



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company **HARTMAN OIL CO.**
Well **GARDEN CITY B-6**
Field **DAMME**
County **FINNEY** State **KANSAS**

Location: API #: 15-055-22507-00-00

Other Services

SEC 8 TWP 22S RGE 33W
2305' FWL & 1100' FSL

CNL/CDL
MEL

Permanent Datum GROUND LEVEL Elevation 2892'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Elevation
K.B. 2903'
D.F. N/A
G.L. 2892'

Date 11/21/2018

Run Number ONE

Depth Driller 4767

Depth Logger 4754'

Bottom Logged Interval 4753'

Top Log Interval 300'

Casing Driller 8.625" @ 351'

Casing Logger 332'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 3000

Density / Viscosity 9.4 47

pH / Fluid Loss 9.0 7.6

Source of Sample FLOWLINE

Rm @ Meas. Temp 0.75 @ 71

Rmf @ Meas. Temp 0.56 @ 71

Rmc @ Meas. Temp 1.01 @ 71

Source of Rmf / Rmc CHARTS

Rm @ BHT 0.43 @ 124

Operating Rig Time 4 HOURS

Max Rec. Temp. F 124

Equipment Number 91

Location HAYS

Recorded By IAN MABB

Witnessed By CHRIS PETERS

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and Pioneer Wireline Services, LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Pioneer Wireline Services, LLC will not 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.

Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.

GARDEN CITY, KS.
NORTH TO TENNIS RD, WEST 4 1/2 MILES,
SOUTH INTO

Log Measured From: KELLY BUSHING 11 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES
www.pioneerenergy.com 785-625-3858

Your Pioneer Energy Services Crew

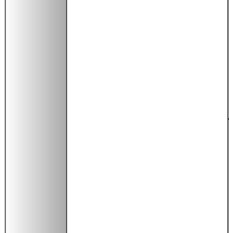
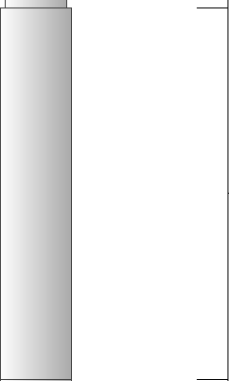
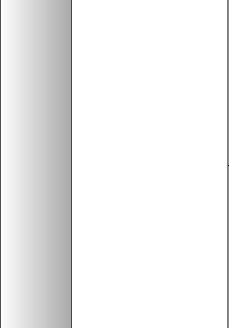
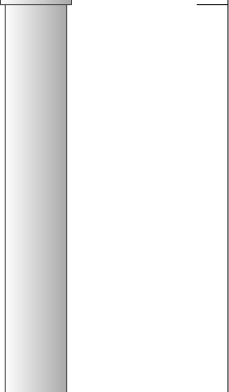
Engineer: IAN MABB
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

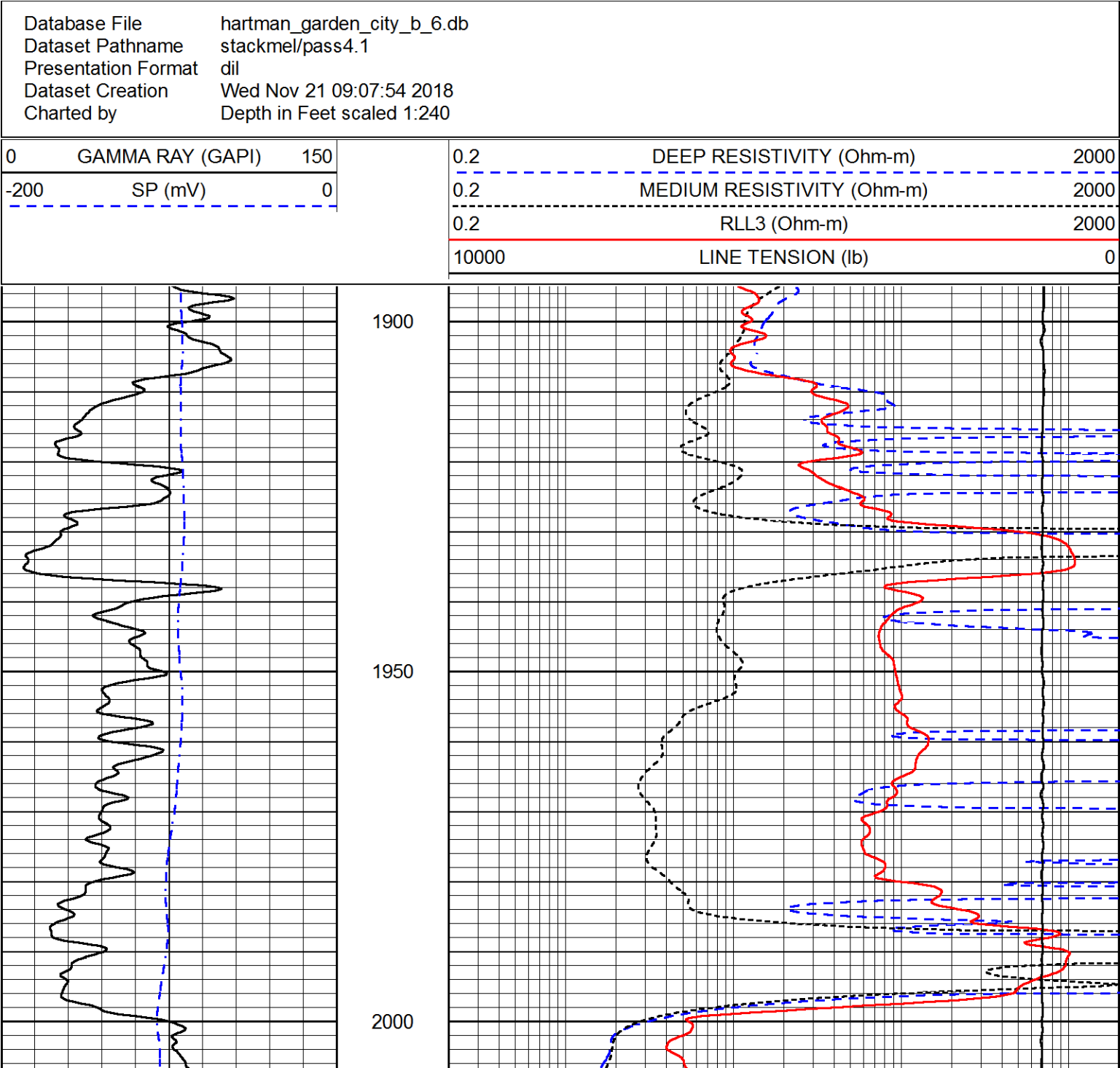
Primary Witness: CHRIS PETERS
Secondary Witness:
Secondary Witness:
Secondary Witness:

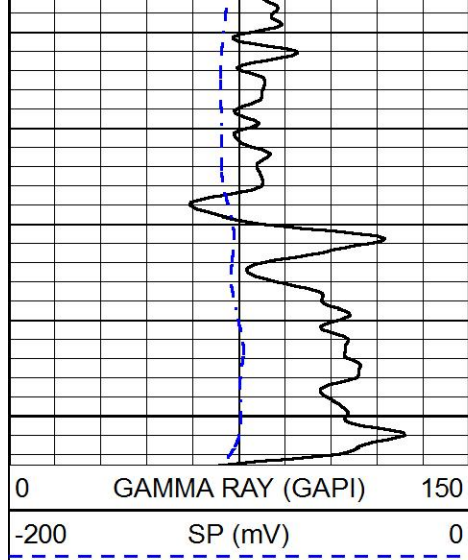
Top - Bottom

M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	60	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	0	0	5.5	0	4754	124	7.875

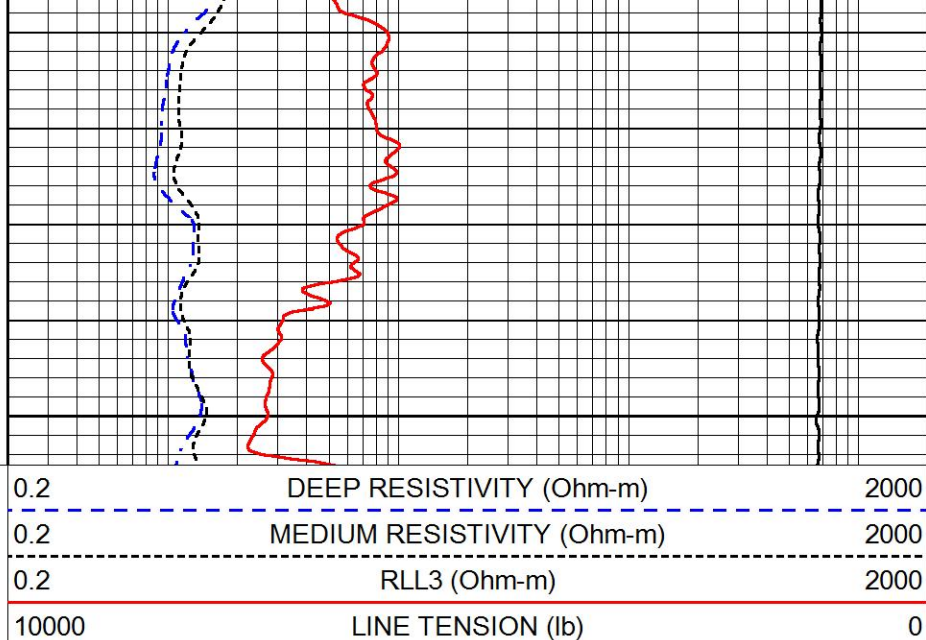
Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (207-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (797-152)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSIML (PSI-01) GO Micro log tools converted to Simplec electronics	7.58	4.00	65.00
RLL3F RLL3	15.80 15.80					

		DIL-PSI HIGH TEMP (967 (HT))		18.50	3.50	220.00
CILD	8.00					
CILM	4.70					
SP	0.20					
Dataset: hartman_garden_city_b_6.db: field/well/stackmel/pass3.1 Total length: 43.08 ft Total weight: 685.00 lb O.D.: 4.00 in						



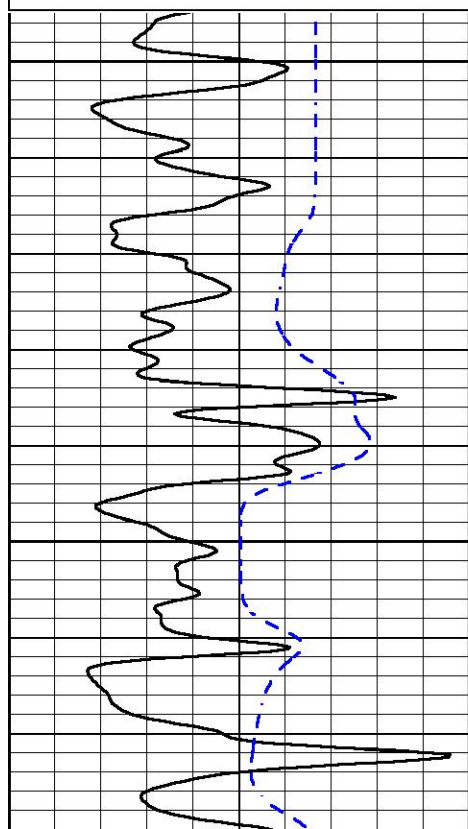
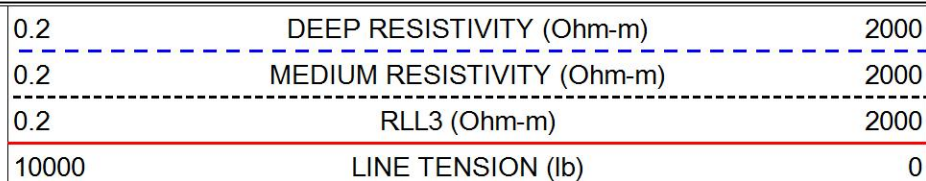
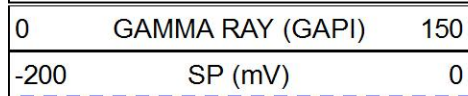


2050



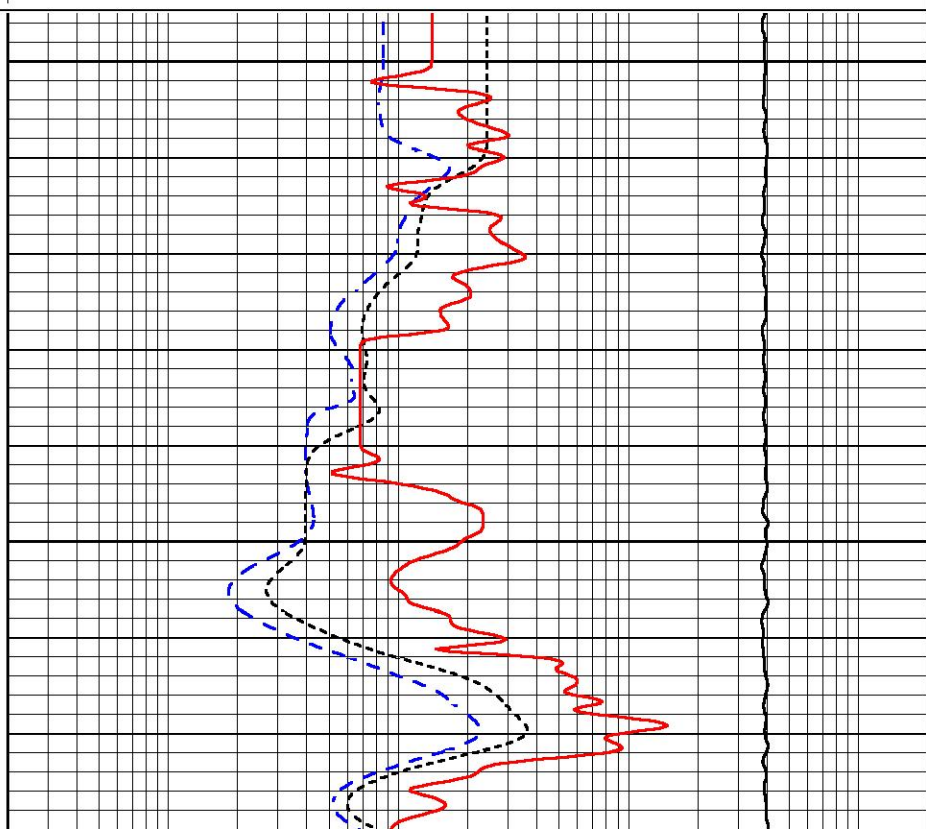
MAIN PASS

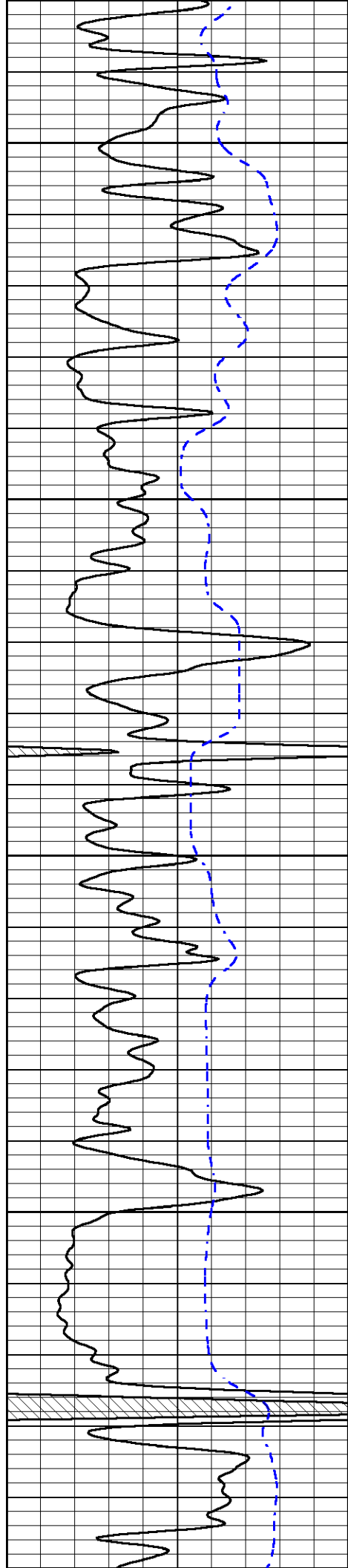
Database File hartman_garden_city_b_6.db
Dataset Pathname stackmel/pass3.1
Presentation Format dil
Dataset Creation Wed Nov 21 08:33:23 2018
Charted by Depth in Feet scaled 1:240



3500

3550





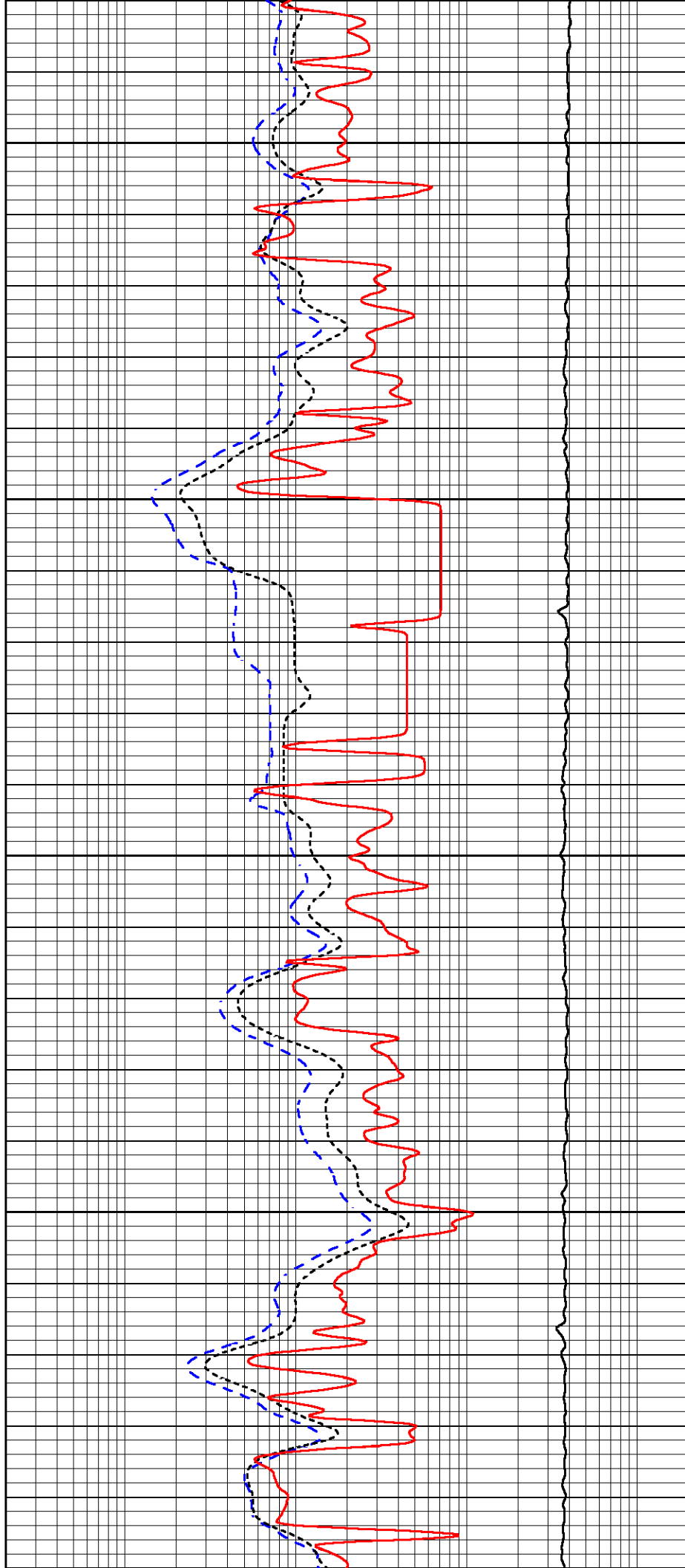
3600

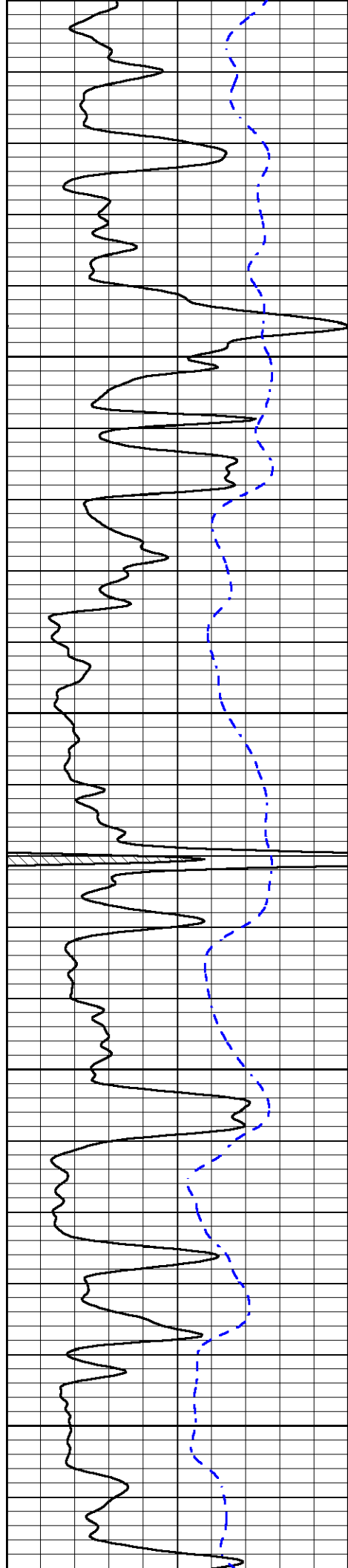
3650

3700

3750

3800





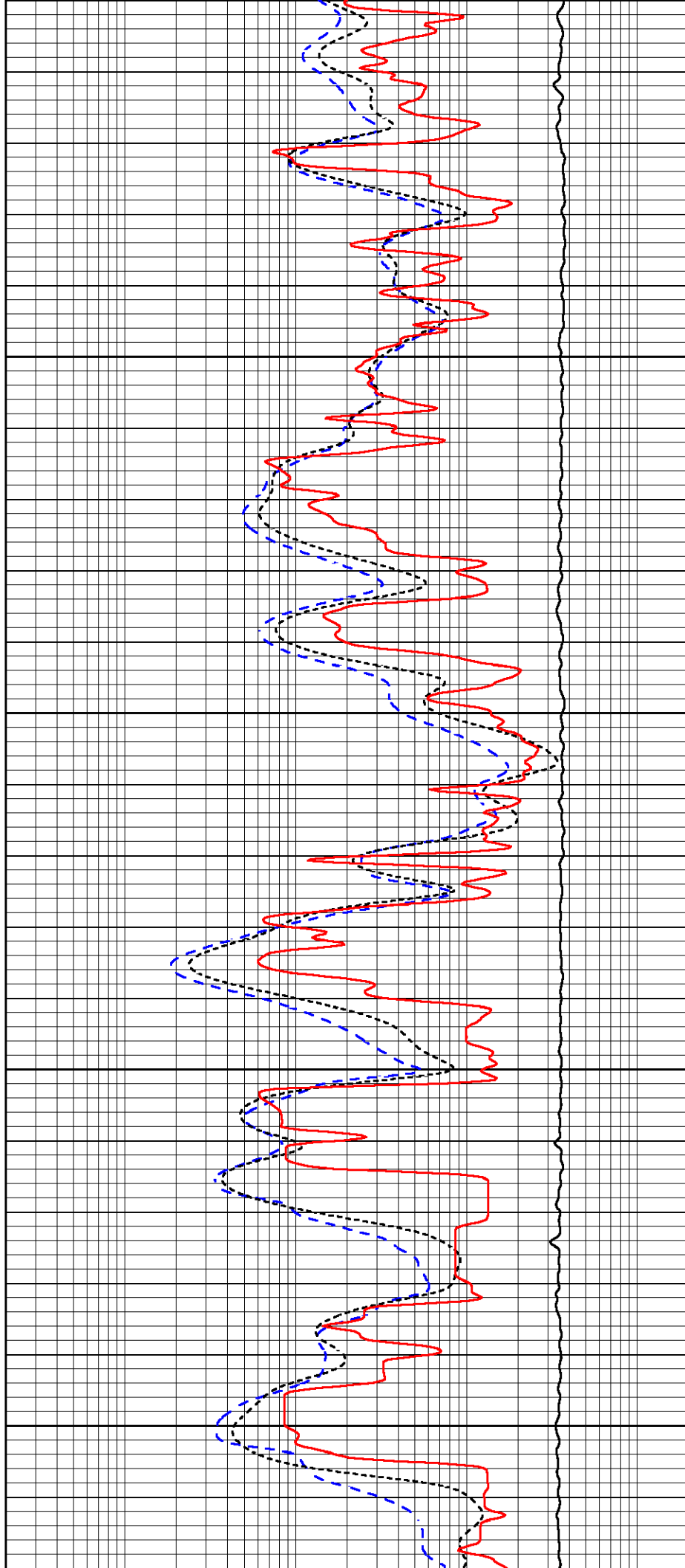
3800

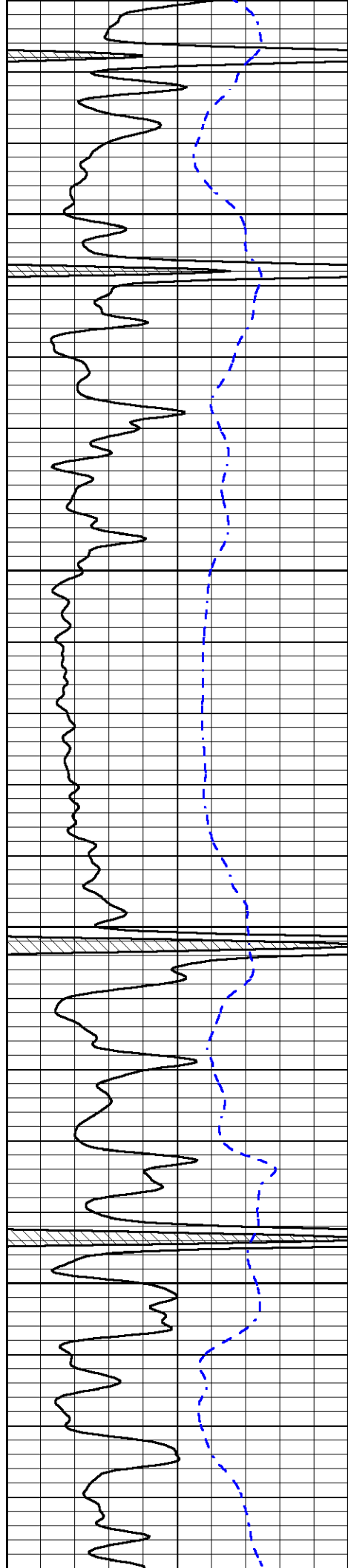
3850

3900

3950

4000



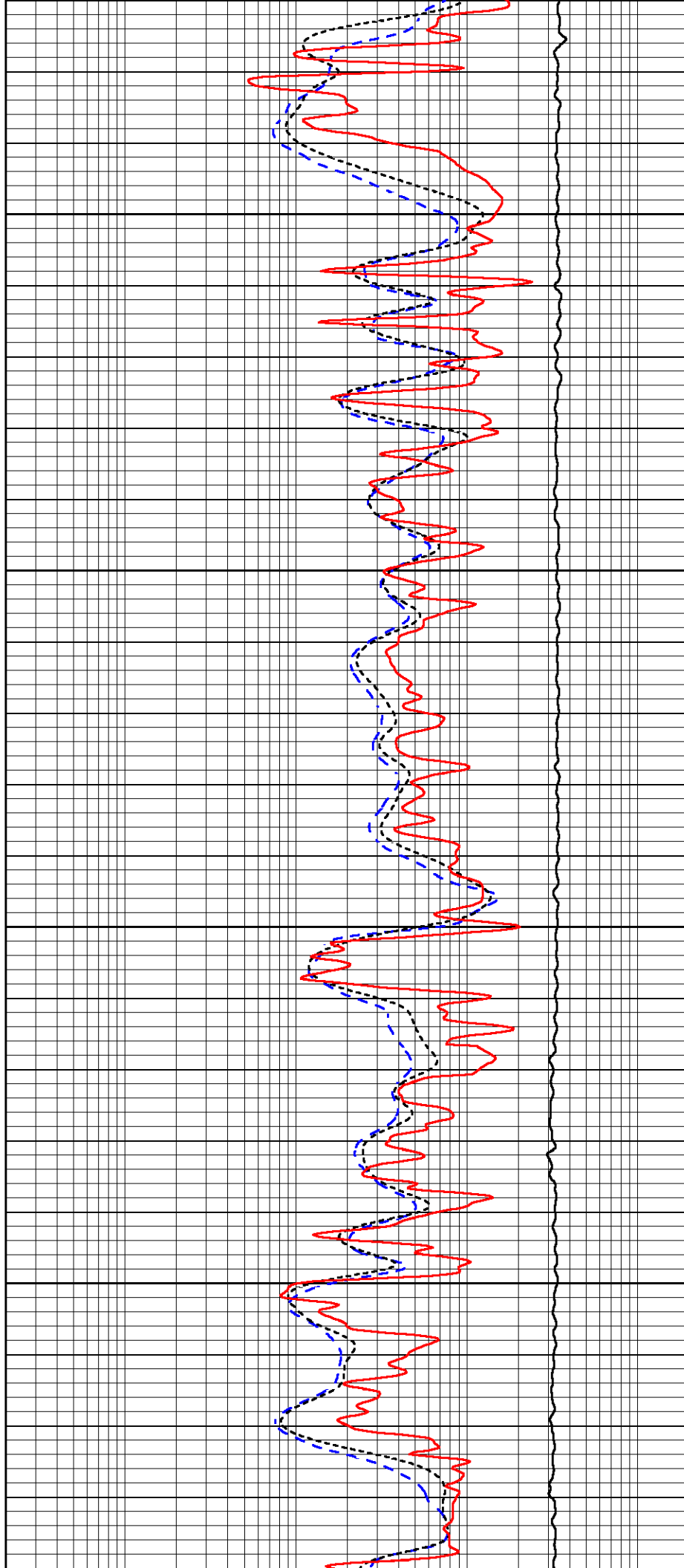


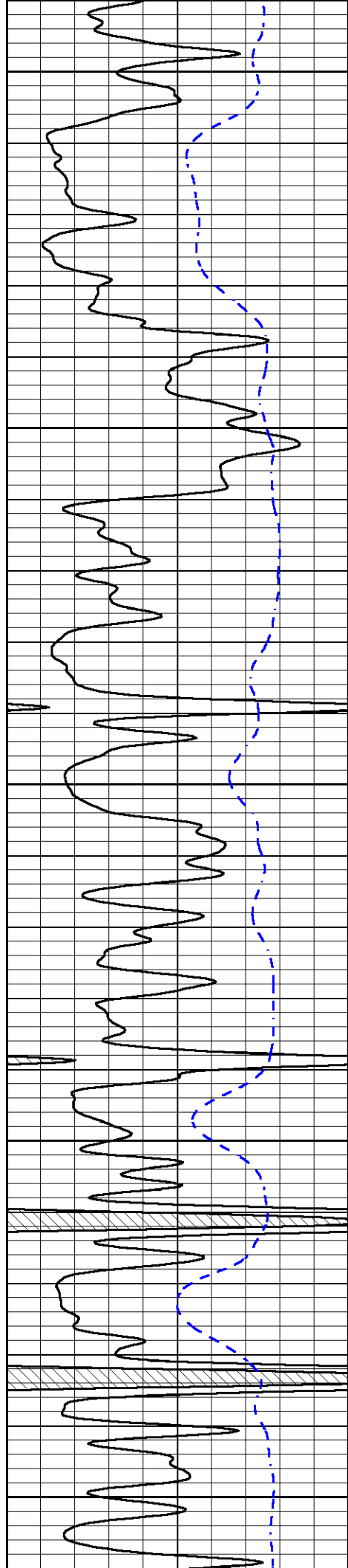
4050

4100

4150

4200





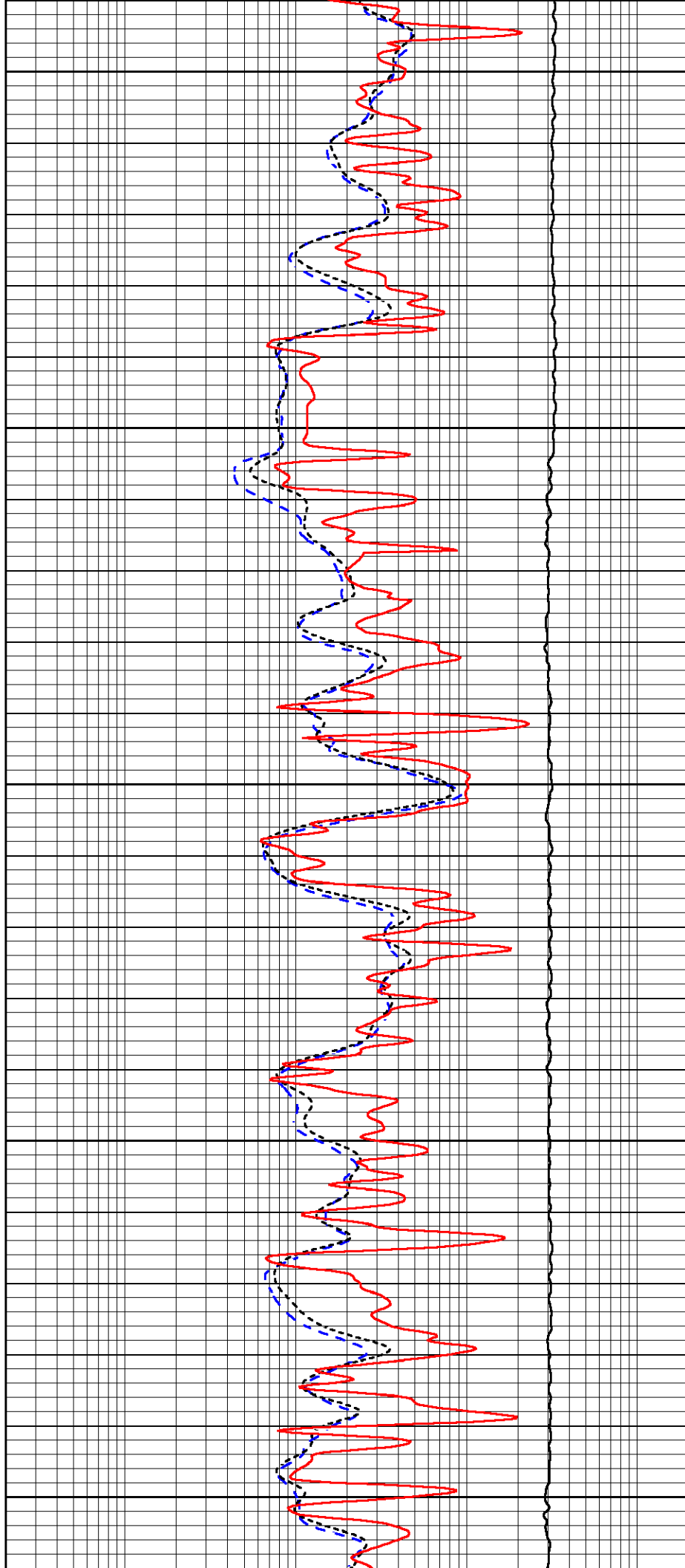
4250

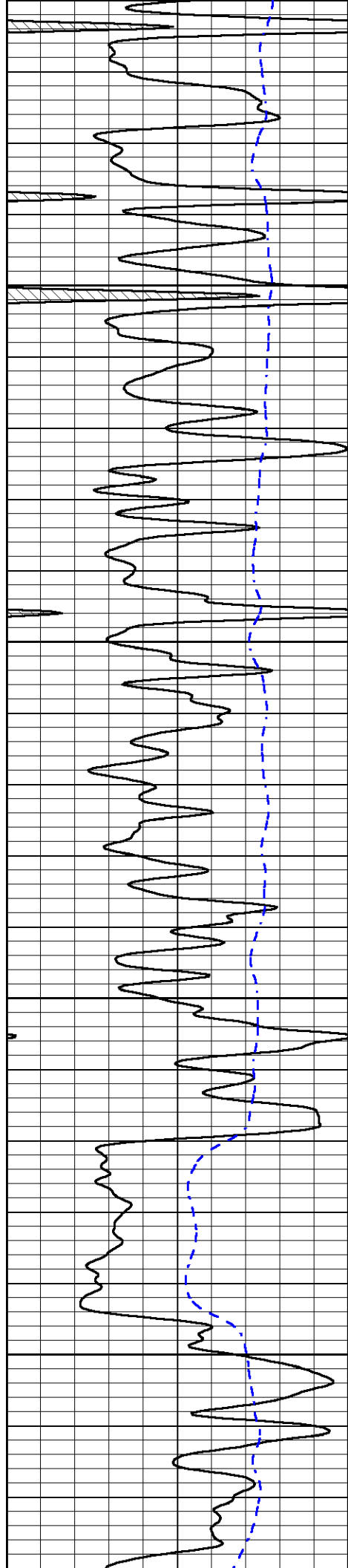
4300

4350

4400

4450



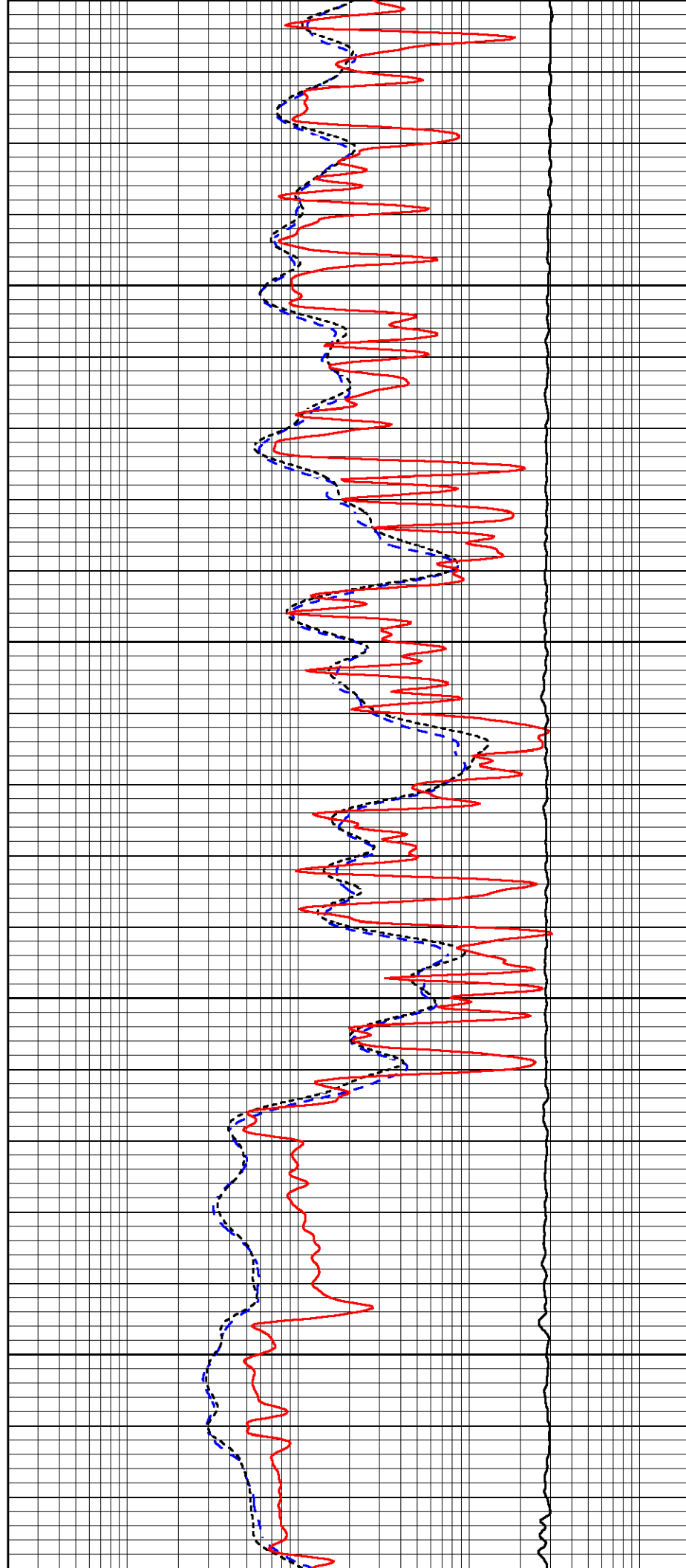


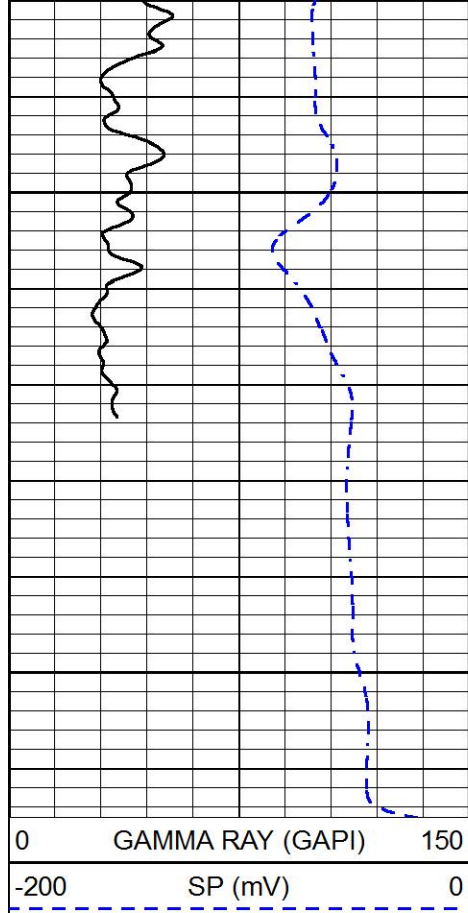
4500

4550

4600

4650

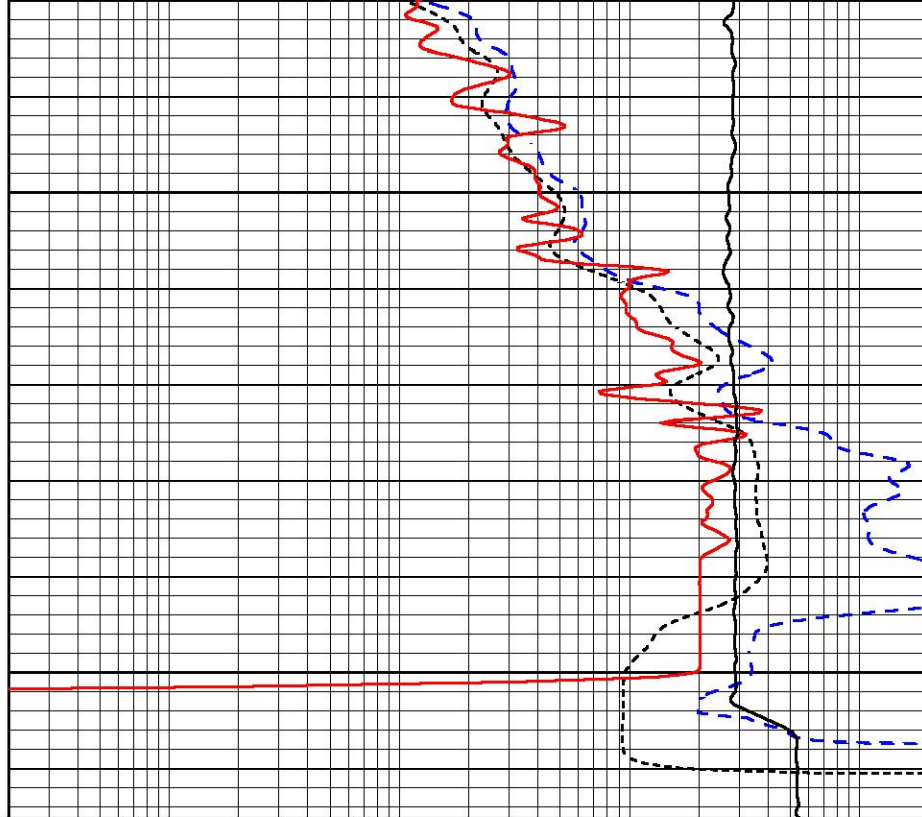




4700

4750

0 GAMMA RAY (GAPI) 150
-200 SP (mV) 0



0.2 DEEP RESISTIVITY (Ohm-m) 2000
0.2 MEDIUM RESISTIVITY (Ohm-m) 2000
0.2 RLL3 (Ohm-m) 2000
10000 LINE TENSION (lb) 0

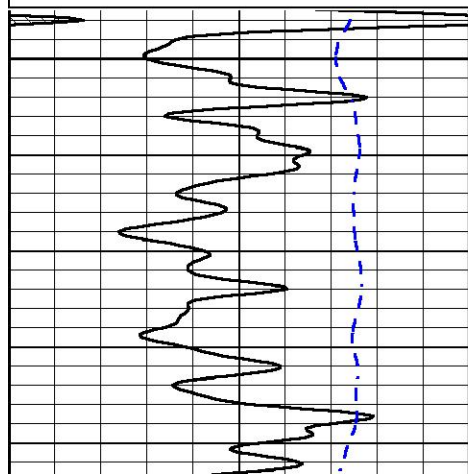


REPEAT SECTION

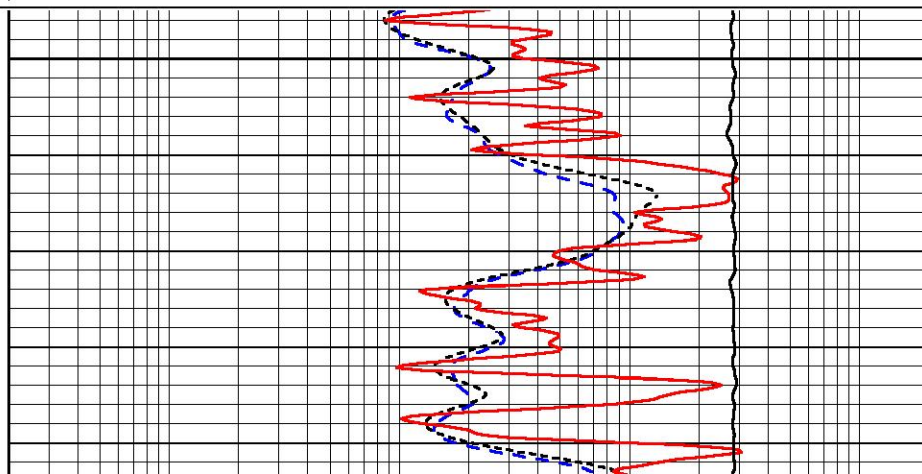
Database File hartman_garden_city_b_6.db
Dataset Pathname stackmel/pass2.1
Presentation Format dil
Dataset Creation Wed Nov 21 08:08:25 2018
Charted by Depth in Feet scaled 1:240

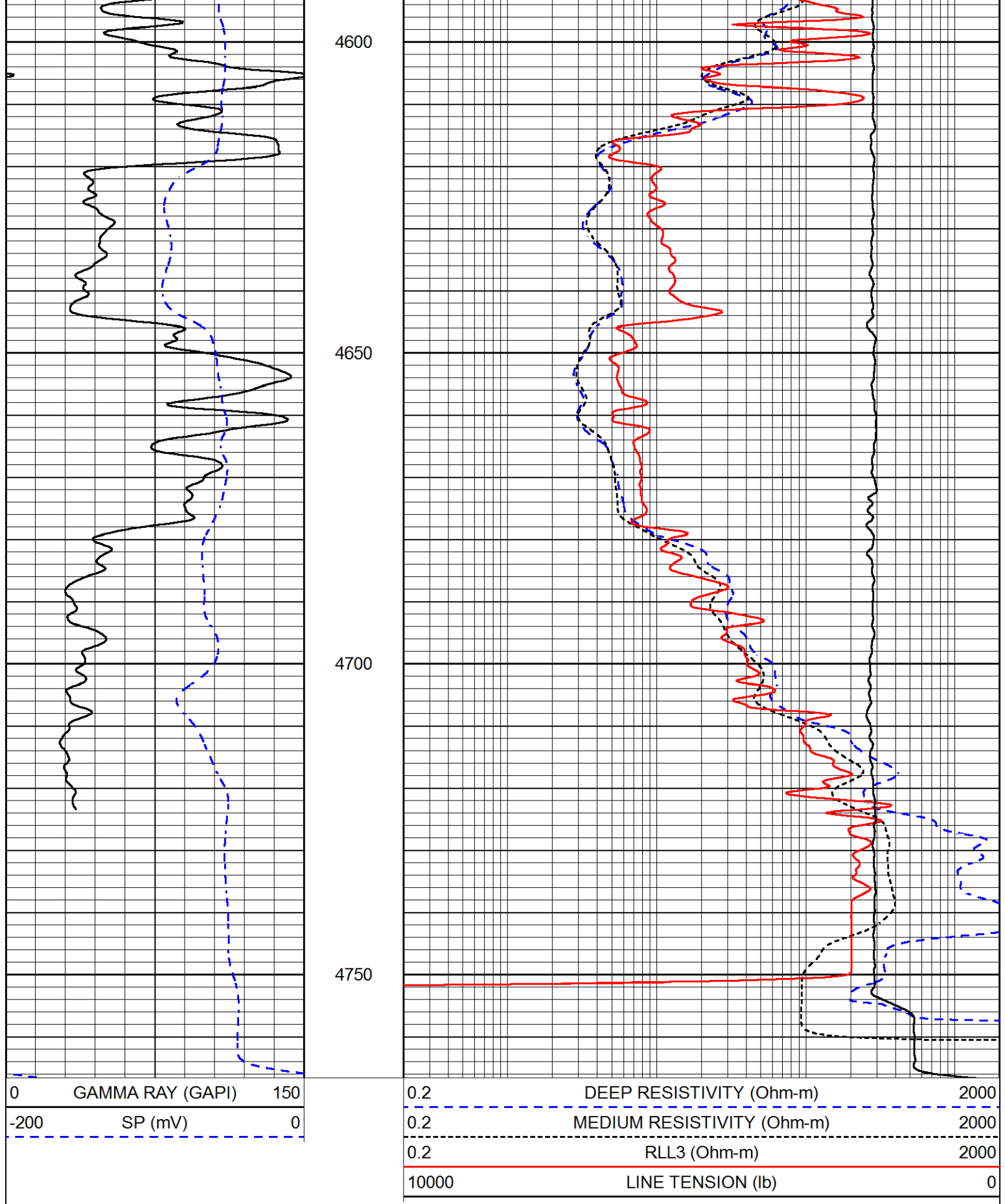
0 GAMMA RAY (GAPI) 150
-200 SP (mV) 0

0.2 DEEP RESISTIVITY (Ohm-m) 2000
0.2 MEDIUM RESISTIVITY (Ohm-m) 2000
0.2 RLL3 (Ohm-m) 2000
10000 LINE TENSION (lb) 0



4550





Calibration Report

Database File hartman_garden_city_b_6.db
Dataset Pathname stackmel/pass3.1
Dataset Creation Wed Nov 21 08:33:23 2018

Serial-Model:	967 (HT)-PSI HIGH TEMP
Calibration Performed:	Sun Oct 07 19:24:22 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.800	mmho/m	0.565	-17.500
Medium	0.000	1348.000	142.000	255.800	mmho/m	0.390	-40.000

Microlog Calibration Report

Serial-Model:	PSI-01-PSIML
Performed:	Sat Sep 08 05:17:35 2018

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	33000.0000	-0.8000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	40000.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-65.6000

Compensated Density Calibration Report

Serial-Model:	797-152-M&W
Source / Verifier:	16955B / 2ci
Master Calibration Performed:	Tue May 01 13:38:28 2018

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4933.40	5500.86	cps
Aluminum	2.650	g/cc	928.80	3521.29	cps
Spine Angle = 75.04			Density/Spine Ratio = 0.518		
	Size		Reading		
Small Ring	5.00	in	1.09		
Large Ring	15.00	in	1.03		

Compensated Neutron Calibration Report

Serial Number:	207-MW
Tool Model:	M&W
Calibration Performed:	FRI AUG 24 10:30:30 2018

Detector	Readings		Target	Normalization
Short Space	6240.00	cps	1000.00 cps	1.6025
Long Space	460.00	cps	1000.00 cps	1.9500

Gamma Ray Calibration Report

Serial Number:	89
Tool Model:	M&W
Calibration Performed:	Fri Aug 24 11:16:10 2018

Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.6000	GAPI/cps



Company	HARTMAN OIL CO.
Well	GARDEN CITY B-6
Field	DAMME
County	FINNEY
State	KANSAS