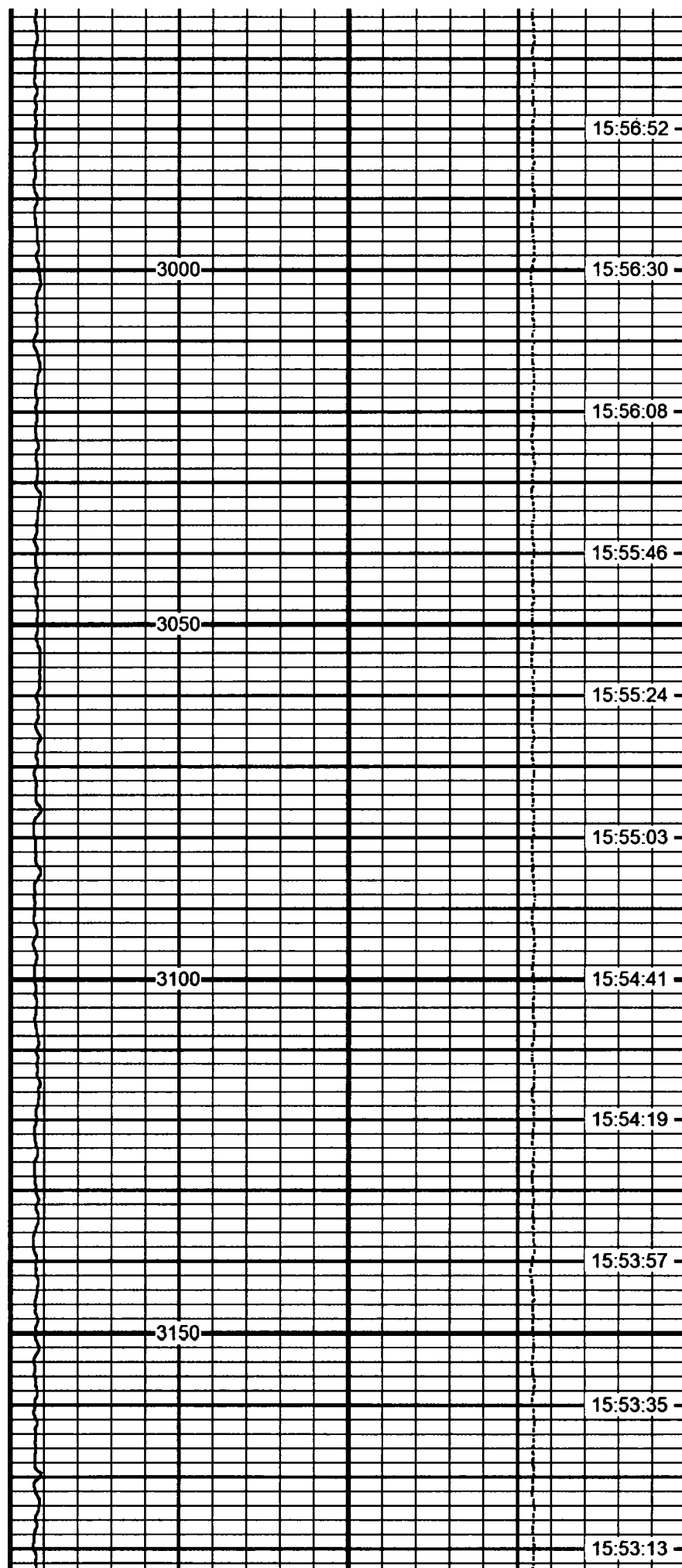
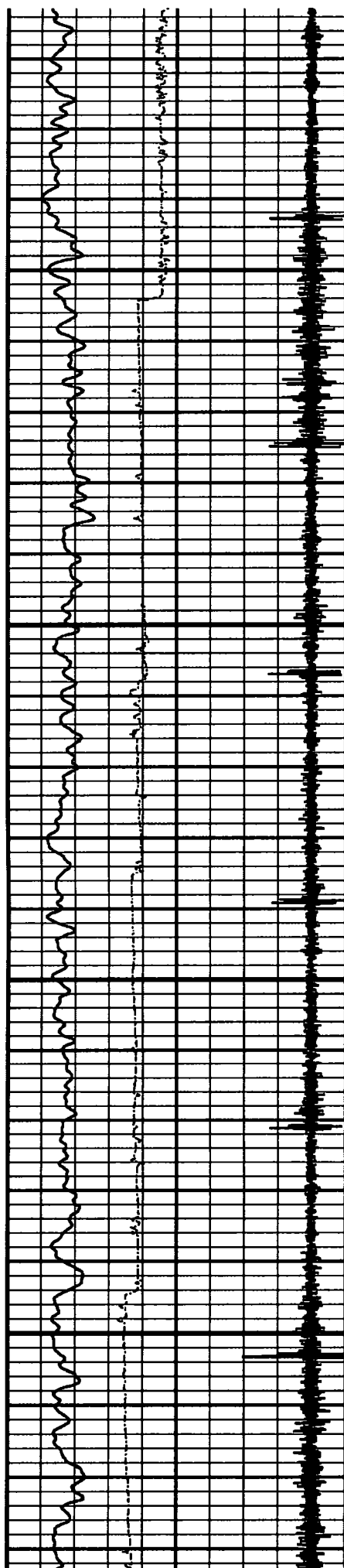
16 GPM @ 0 PSI

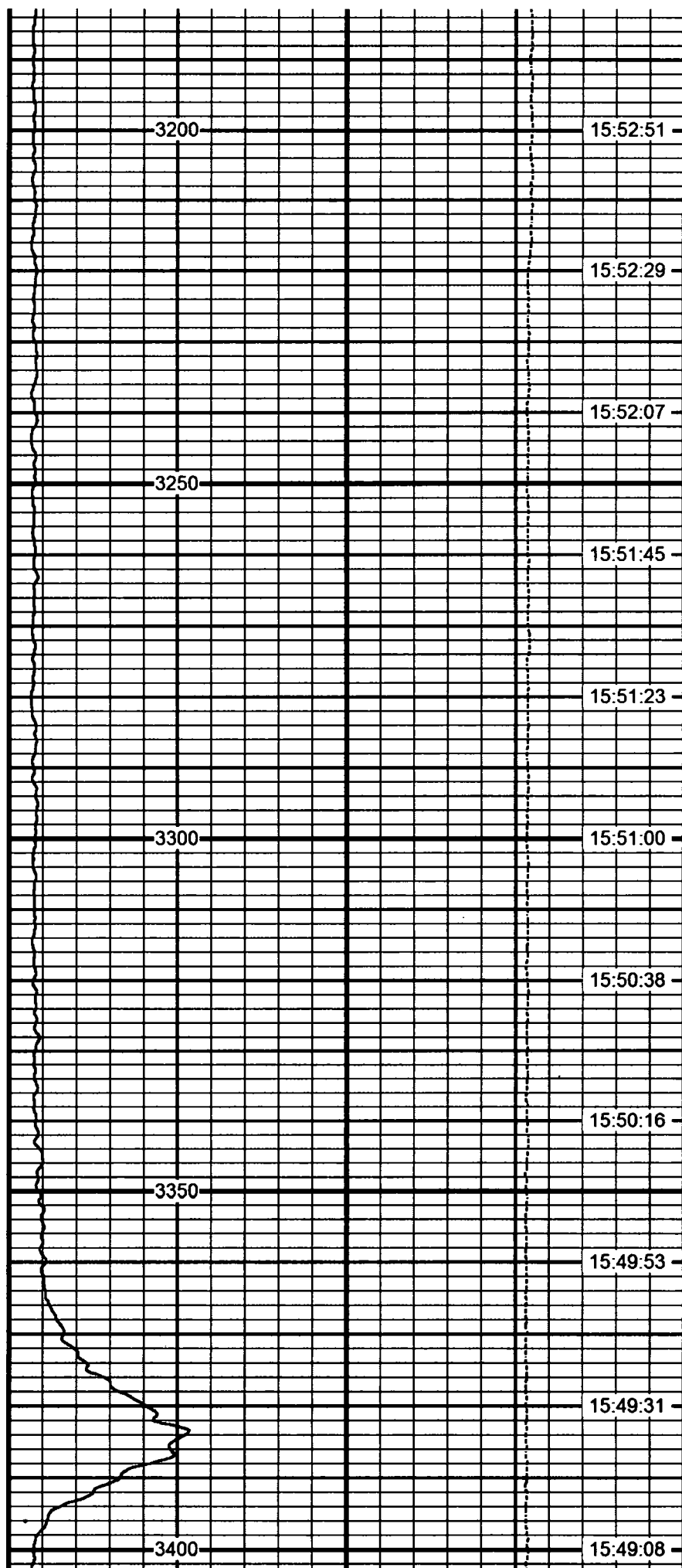
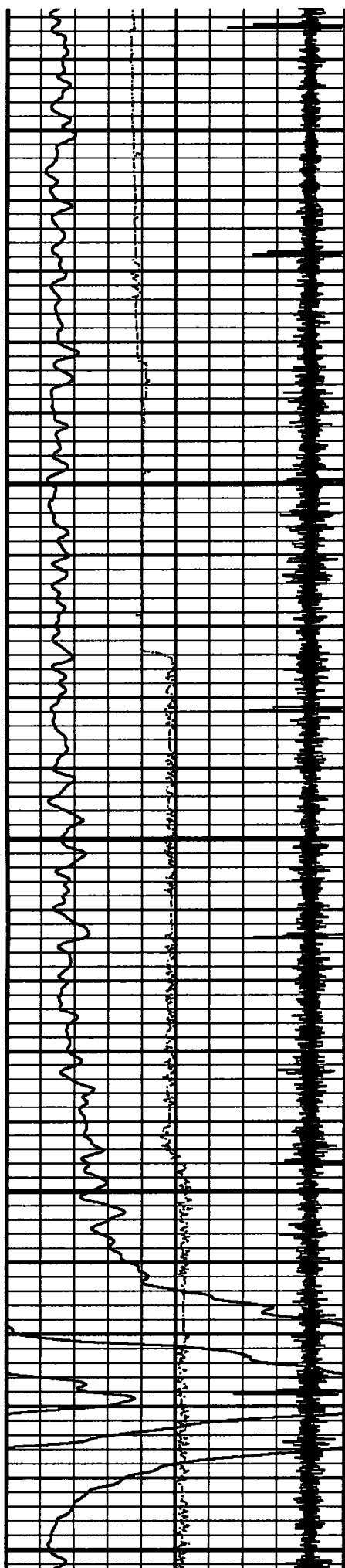
Database File western refshellstate13swd1 rat 2019.db
 Dataset Pathname slug1/pass3
 Presentation Format tracergw
 Dataset Creation Tue Jul 09 15:48:54 2019
 Charted by Depth in Feet scaled 1:240

-18	CCL	2
0	LTEN (lb)	1000
0	UPPER DET. (GAPI)	100

0	Lower Det. (GAPI)	1000	
0	LSPD (ft/min)	-100	
		TOD (sec)	







-18	CCL	2
0	LTEN (lb)	1000
0	UPPER DET. (GAPI)	100

0	Lower Det. (GAPI)	1000
0	LSPD (ft/min)	-100
	TOD (sec)	



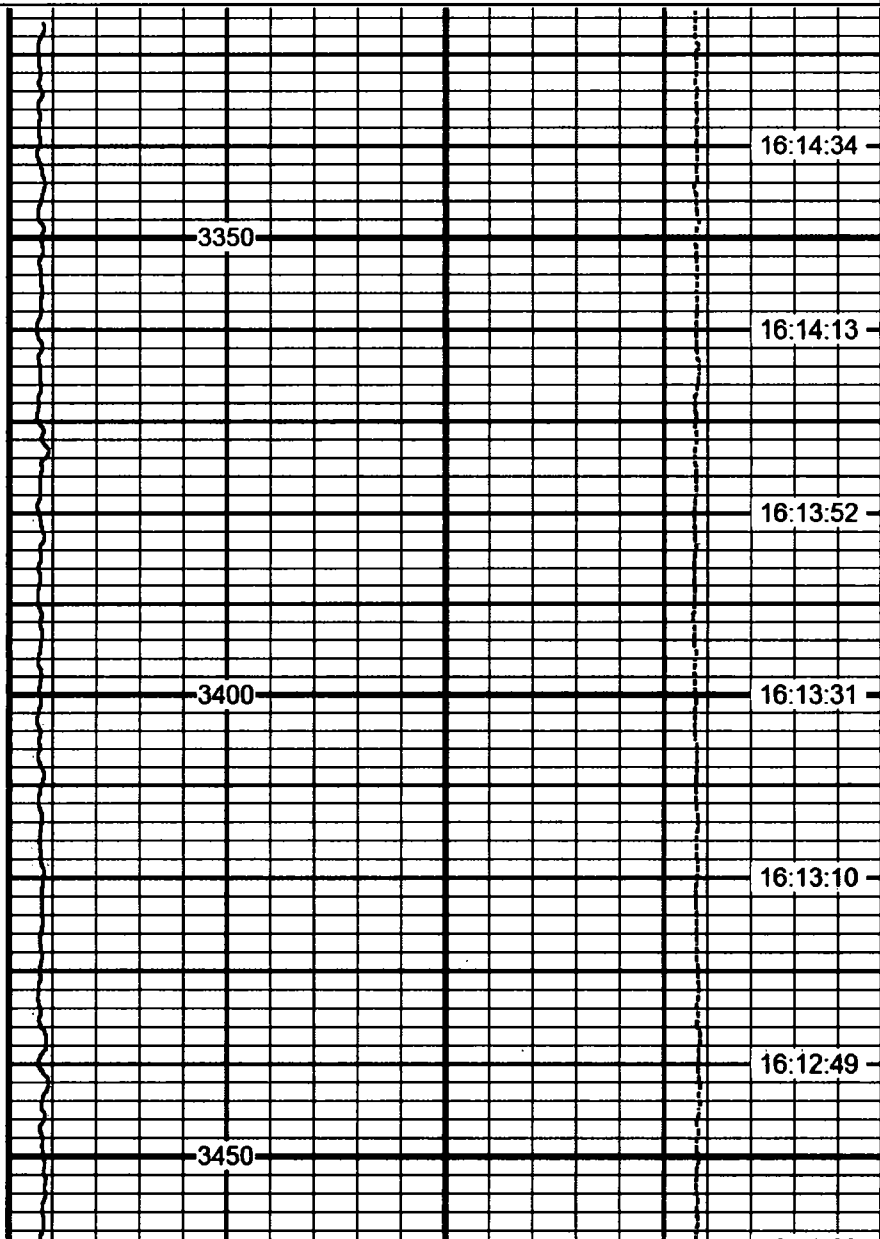
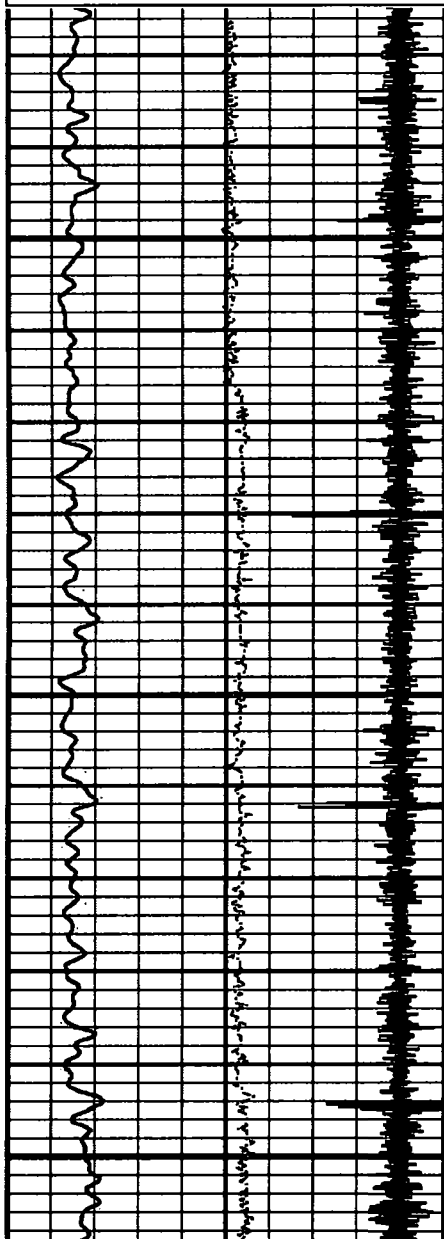
RUN # 5

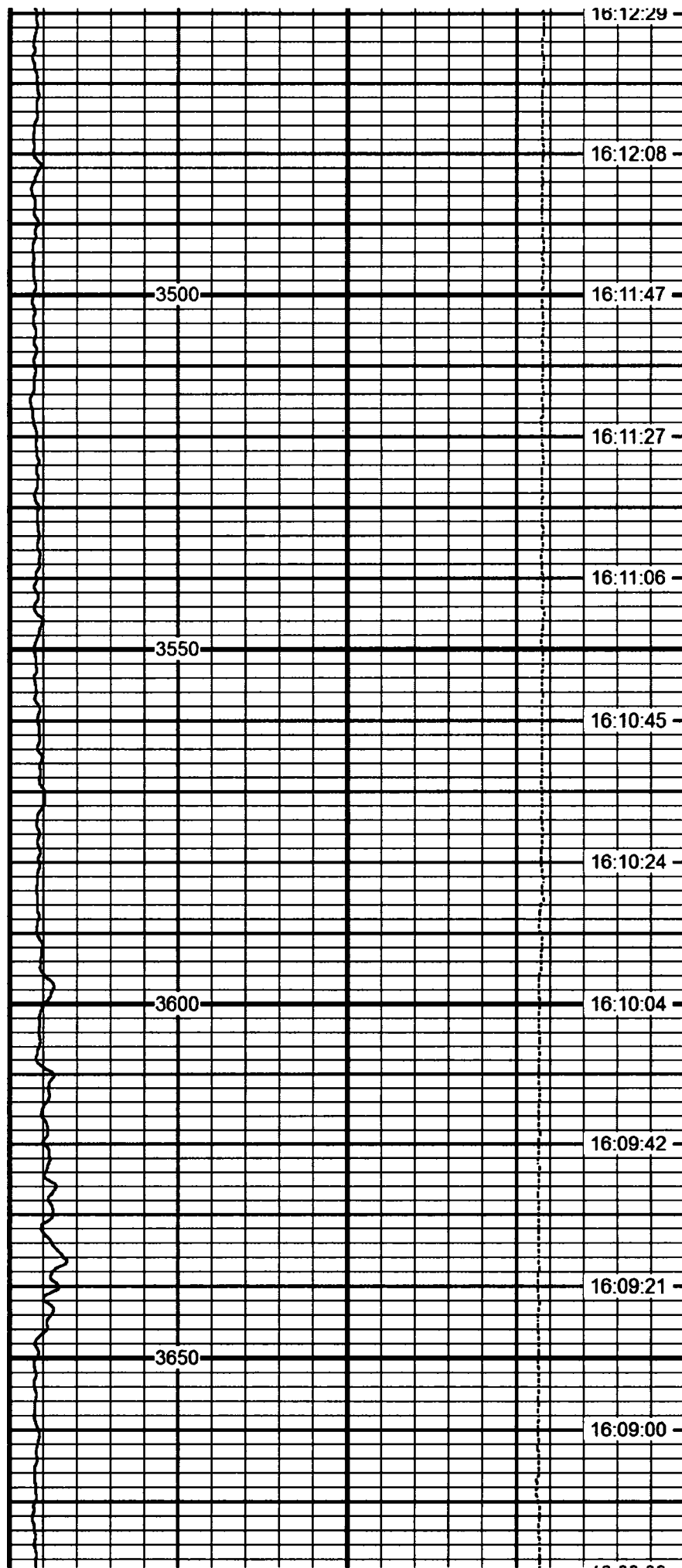
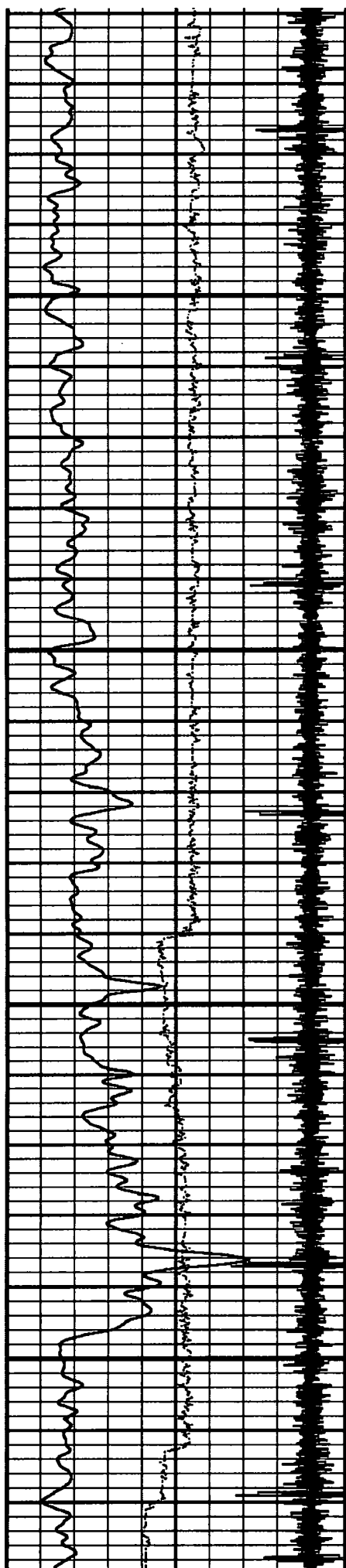
SLUG # 1 CHASE # 4 DISSIPATING
16 GPM @ 0 PSI

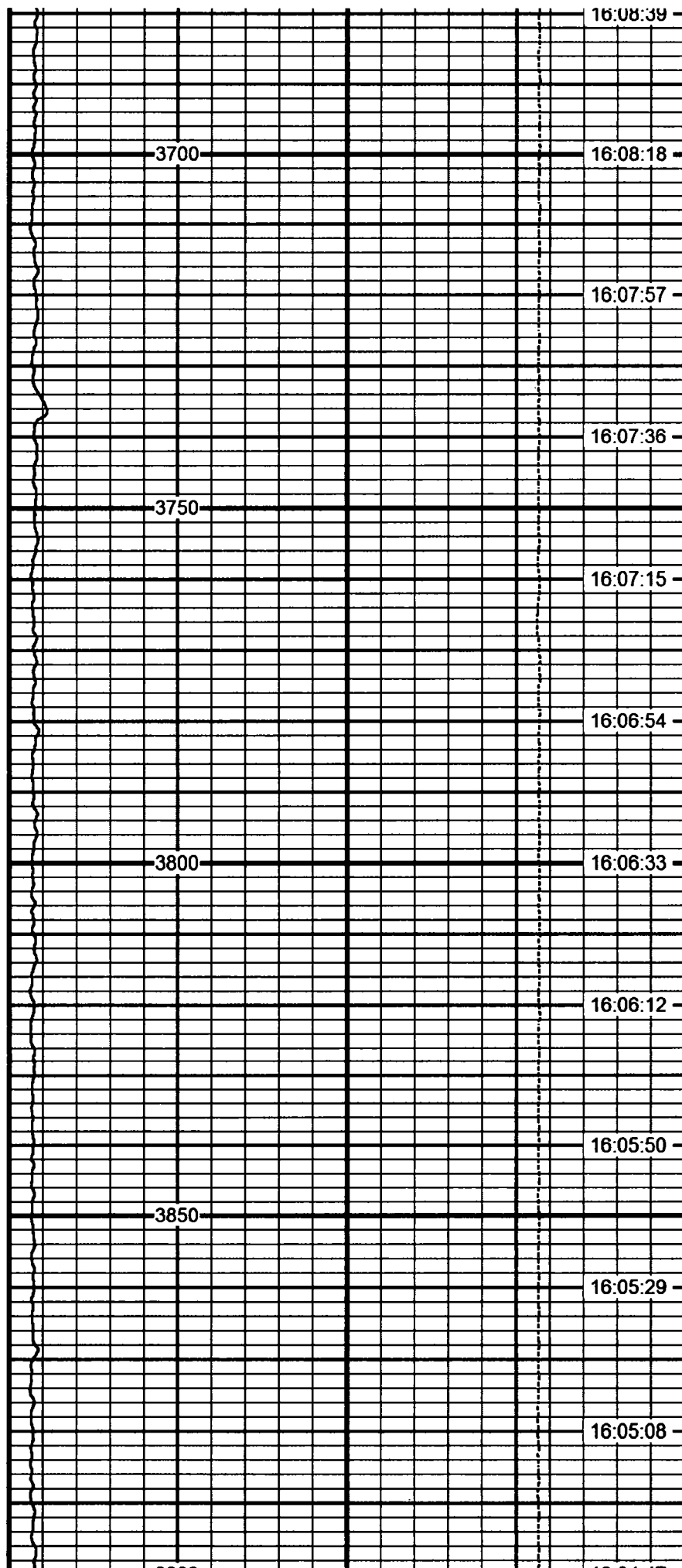
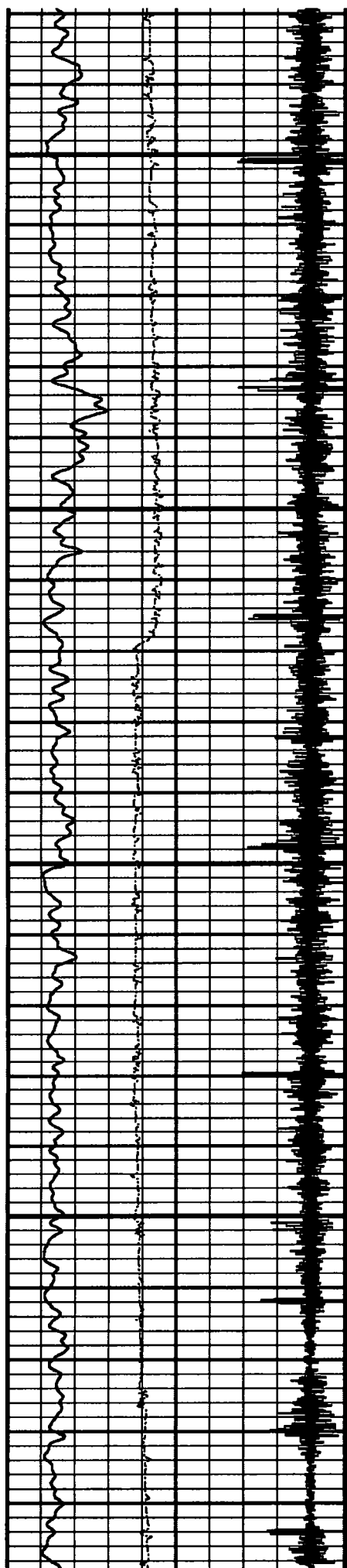
Database File western refshellstate13swd1 rat 2019.db
Dataset Pathname slug1/pass4
Presentation Format tracergw
Dataset Creation Tue Jul 09 16:04:14 2019
Charted by Depth in Feet scaled 1:240

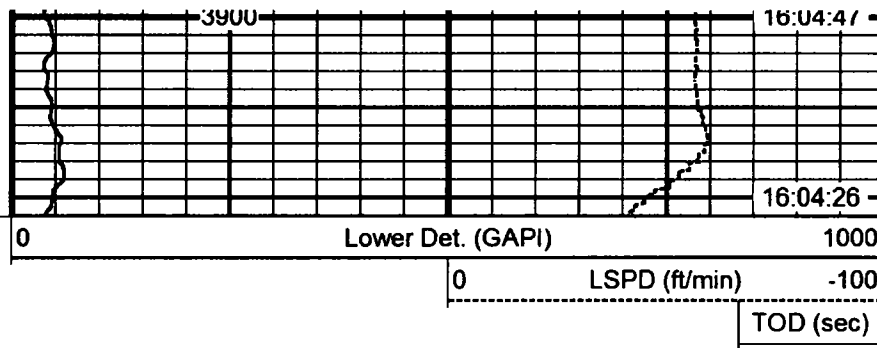
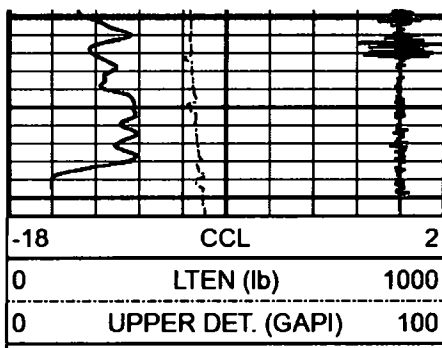
-18	CCL	2
0	LTEN (lb)	1000
0	UPPER DET. (GAPI)	100

0	Lower Det. (GAPI)	1000
0	LSPD (ft/min)	-100
	TOD (sec)	



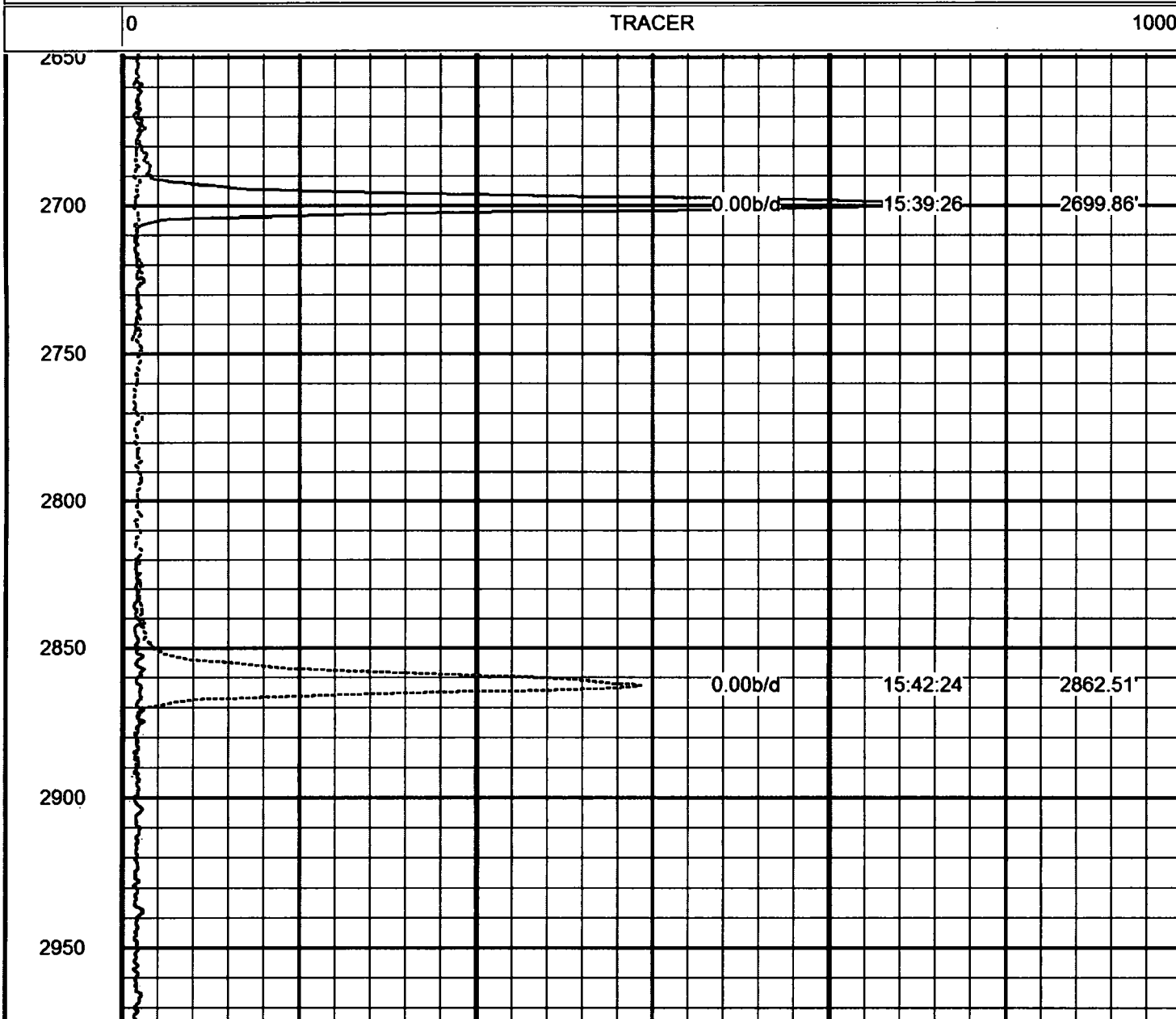






SLUG 1 MERGED

Database File western refshellstate13swd1 rat 2019.db
 Dataset Pathname slug1/_profile1_
 Presentation Format trcprof
 Dataset Creation Tue Jul 09 17:26:59 2019
 Charted by Depth in Feet scaled 1:600



3000

3050

3100

3150

3200

3250

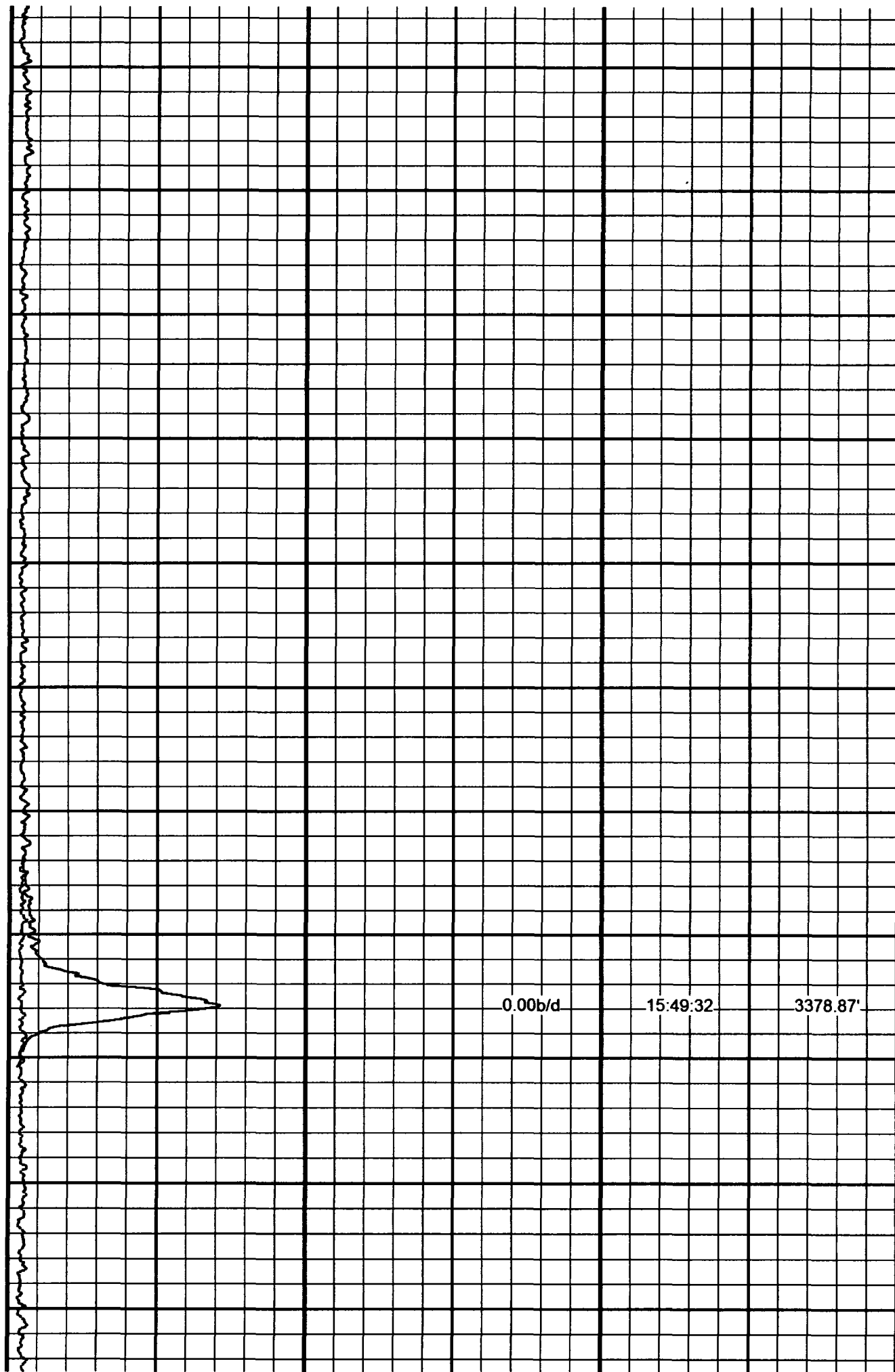
3300

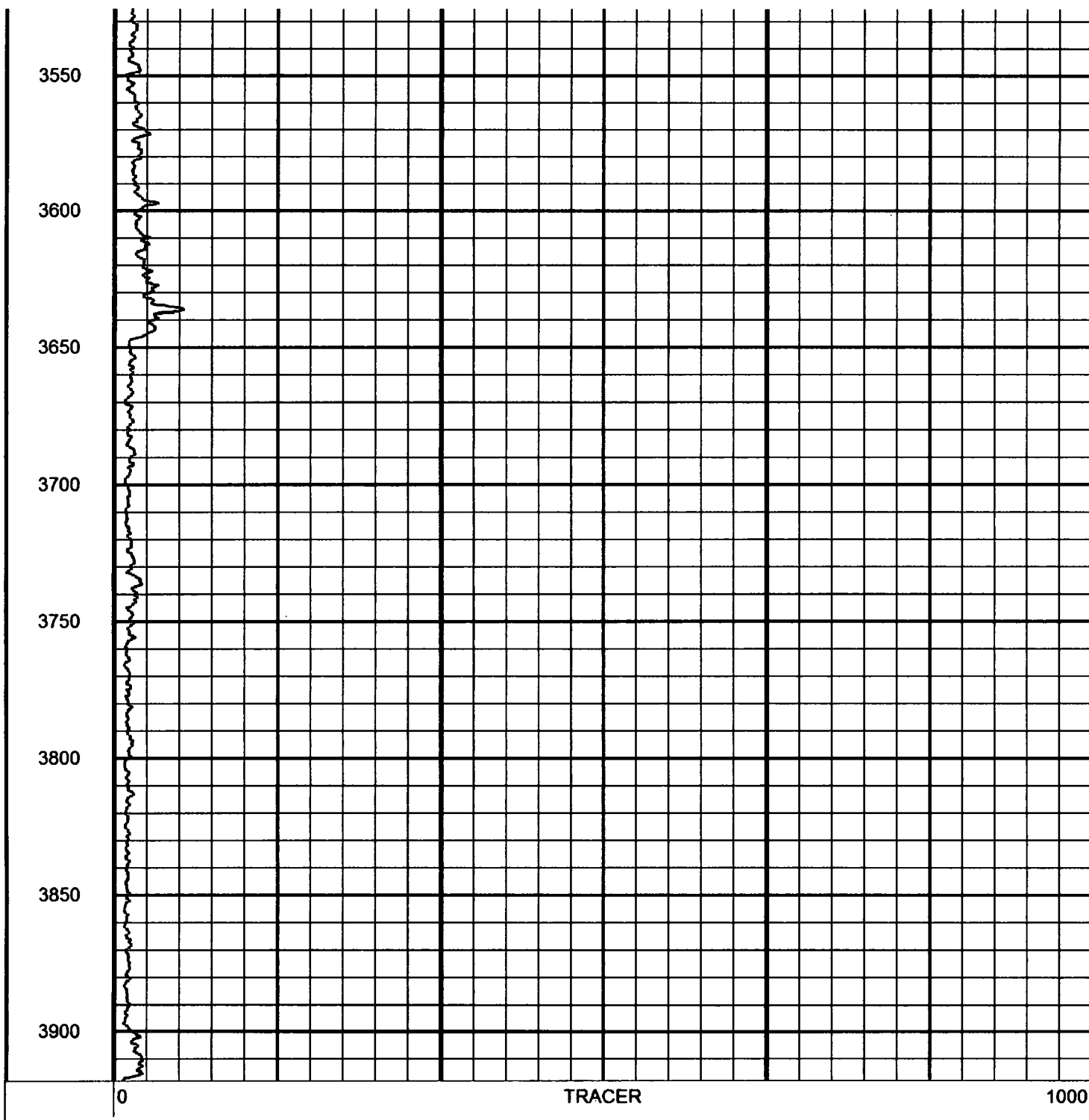
3350

3400

3450

3500



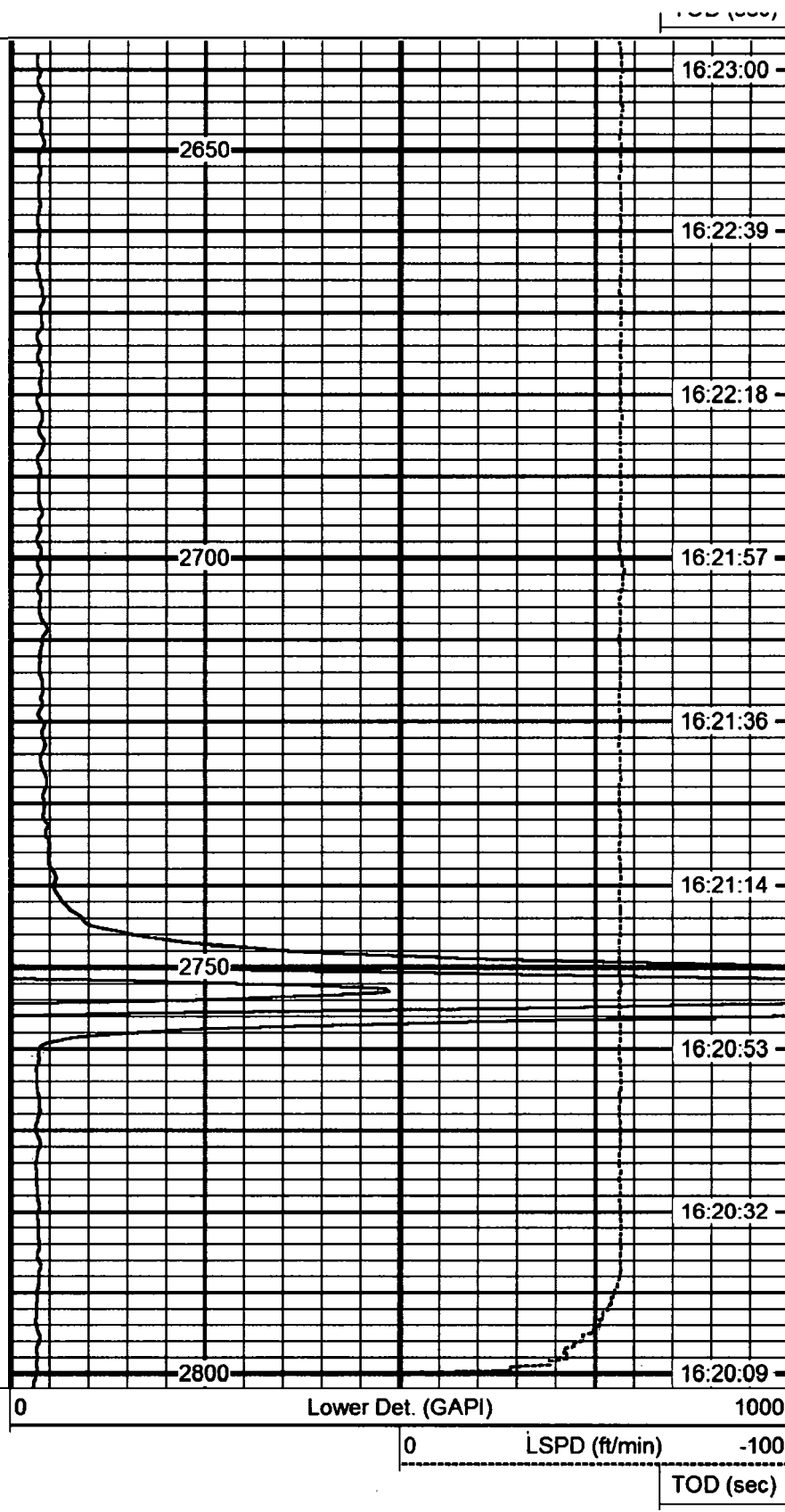
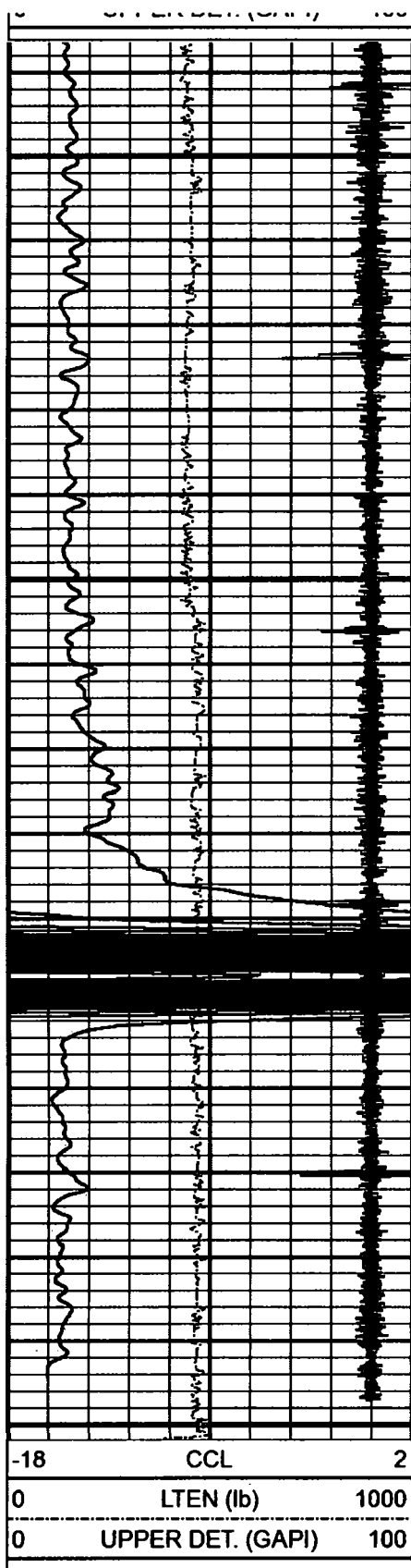


RUN # 6

SLUG # 2 CHASE # 1 EJECT @ 2650
16 GPM @ 0 PSI

Database File western refshellstate13swd1 rat 2019.db
Dataset Pathname slug2/pass1
Presentation Format tracergw
Dataset Creation Tue Jul 09 16:20:06 2019
Charted by Depth in Feet scaled 1:240

-18	CCL	2	0	Lower Det. (GAPI)	1000
0	LTEN (lb)	1000	0	LSPD (ft/min)	-100
0	UPPER DET (GAPI)	100		TOD (sec)	



RUN # 7

SLUG # 2 CHASE # 2
16 GPM @ 0 PSI

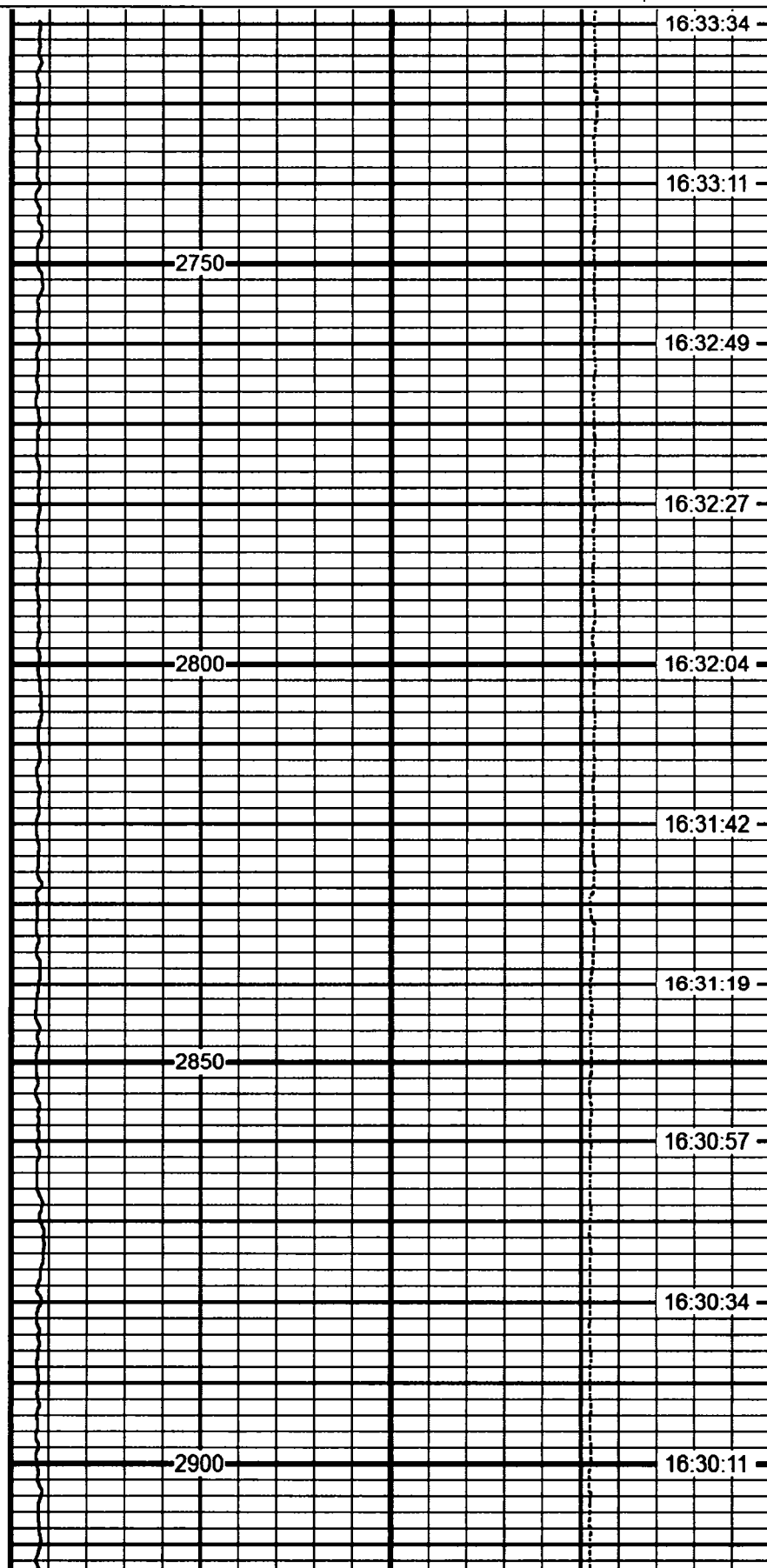
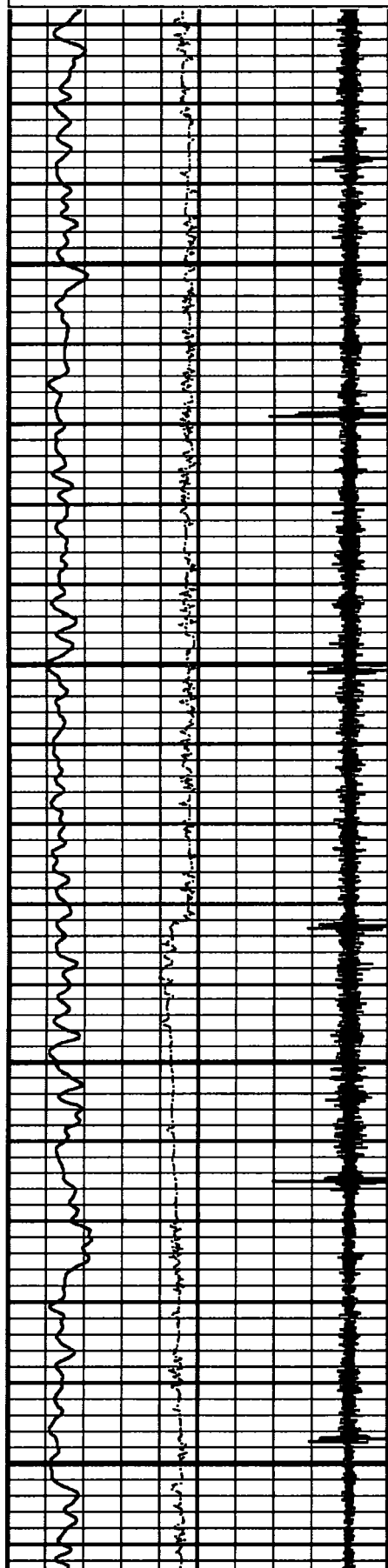
Database File western refshellstate13swd1 rat 2019.db
Dataset Pathname slug2/pass2
Presentation Format tracerow

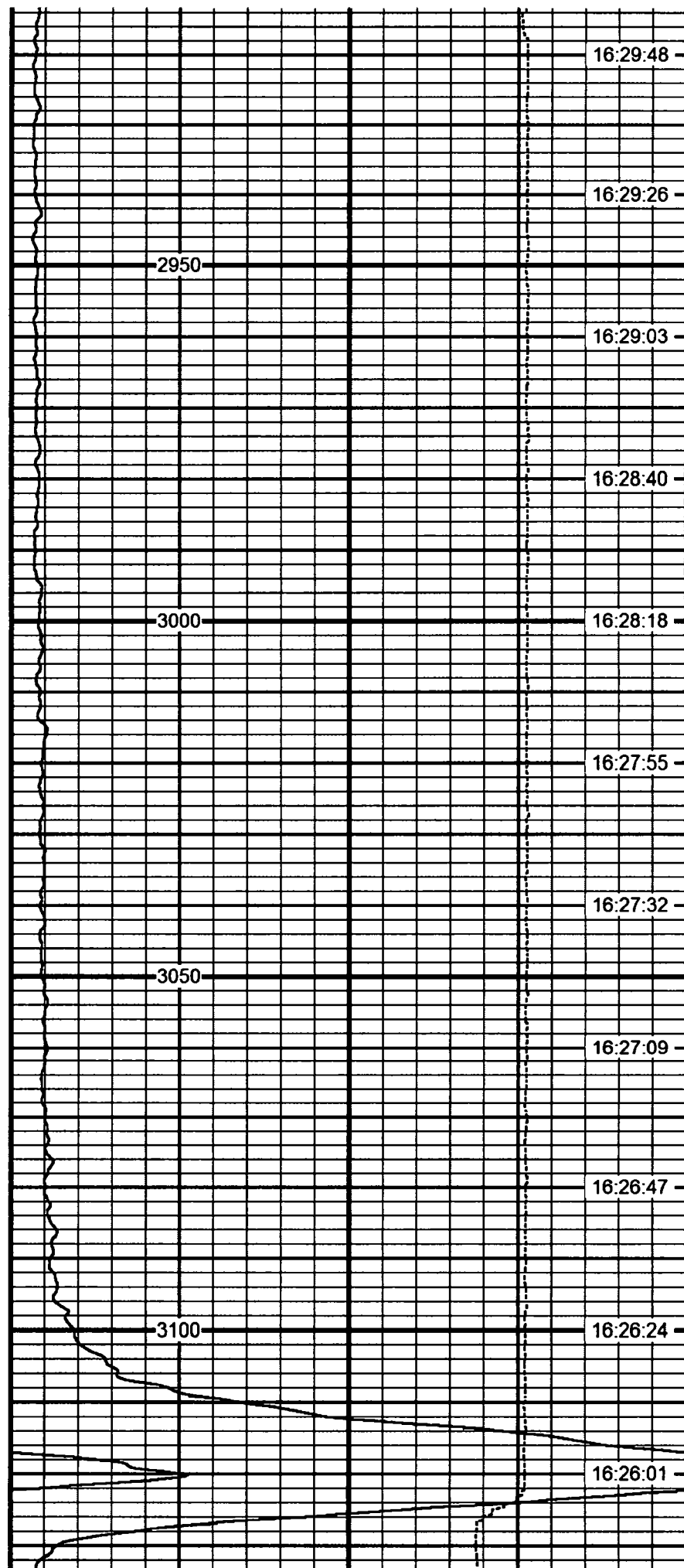
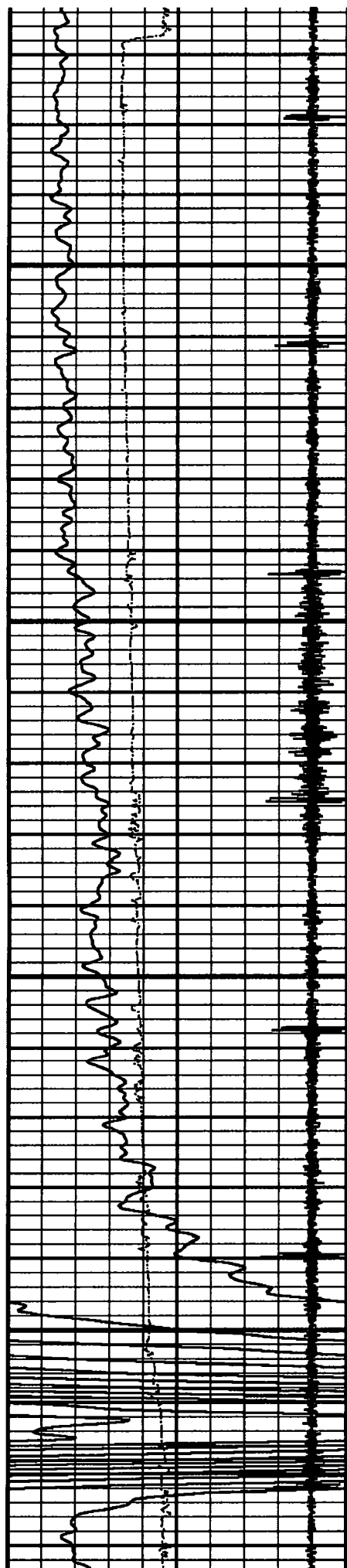
Dataset Creation
Charted by

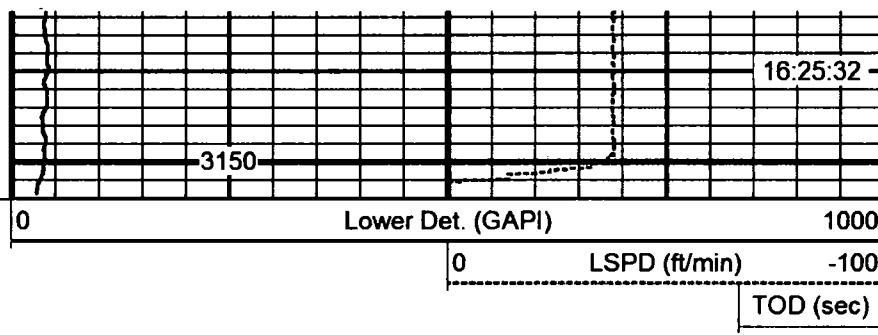
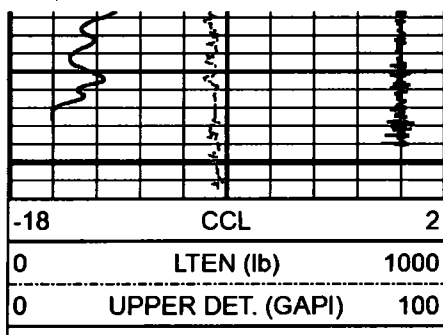
Tue Jul 09 16:25:10 2019
Depth in Feet scaled 1:240

-18	CCL	2
0	LTEN (lb)	1000
0	UPPER DET. (GAPI)	100

0	Lower Det. (GAPI)	1000
0	LSPD (ft/min)	-100
		TOD (sec)



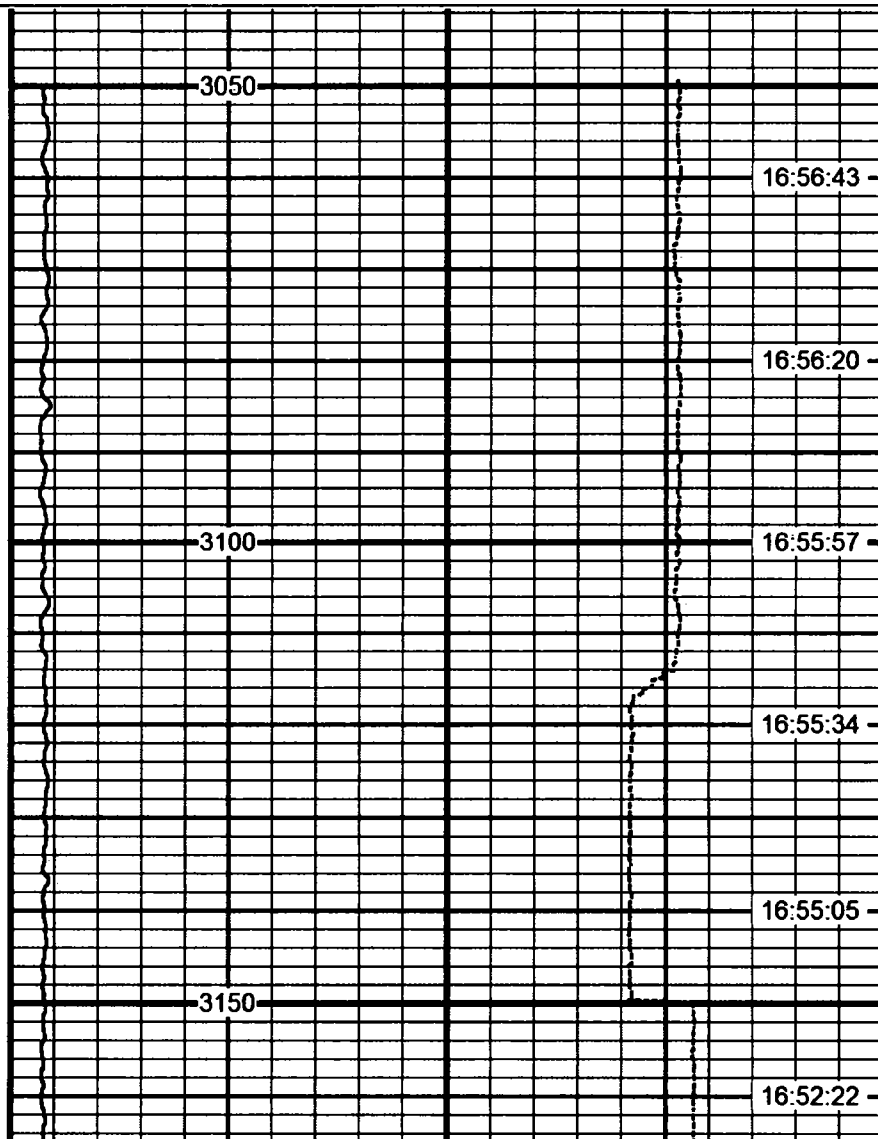
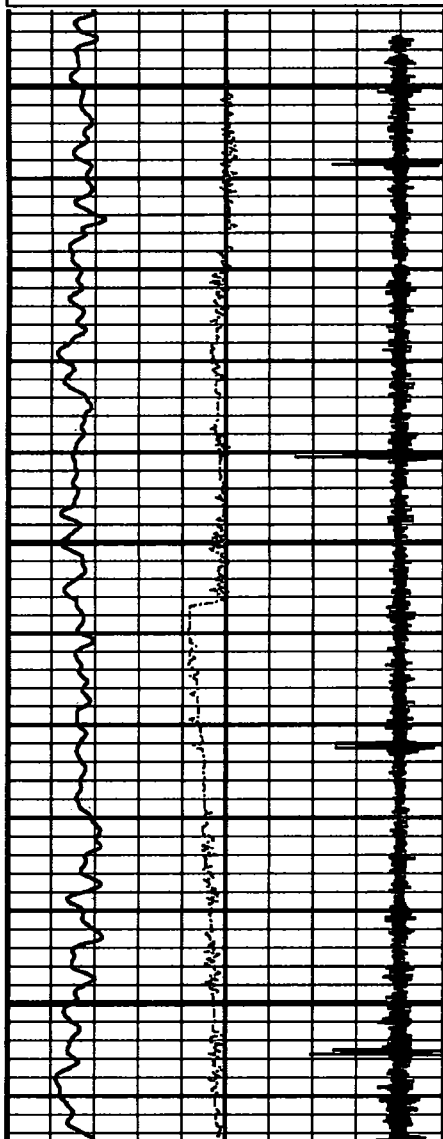
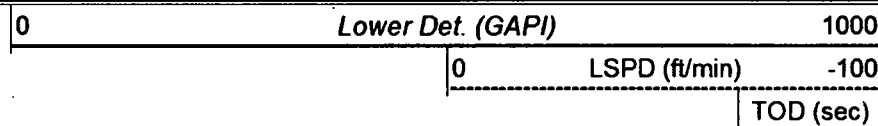
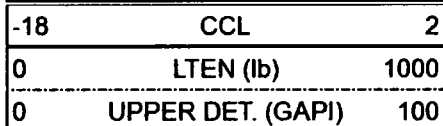


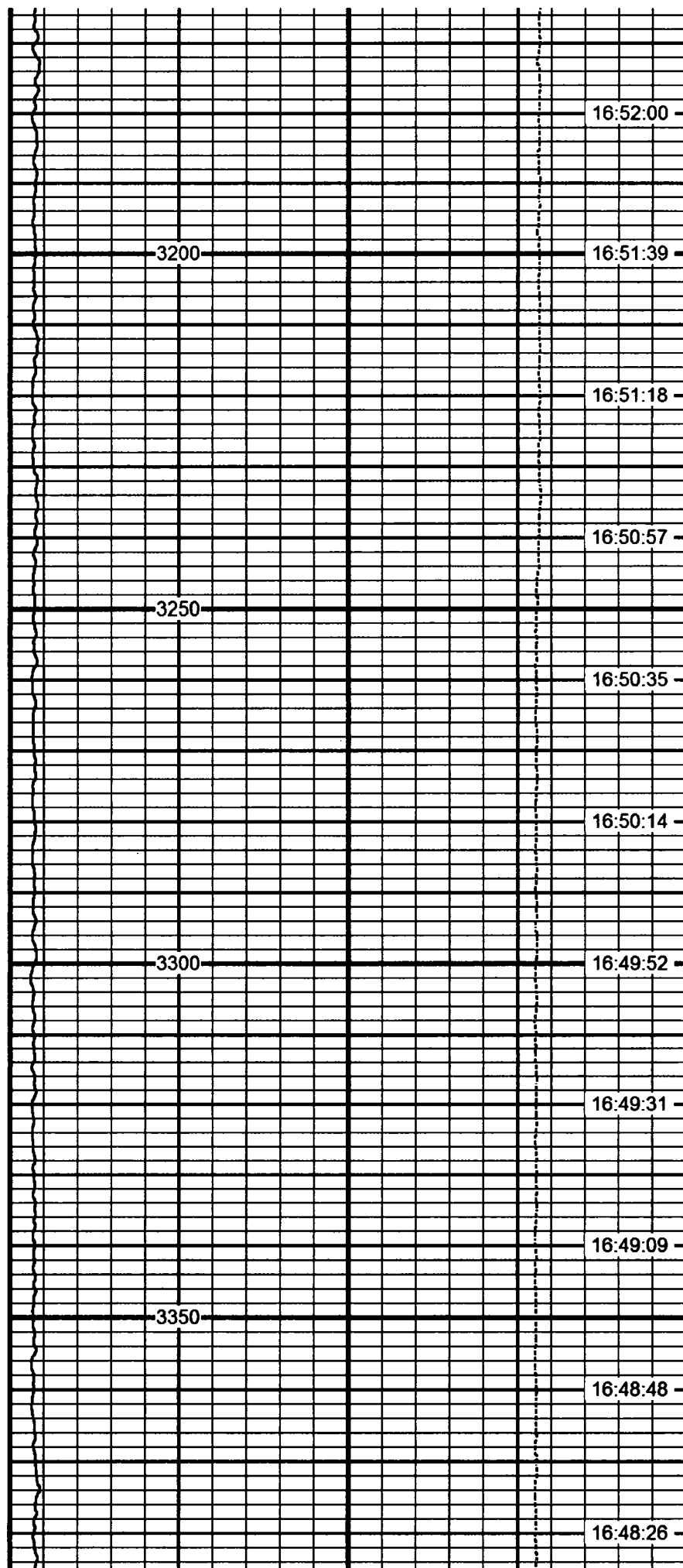
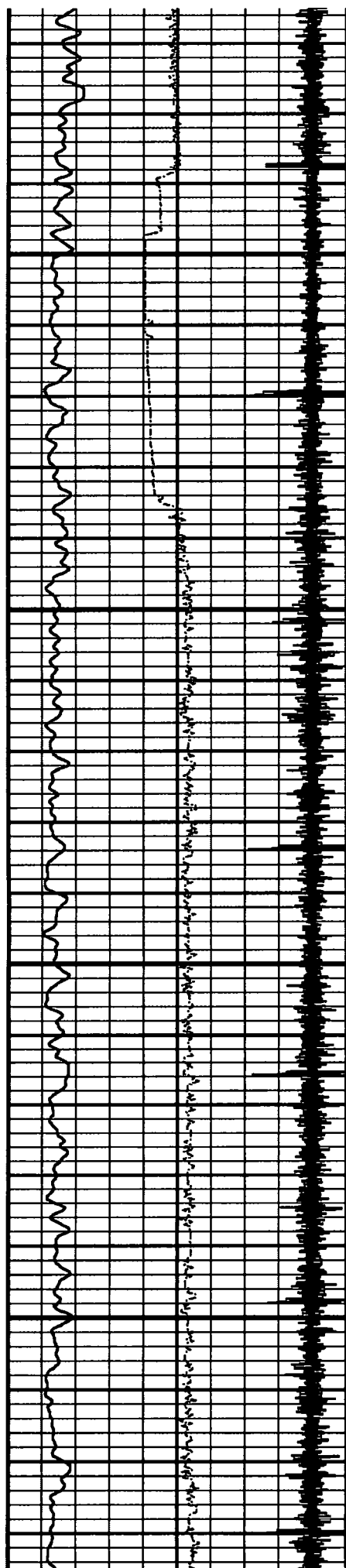


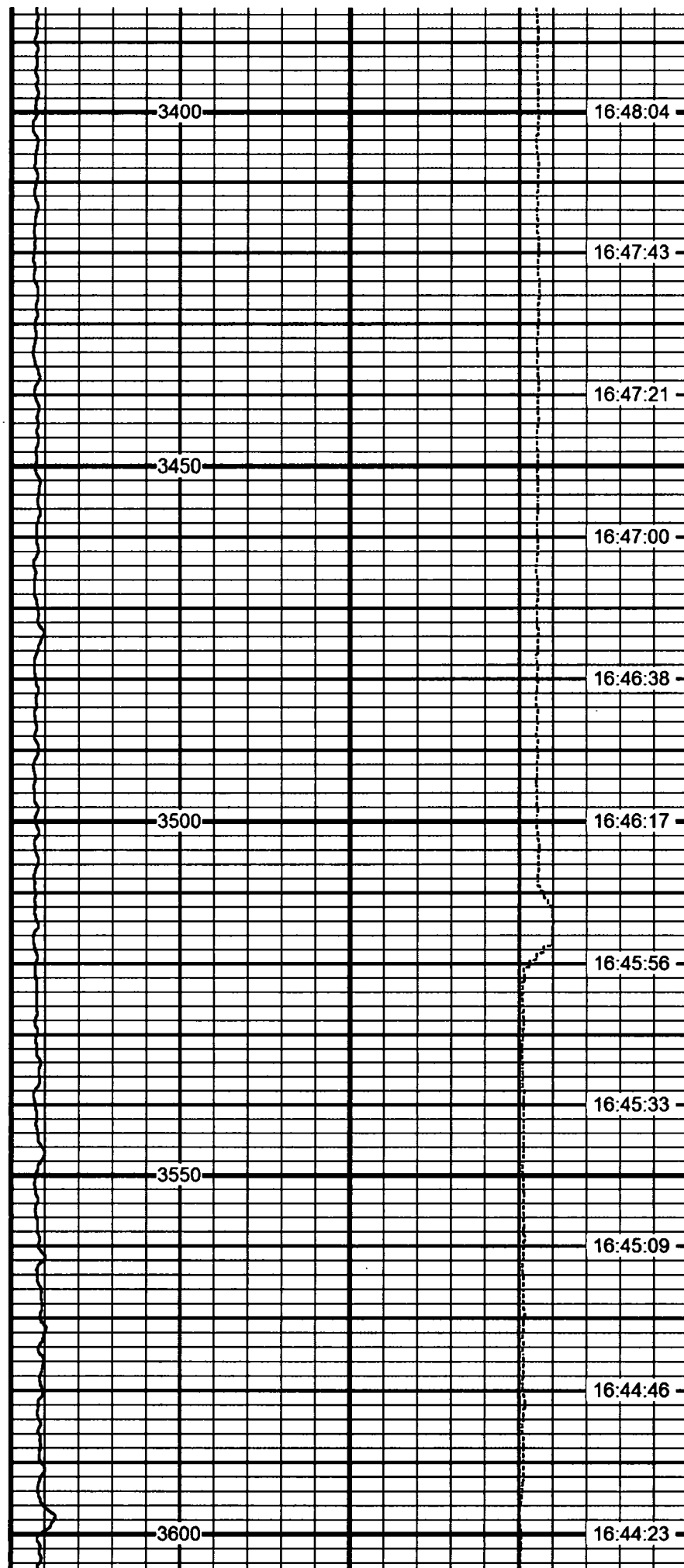
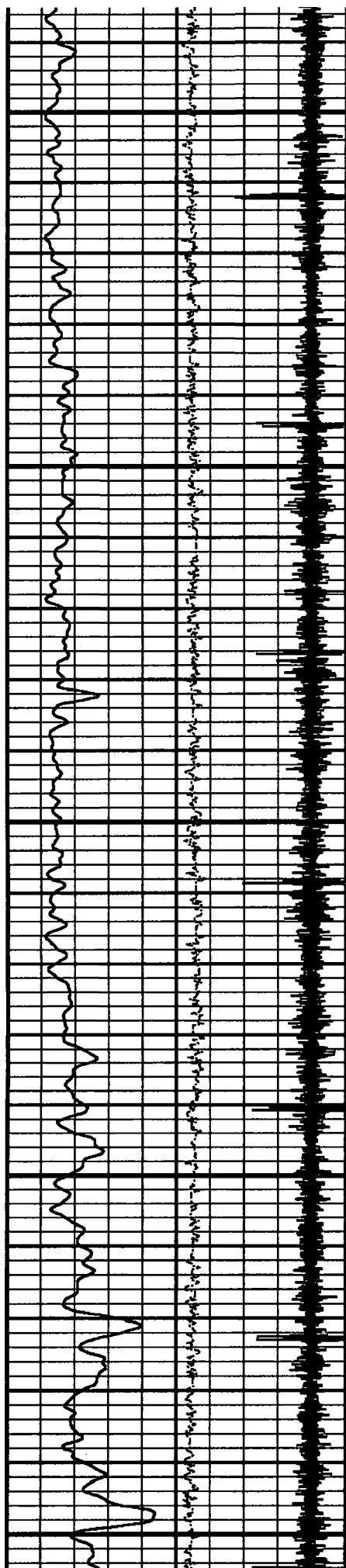
RUN # 8

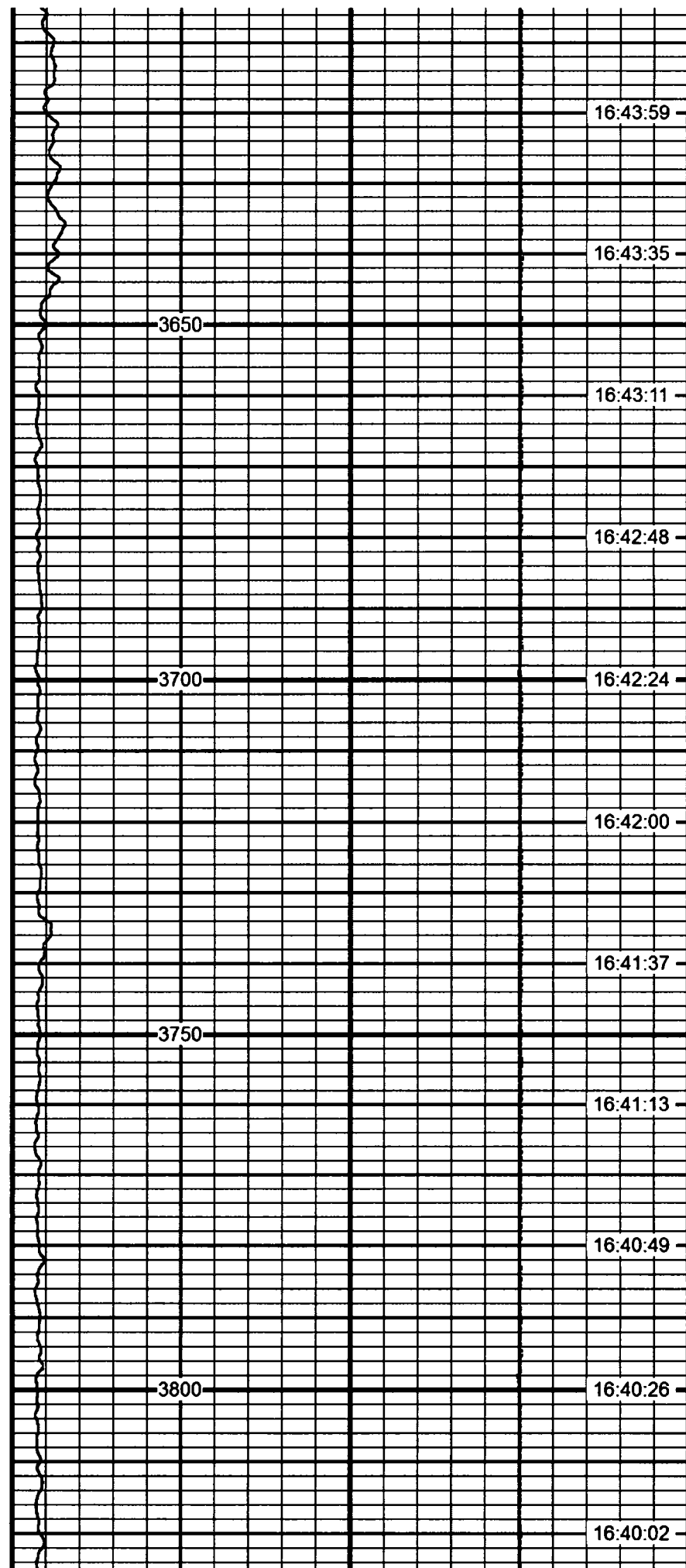
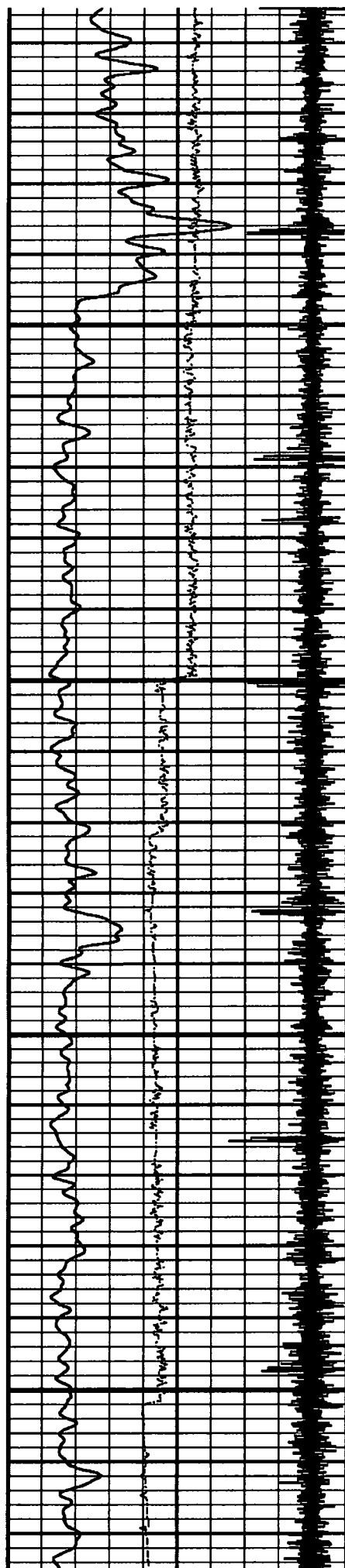
SLUG # 2 CHASE # 3
22 GPM @ 0 PSI

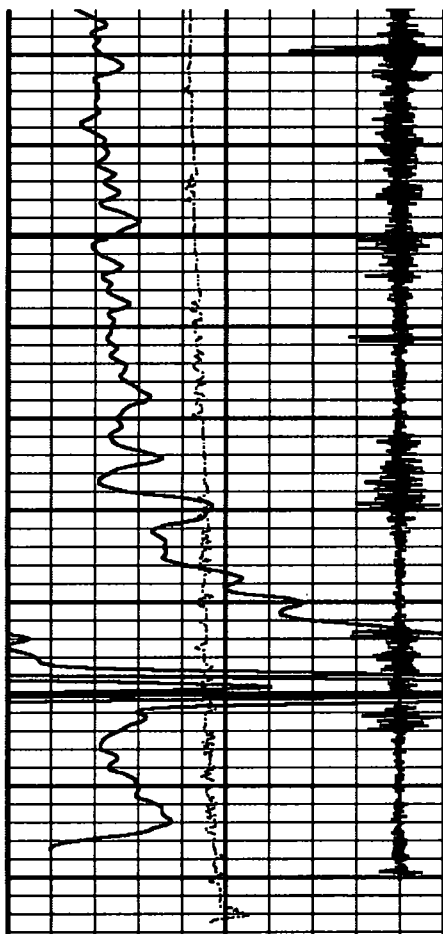
Database File western refshellstate13swd1 rat 2019.db
Dataset Pathname slug2/pass3_merge
Presentation Format tracergw
Dataset Creation Thu Jul 11 09:57:44 2019
Charted by Depth in Feet scaled 1:240



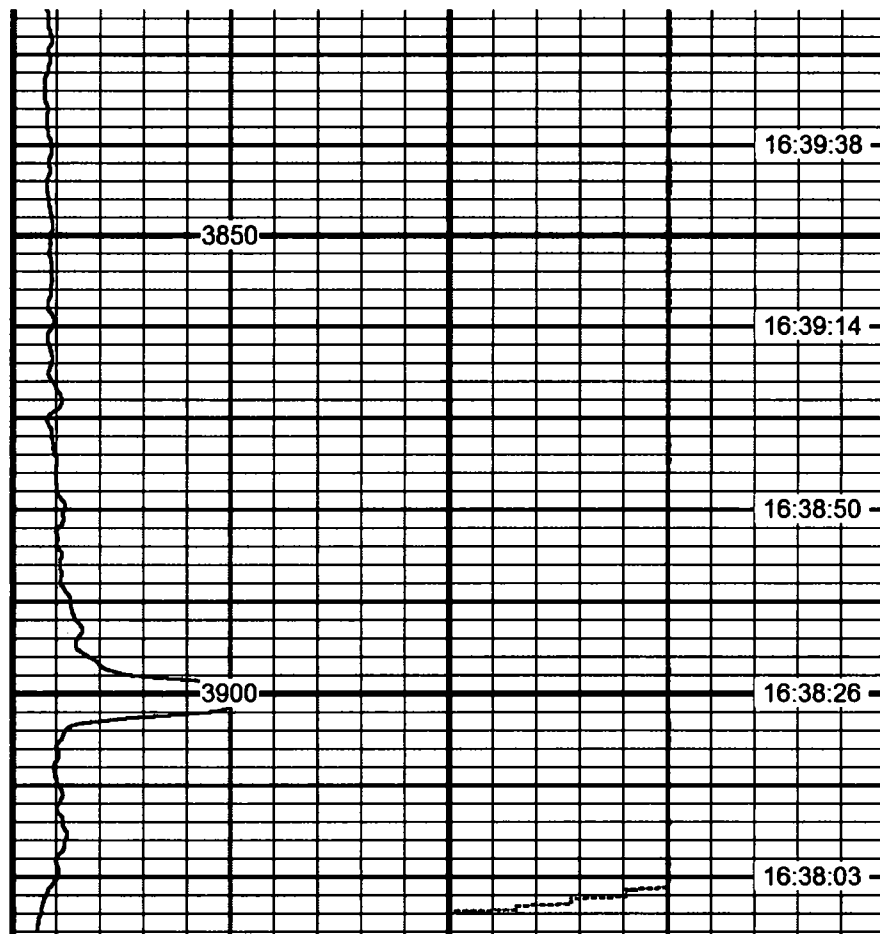








-18	CCL	2
0	LTEN (lb)	1000
0	UPPER DET. (GAPI)	100



0	Lower Det. (GAPI)	1000
0	LSPD (ft/min)	-100
		TOD (sec)



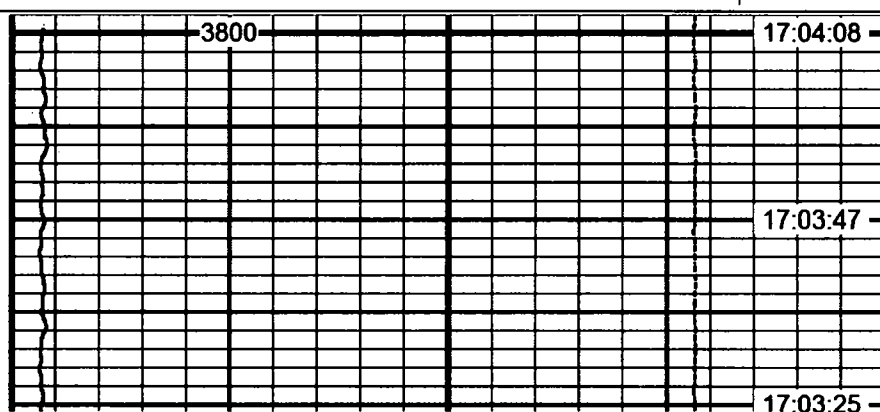
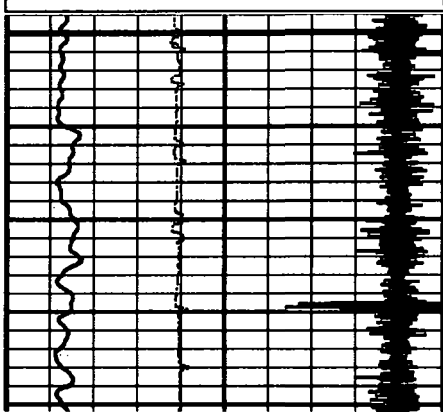
RUN # 10

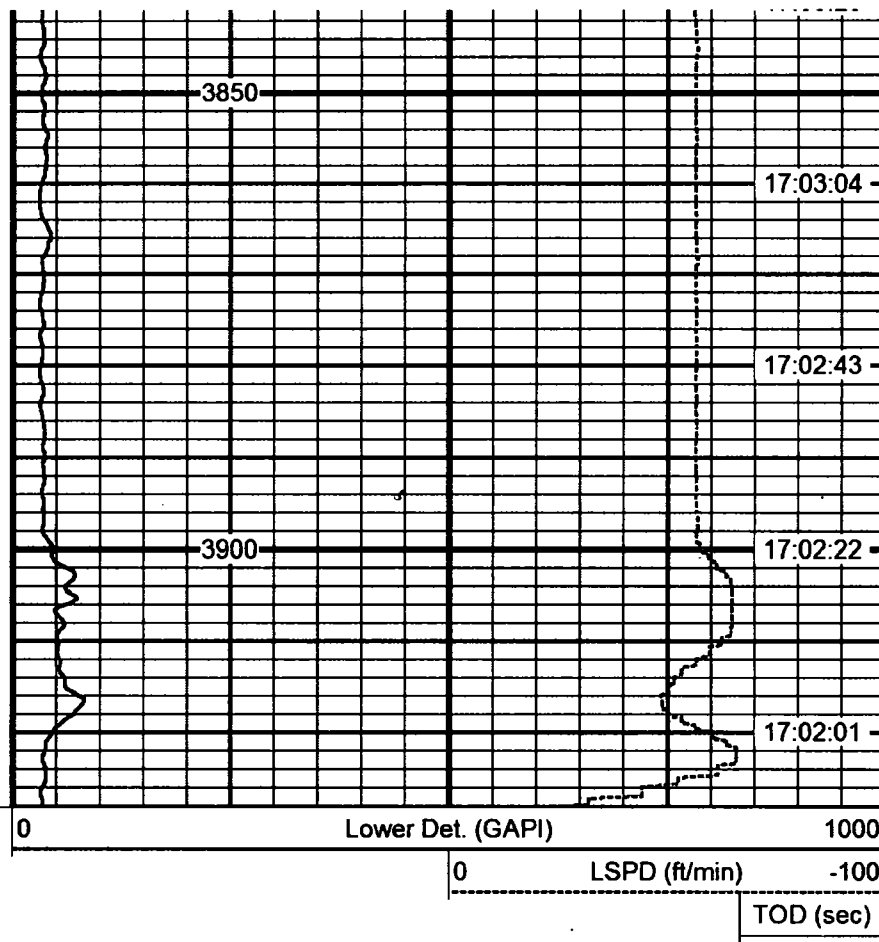
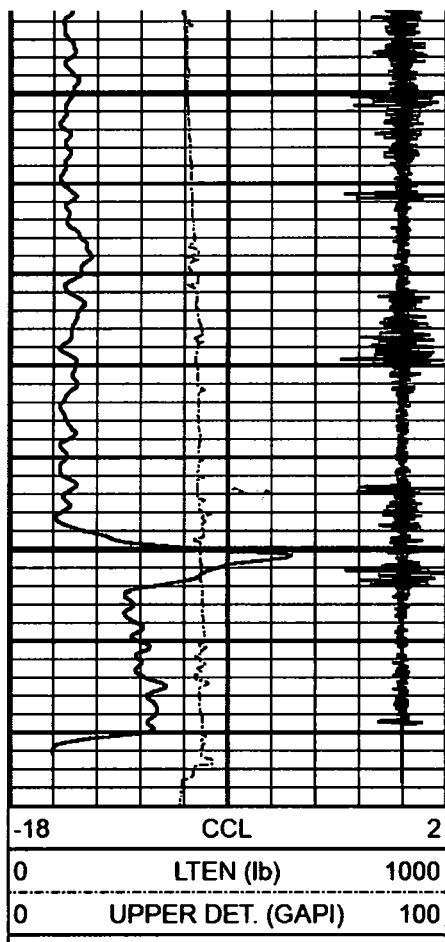
SLUG # 2 CHASE # 4 DISSIPATING
22 GPM @ 0 PSI

Database File	western refshellstate13swd1 rat 2019.db
Dataset Pathname	slug2/pass5
Presentation Format	tracergw
Dataset Creation	Tue Jul 09 17:01:48 2019
Charted by	Depth in Feet scaled 1:240

-18	CCL	2
0	LTEN (lb)	1000
0	UPPER DET. (GAPI)	100

0	Lower Det. (GAPI)	1000
0	LSPD (ft/min)	-100
		TOD (sec)

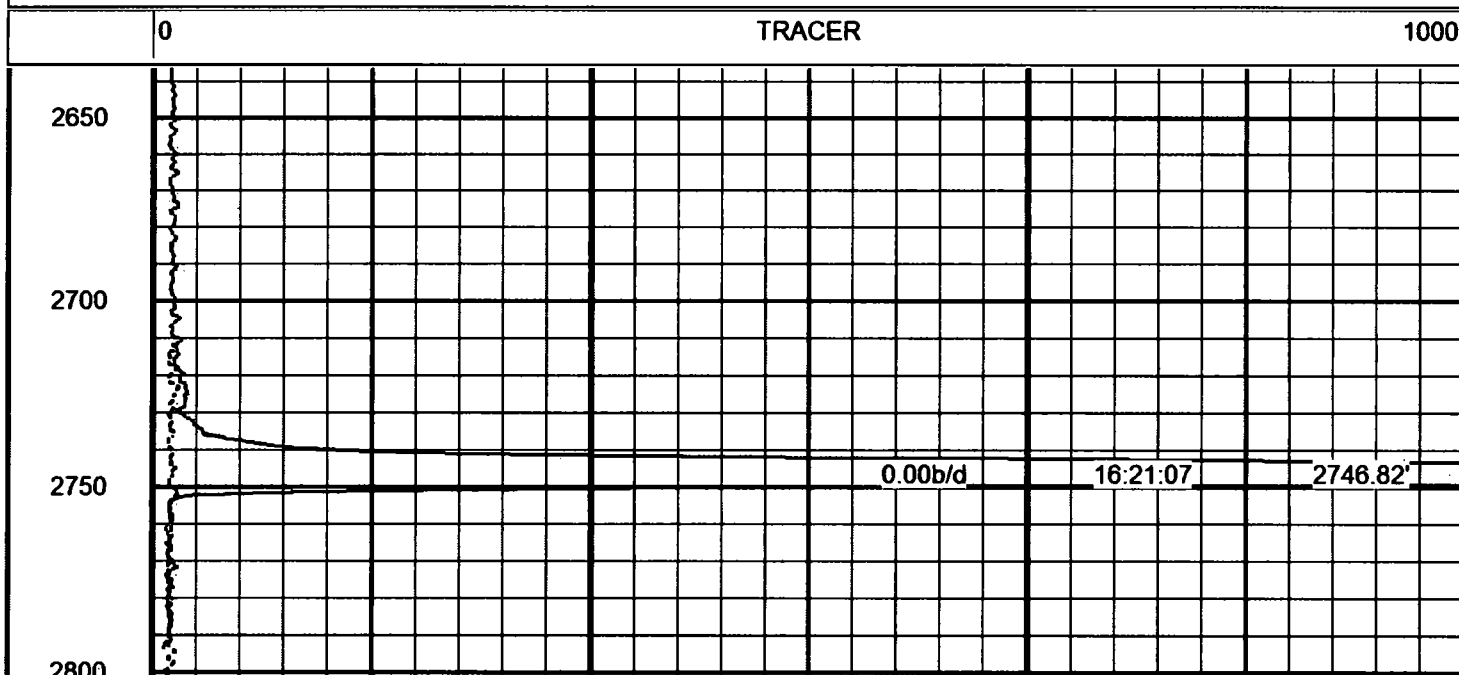




QES WIRELINE LLC

SLUG 2 MERGED

Database File western ref\shellstate13swd1 rat 2019.db
 Dataset Pathname slug2/_profile1_
 Presentation Format trcprof
 Dataset Creation Tue Jul 09 17:28:46 2019
 Charted by Depth in Feet scaled 1:600



2850

2900

2950

3000

3050

3100

3150

3200

3250

3300

3350

0.00b/d 16:26:06 3115.43'

3400

3450

3500

3550

3600

3650

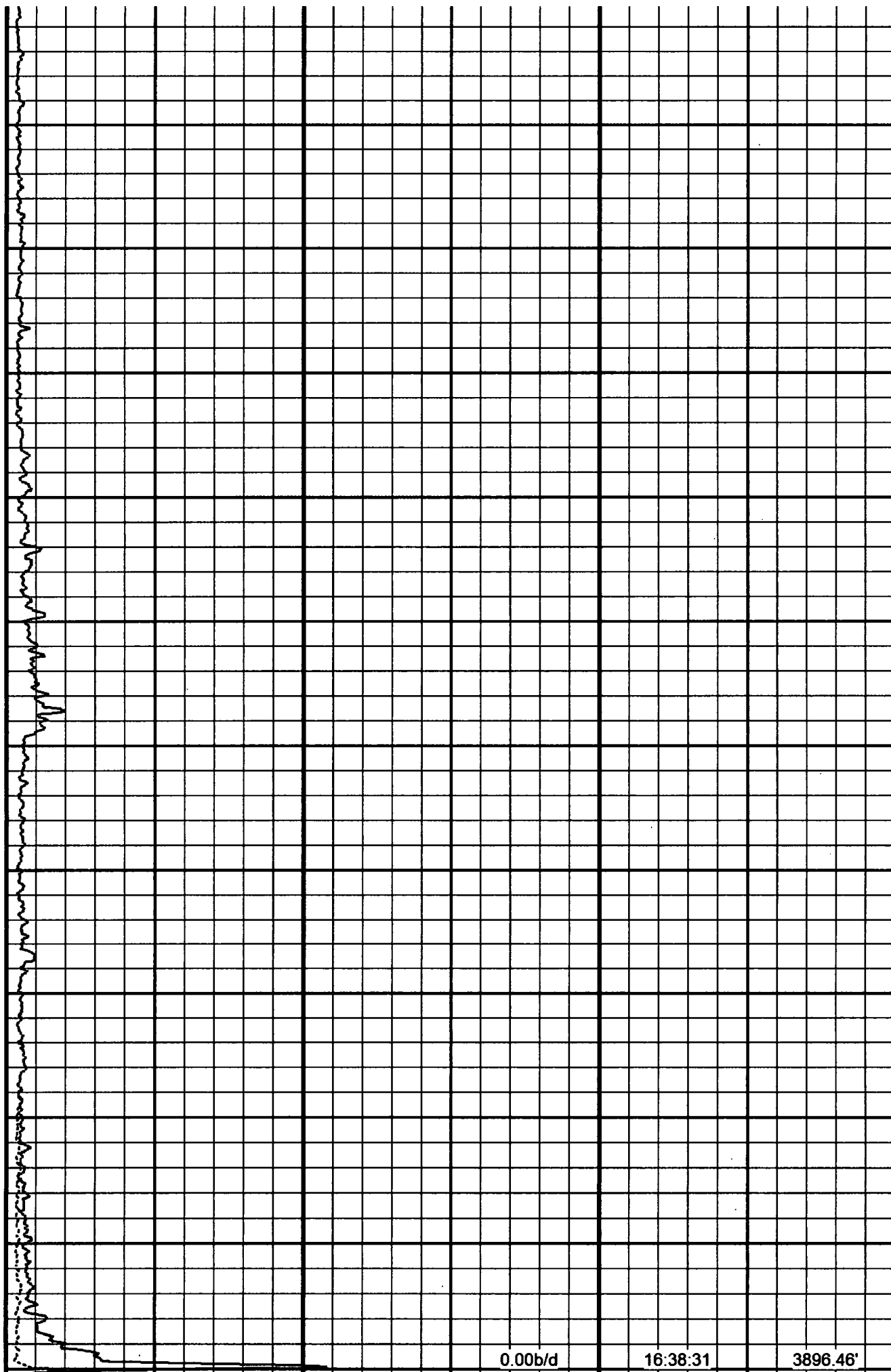
3700

3750

3800

3850

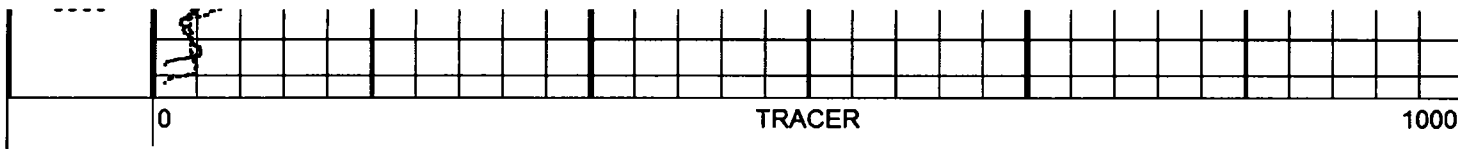
3900



0.00b/d

16:38:31

3896.46'





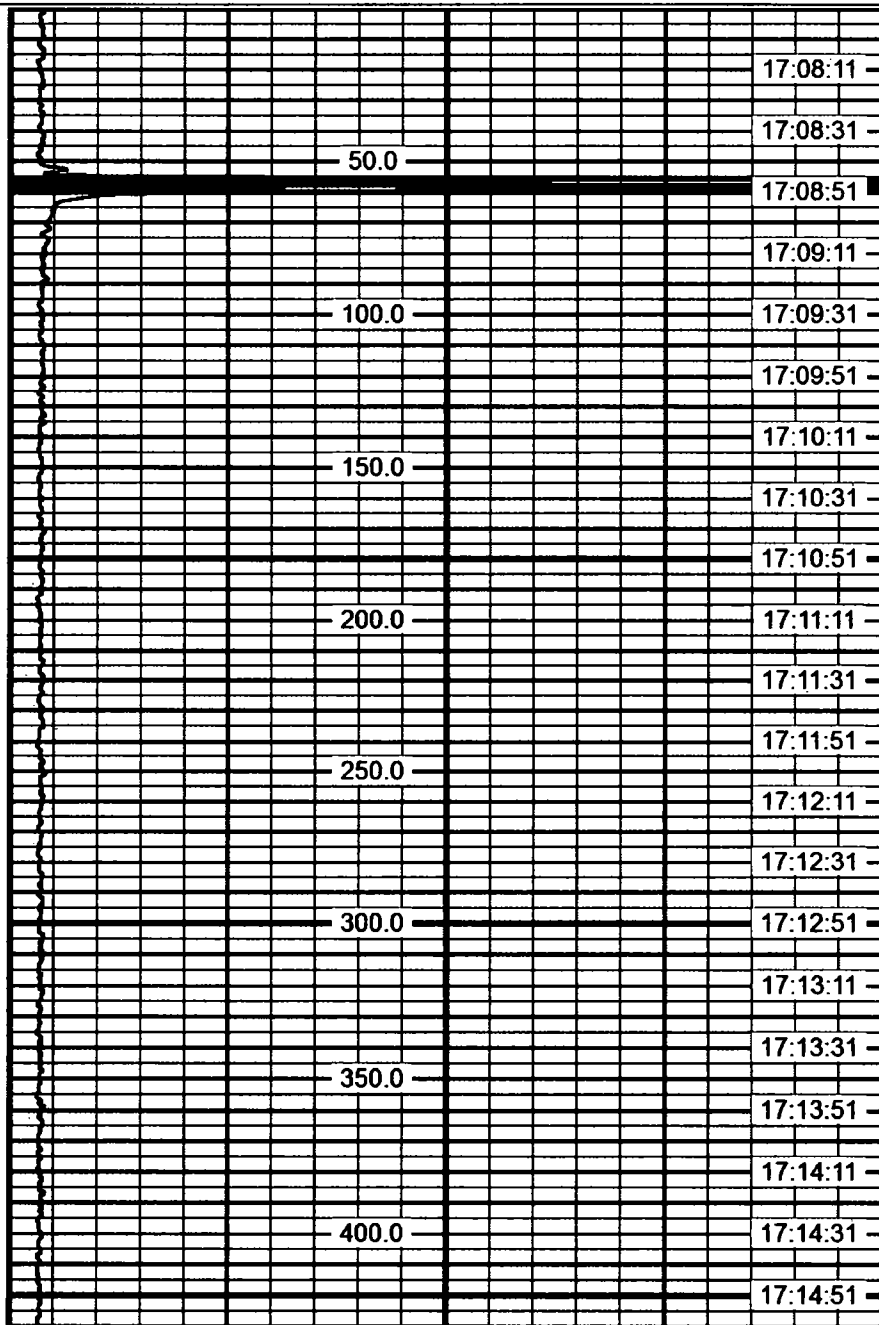
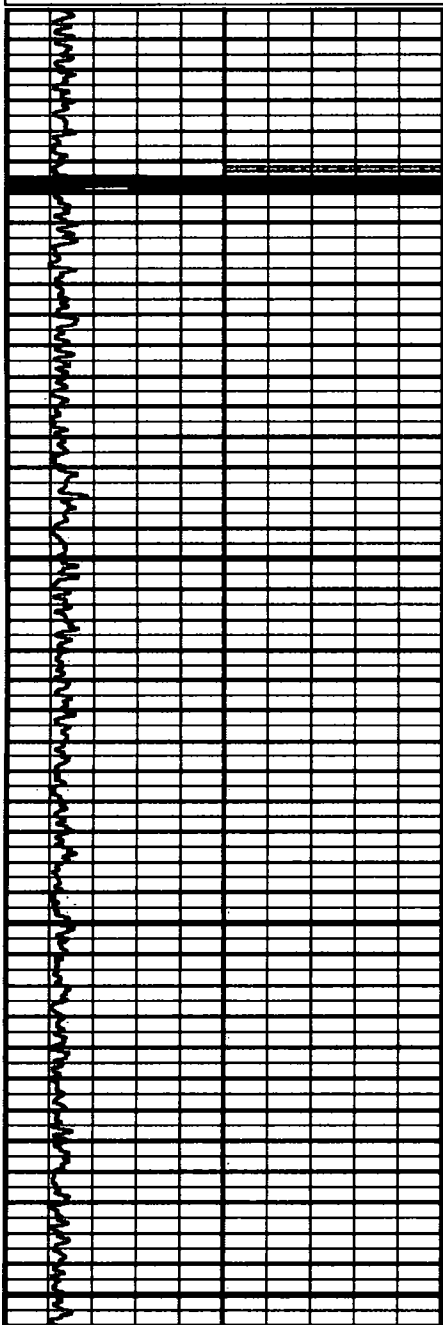
QES WIRELINE LLC

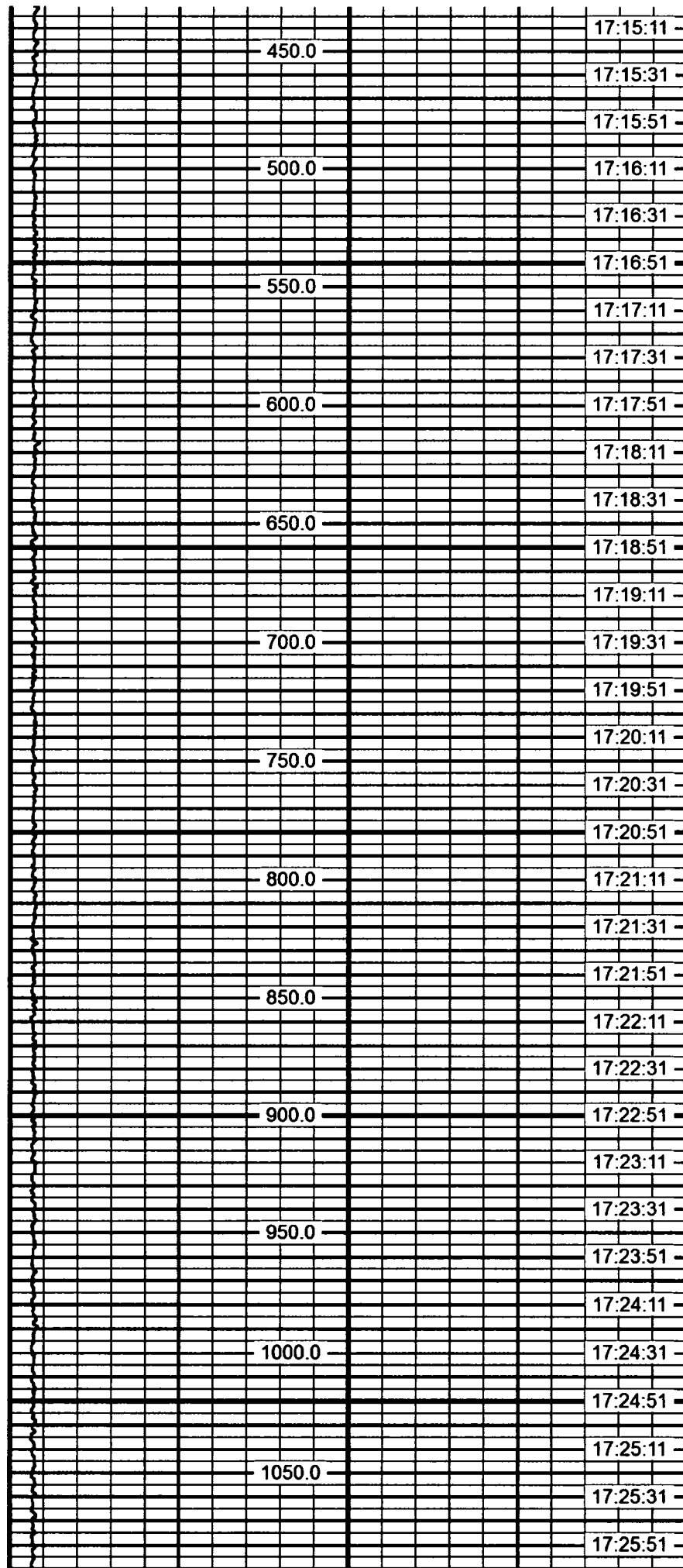
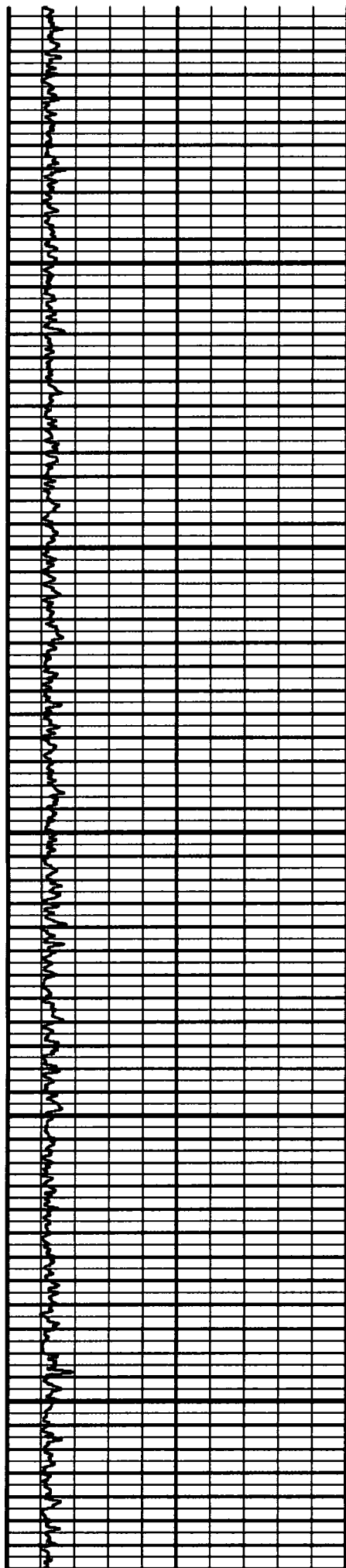
RUN # 11

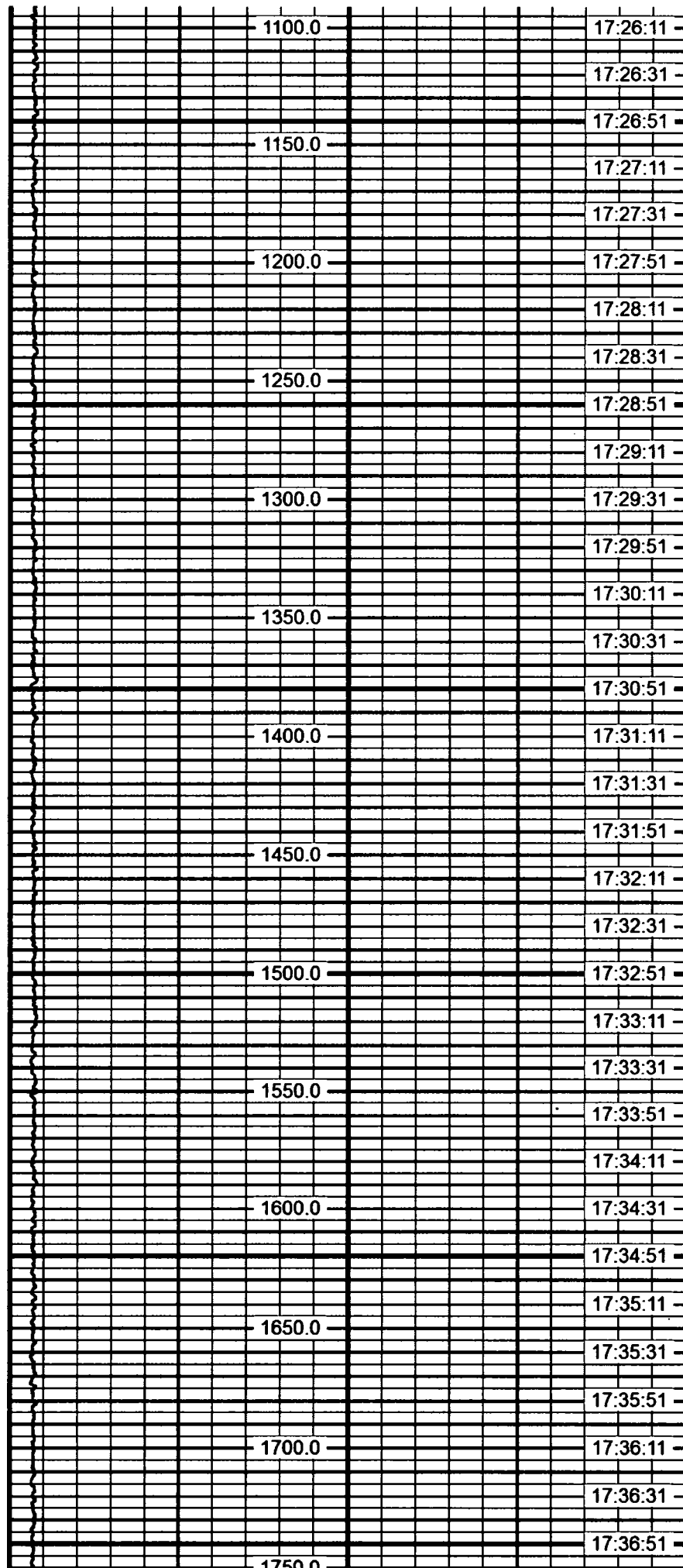
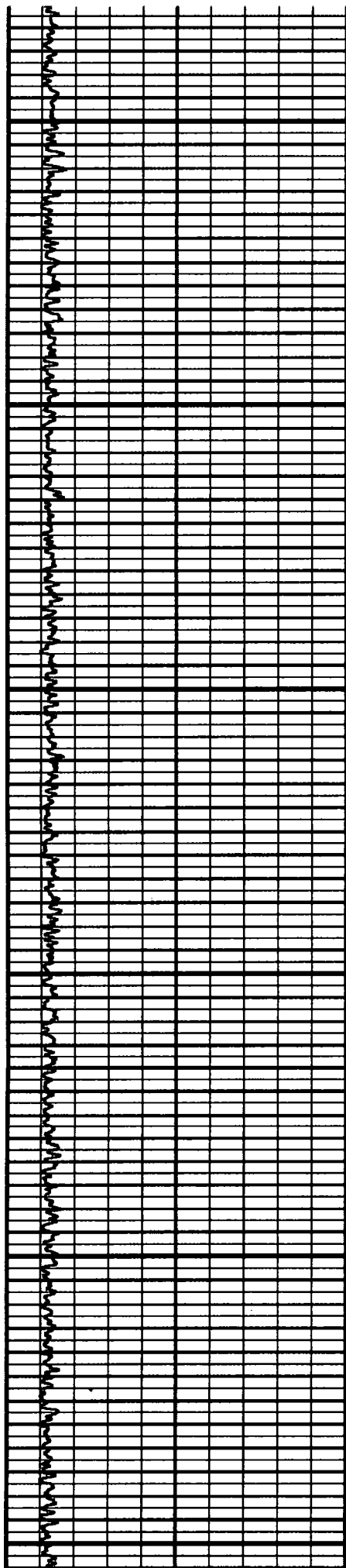
TIME DRIVE # 1 @ 3850
22 GPM @ 0 PSI

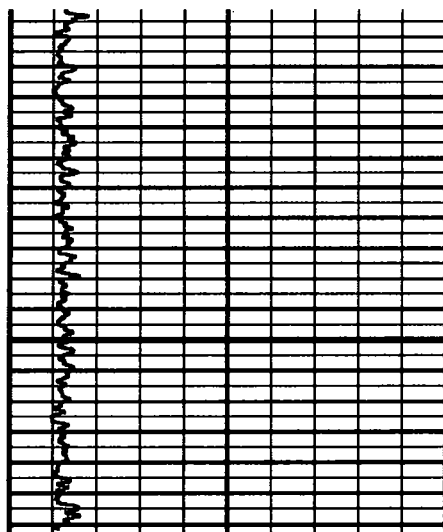
Database File	western ref\shellstate13swd1 rat 2019.db
Dataset Pathname	td/pass1
Presentation Format	tratmd
Dataset Creation	Tue Jul 09 17:07:52 2019
Charted by	Time scaled 60/hour

0	UPPER DET (GAPI)	100	0	LOWER DET (GAPI)	1000
-0.9	Eject	0.9	ELTIM	TIME (sec)	
			(sec)		

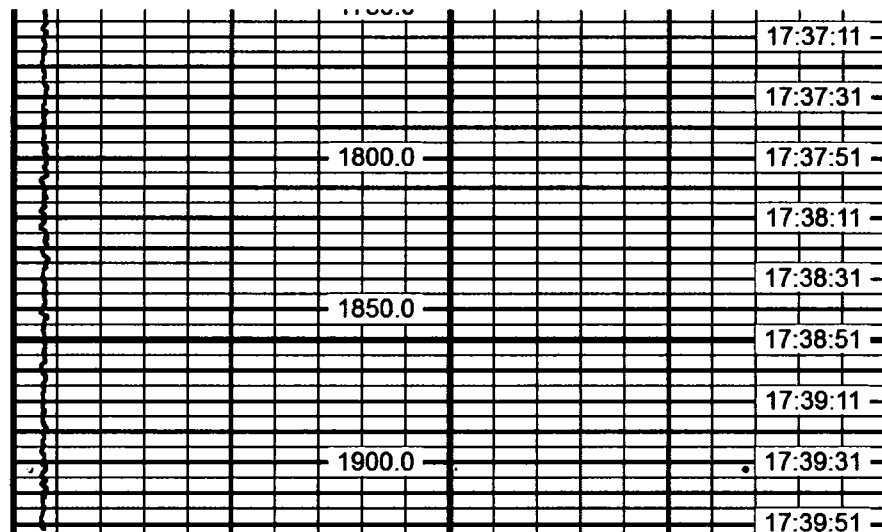








0	UPPER DET (GAPI)	100
-0.9	Eject	0.9



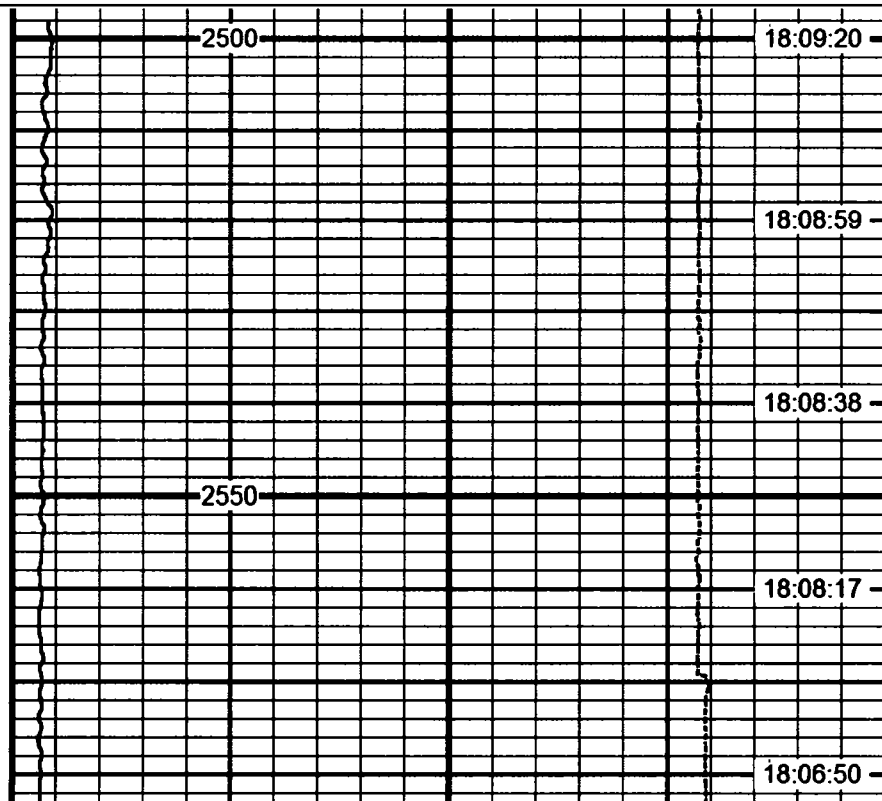
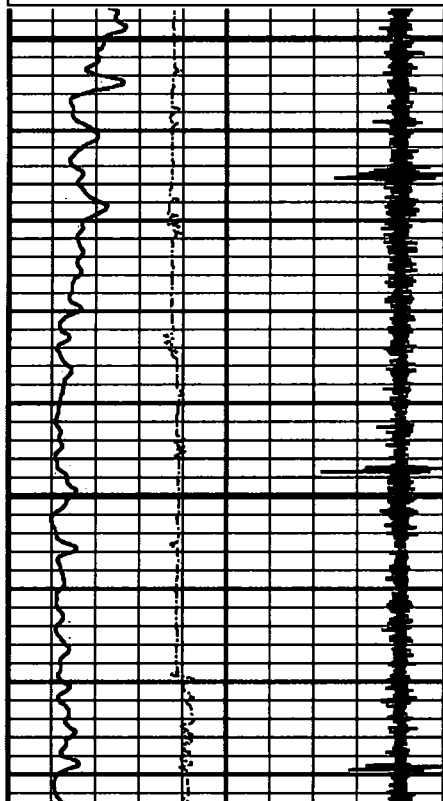
0	LOWER DET (GAPI)	1000
ELTIM (sec)		TIME (sec)

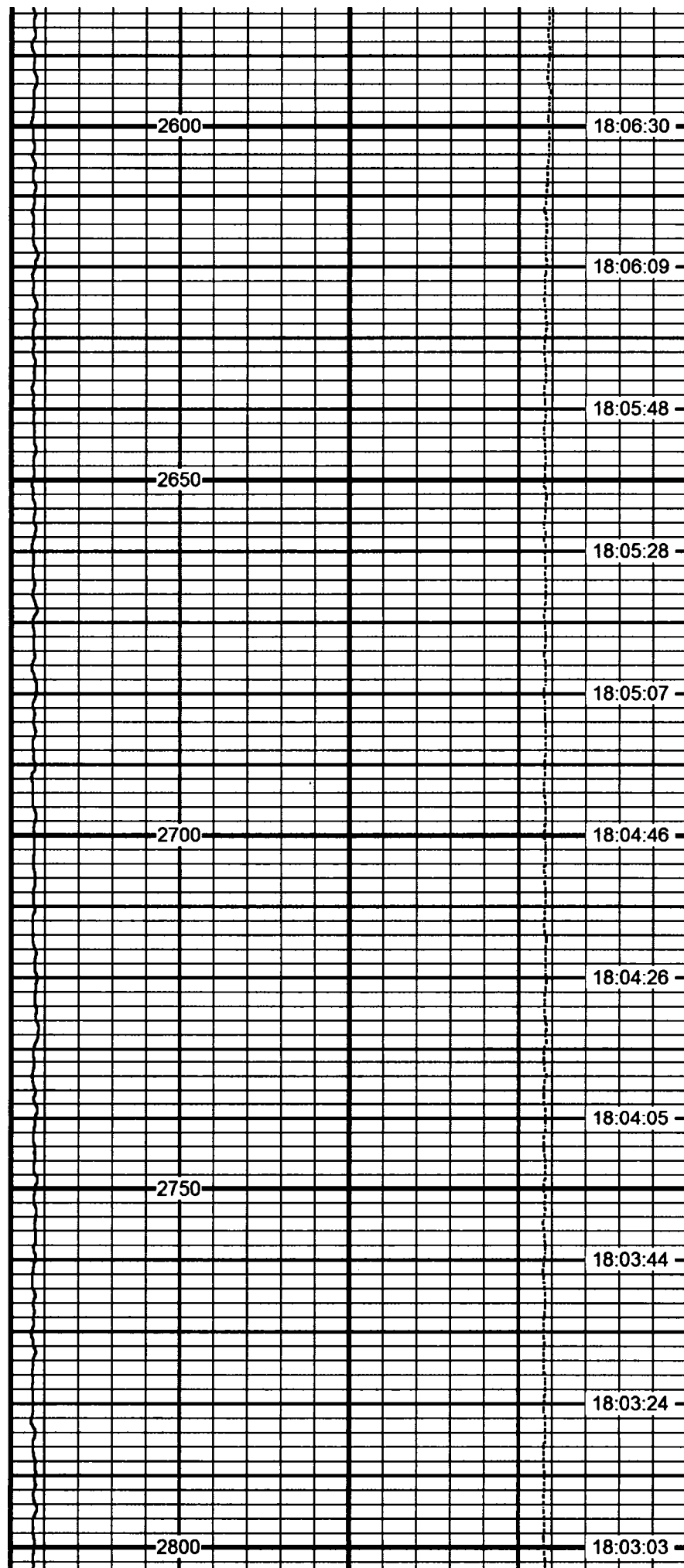
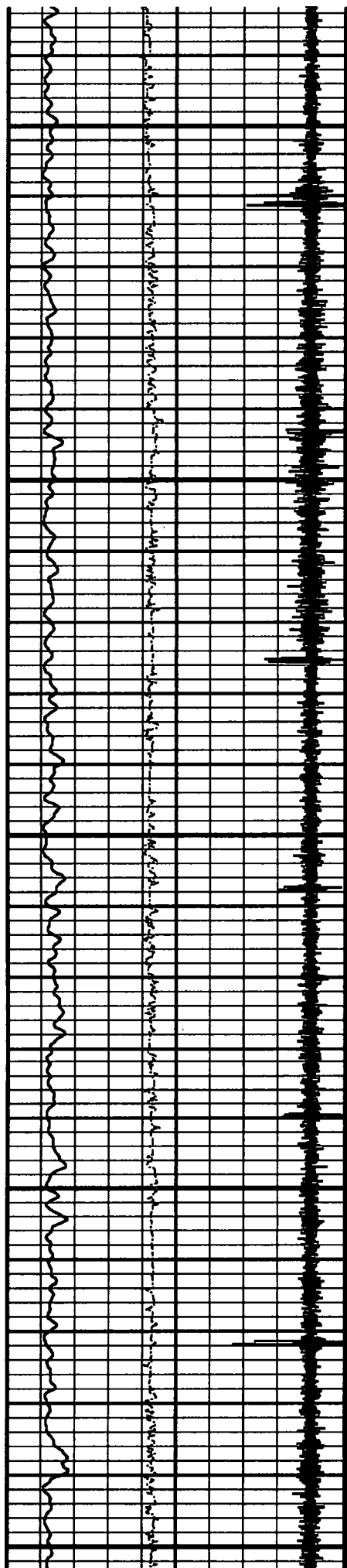


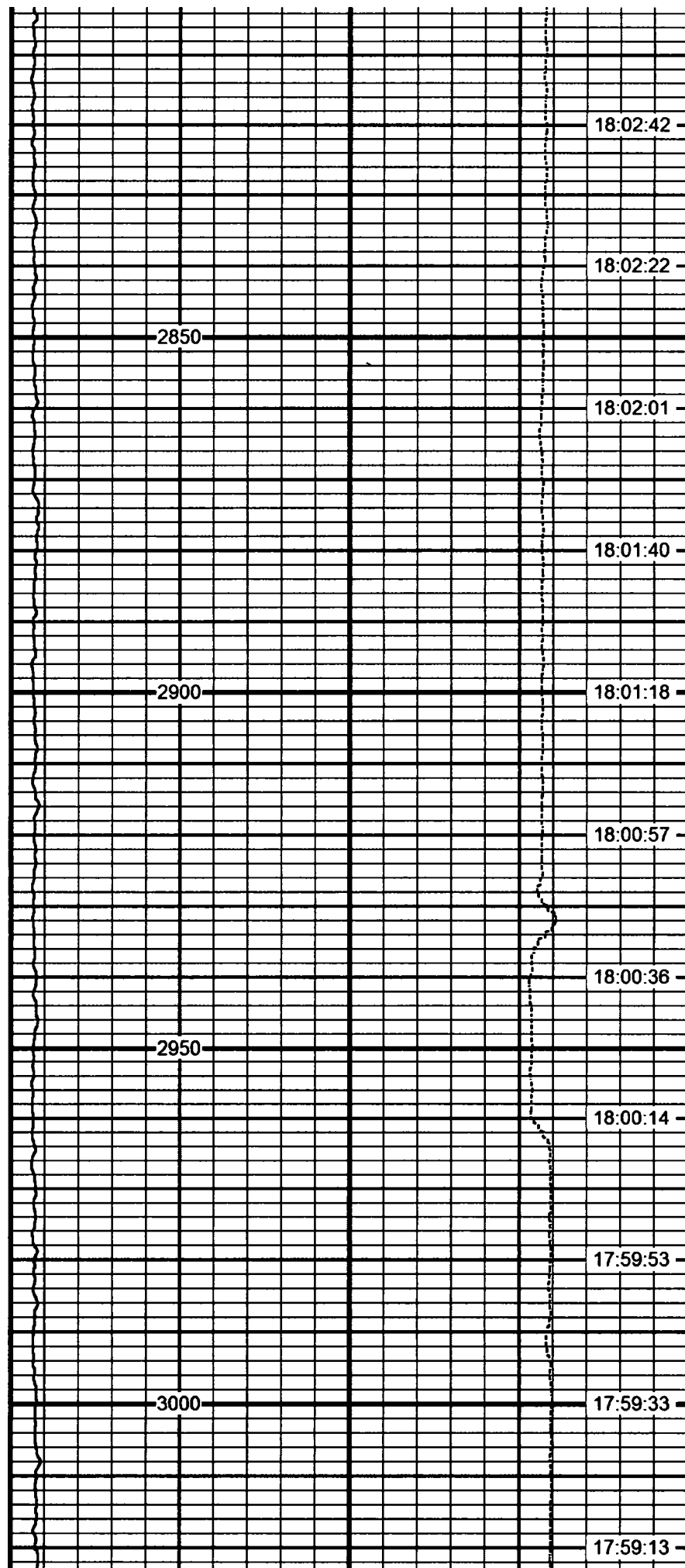
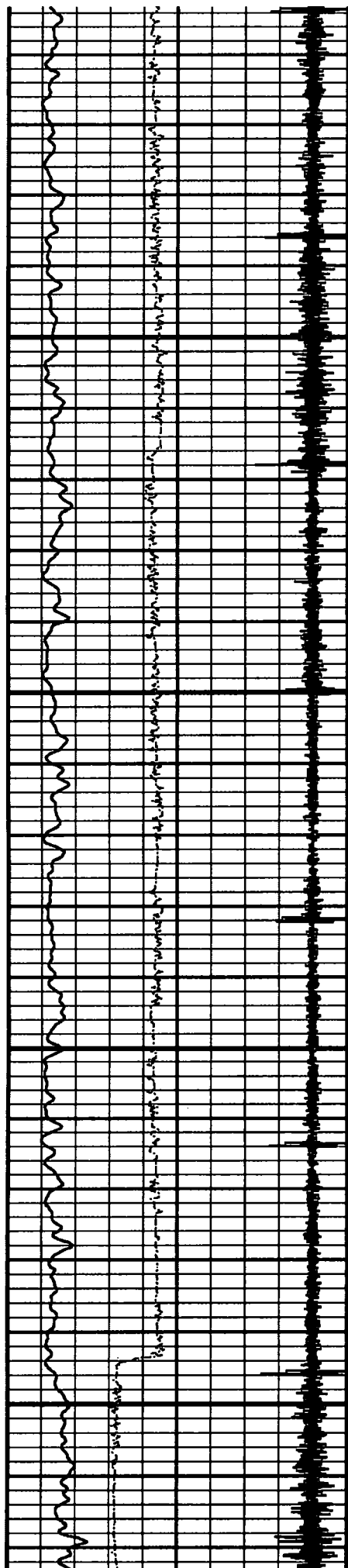
RUN # 12 POST SURVEY BASE LOG 0 GPM @ 0 PSI

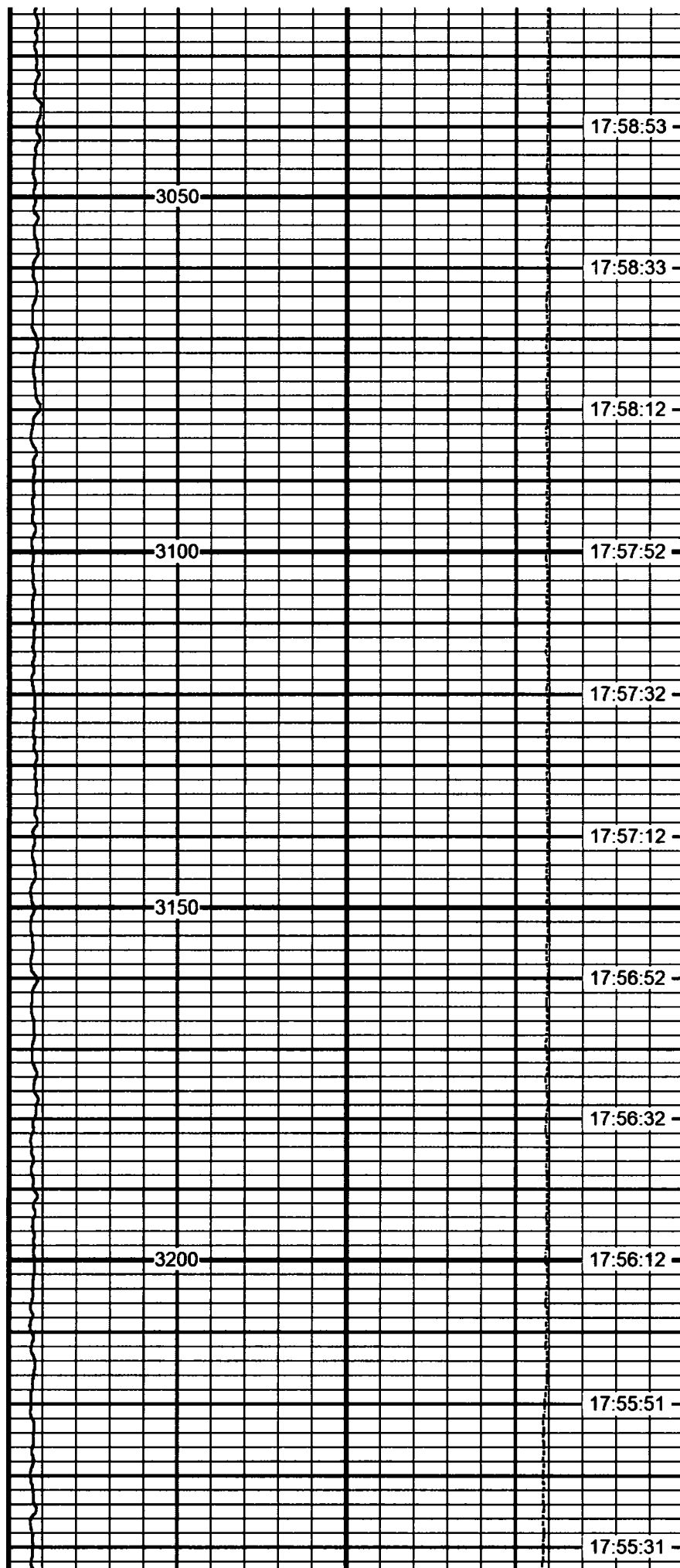
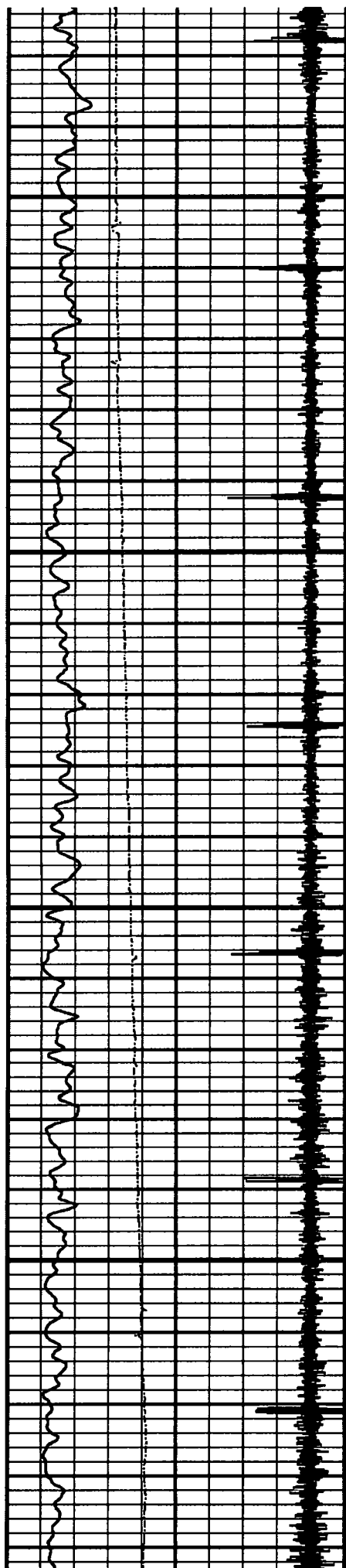
Database File	western refshellstate13swd1 rat 2019.db
Dataset Pathname	pstbse/pass1
Presentation Format	tracergw
Dataset Creation	Tue Jul 09 17:43:34 2019
Charted by	Depth in Feet scaled 1:240

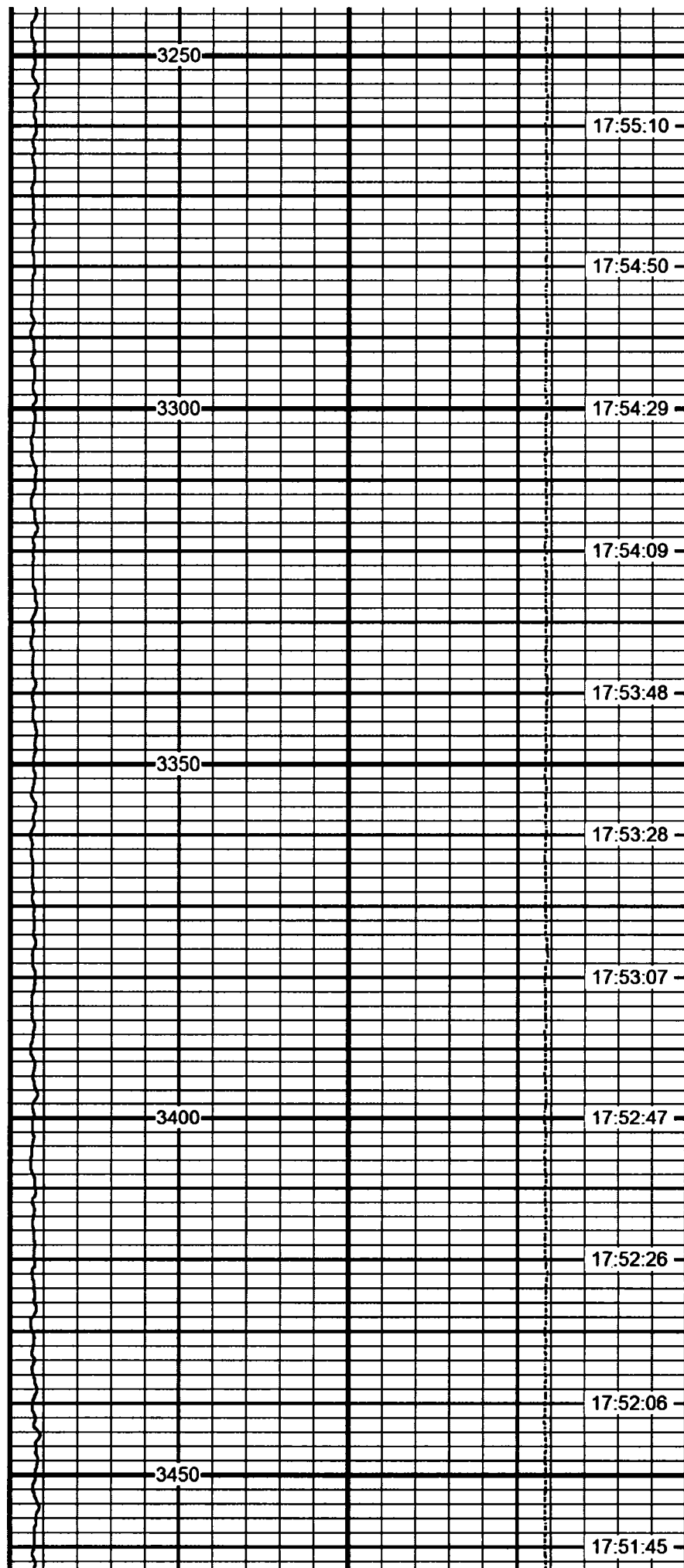
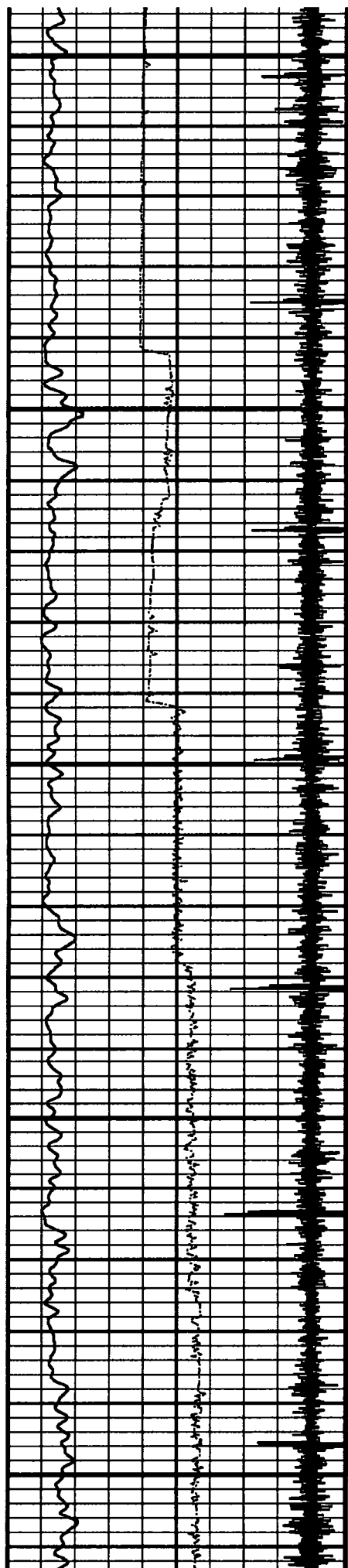
-18	CCL	2	0	Lower Det. (GAPI)	1000
0	LTEN (lb)	1000	0	LSPD (ft/min)	-100
0	UPPER DET. (GAPI)	100	TOD (sec)		

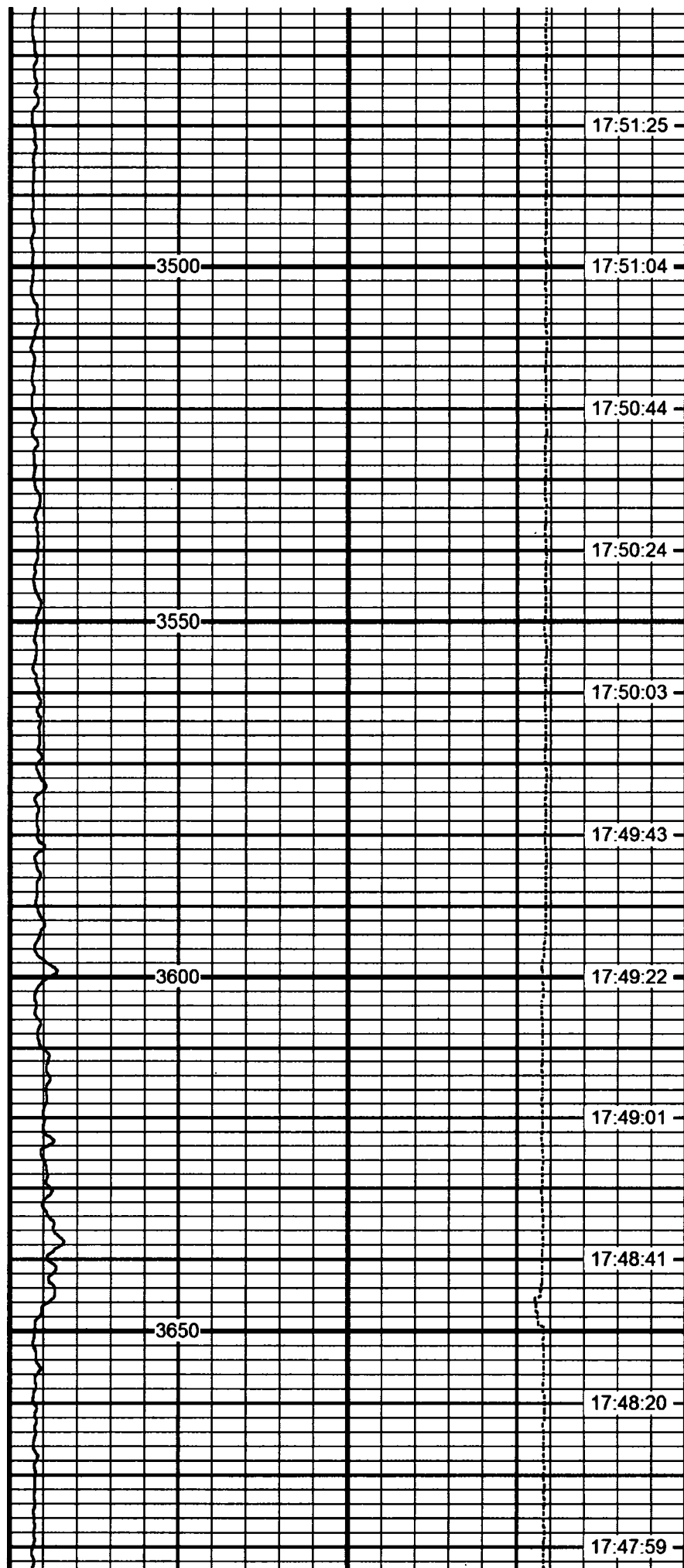
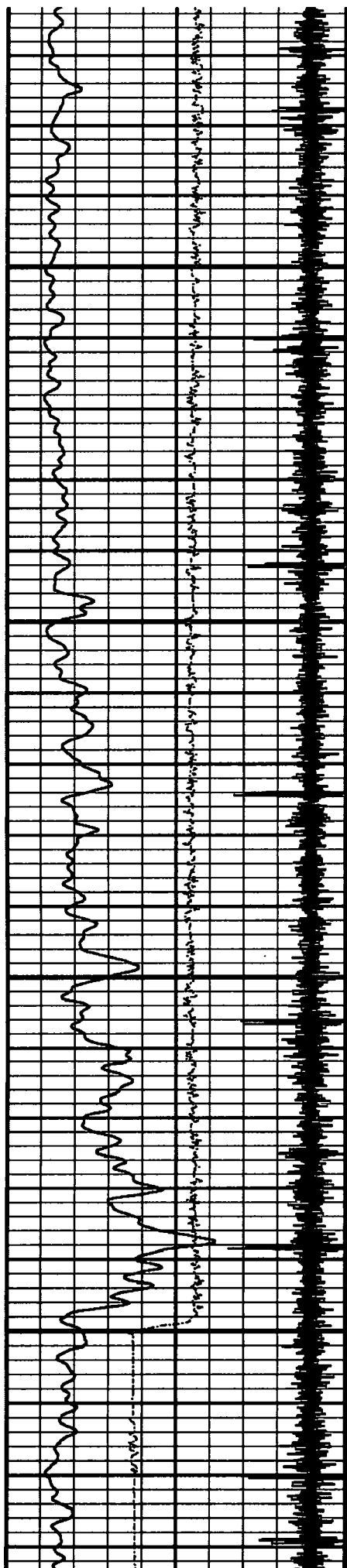


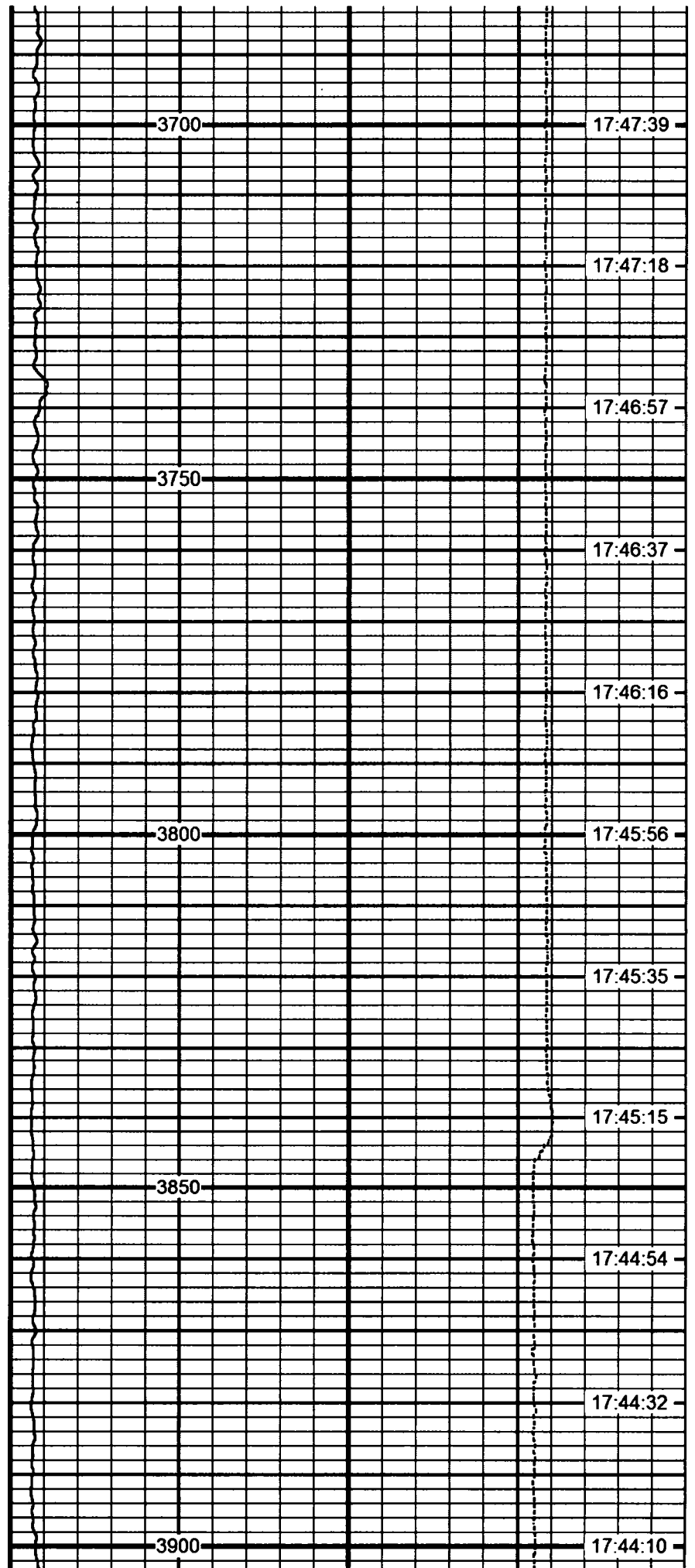
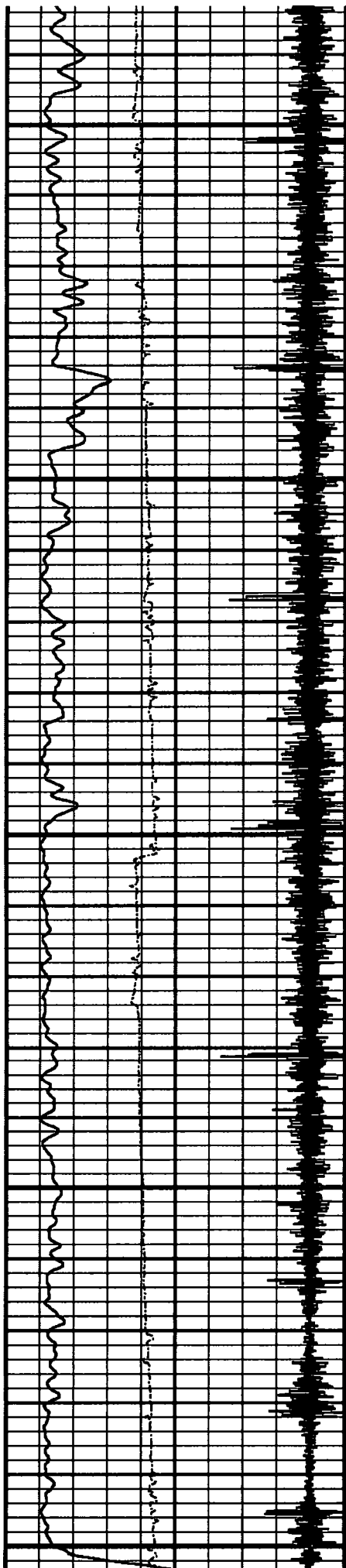


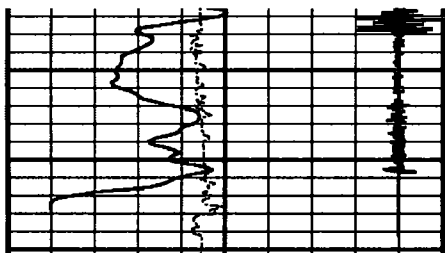




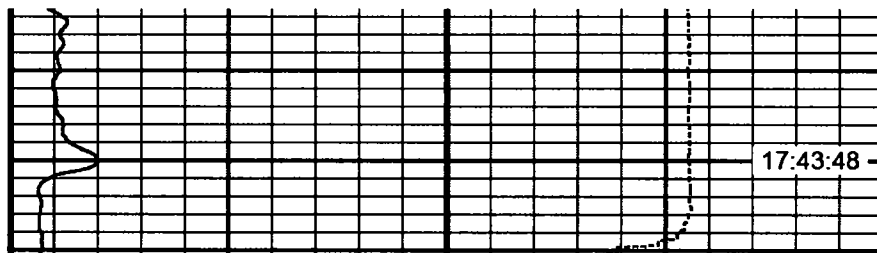








-18	CCL	2
0	LTEN (lb)	1000
0	UPPER DET. (GAPI)	100



0	Lower Det. (GAPI)	1000
0	LSPD (ft/min)	-100
	TOD (sec)	

LONQUIST & CO. LLC

PETROLEUM
ENGINEERS

ENERGY
ADVISORS

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

July 22, 2019

Mr. Kerry Fortner,
District 1 Supervisor
New Mexico Oil Conservation Division
1625 N. French Drive
Hobbs, New Mexico 88240

HOBBS OCD
AUG 08 2019
RECEIVED

RE: WESTERN REFINING COMPANY, LP
SHELL STATE NO. 13 ANNUAL RADIOACTIVE TRACER SURVEY (2019)

Mr. Fortner,

Attached, please find the Radioactive Tracer Survey that was run on the Shell State No. 13 disposal well located at the Western Refining facility, Plant No. 4, 10 miles north of Jal, NM on July 9, 2019.

The Radioactive Tracer Survey indicates all fluid is going into the perforations. There was no indication of channeling or fluid migration behind the casing.

If you have any questions or require any additional information, please contact me at (832) 797-3238.

Sincerely,

Krystyn Strong

Krystyn Strong
Petroleum Engineer
Lonquist & Co., LLC
(713) 987-4292
(832) 797-3238
krystyn@lonquist.com