

**COMPENSATED DENSITY  
NEUTRON  
LOG**

Company Blackhawk Production Co.  
Well Frank C, Sanders #13  
Field Toulon  
County Ellis  
State Kansas

Company Blackhawk Production Co.  
Well Frank C, Sanders #13  
Field Toulon  
County Ellis State Kansas

Location: API #: 15 051 26227  
400' FNL & 1809' FWL  
SEC 10 TWP 14s RGE 17W  
Permanent Datum Ground Level Elevation 2003'  
Log Measured From KB 8' AGL  
Drilling Measured From KB  
Other Services  
ML  
DIL  
BCS  
Elevation  
K.B. 2011'  
D.F. 2010'  
G.L. 2003'

Date	11-25-11
Run Number	One
Depth Driller	3548'
Depth Logger	3545'
Bottom Logged Interval	3519'
Top Log Interval	2900'
Casing Driller	1031'
Casing Logger	1031'
Bit Size	7 7/8"
Type Fluid in Hole	Chemical
Density / Viscosity	9.1/50
pH / Fluid Loss	10.0/8.0
Source of Sample	Pit
Rm @ Meas. Temp	.4@70deg
Rmf @ Meas. Temp	.3@70deg
Rmc @ Meas. Temp	.64@70deg
Source of Rmf / Rmc	Calculated
Rm @ BHT	.28@113deg
Time Circulation Stopped	12:30 a.m.
Time Logger on Bottom	2:15 a.m.
Maximum Recorded Temperature	113
Equipment Number	T045
Location	Hays
Recorded By	L. Smith
Witnessed By	Mr. Tony Richardson

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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**

Thank you for using The Perforators LLC  
Hays, KS 785-621-4604  
  
Old 40 E, N 1 mi on 310 Ave, E 1/4, S into.

Database File: bhfrankcsanders#13oh.db  
 Dataset Pathname: pass2.2  
 Presentation Format: kcdnl  
 Dataset Creation: Fri Nov 25 04:46:30 2011 by Calc Open-Cased 100827  
 Charted by: Depth in Feet scaled 1:240

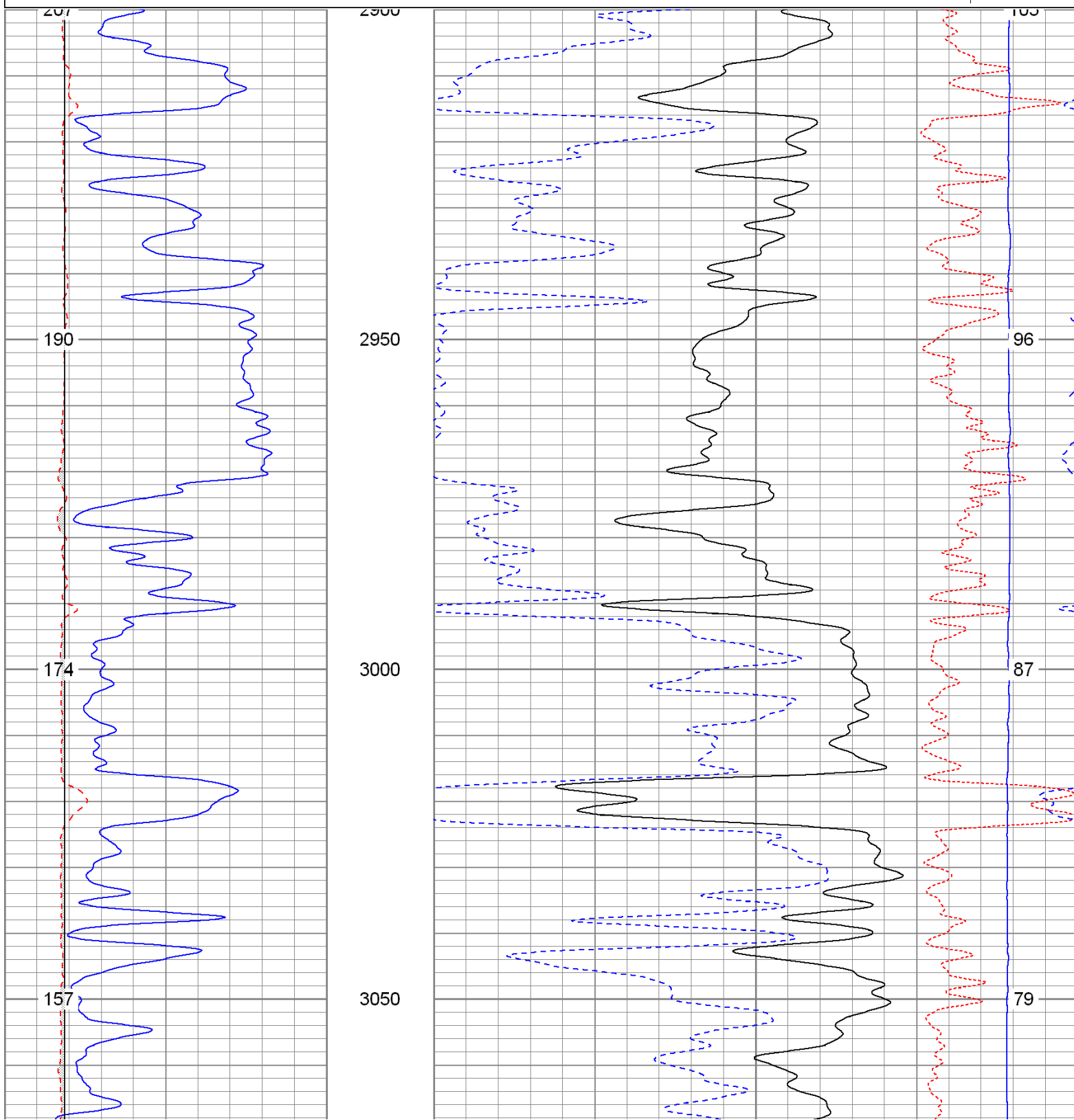
0	GR (GAPI)	150
6	DCAL (in)	16
6	BOREID (in)	16

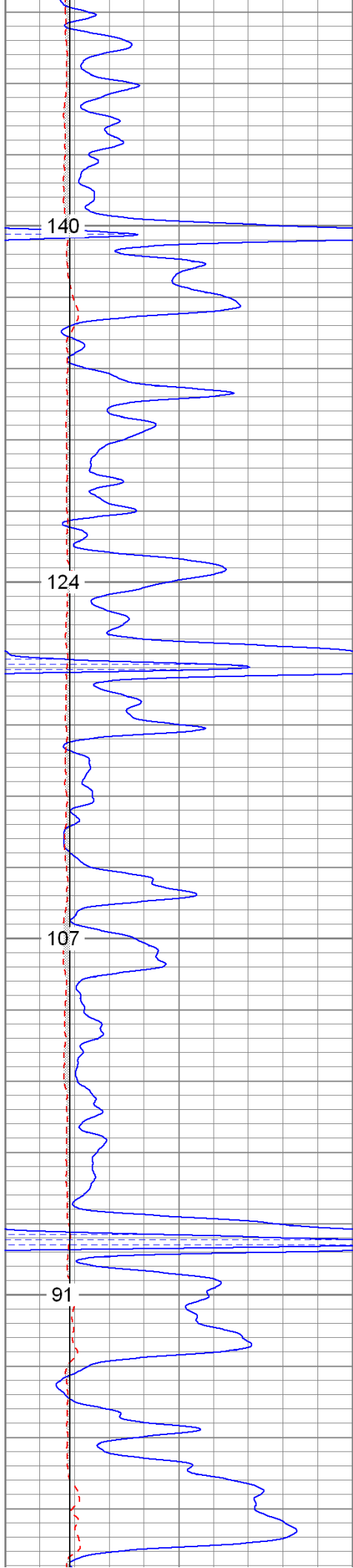
30	NPOR (pu)	-10
30	DPOR (pu)	-10
70	DPOR (pu)	30

TBHV (ft3)

-0.25	RHOC (g/cc)	0.25
8000	LTEN (lb)	0

ABHV (ft3)



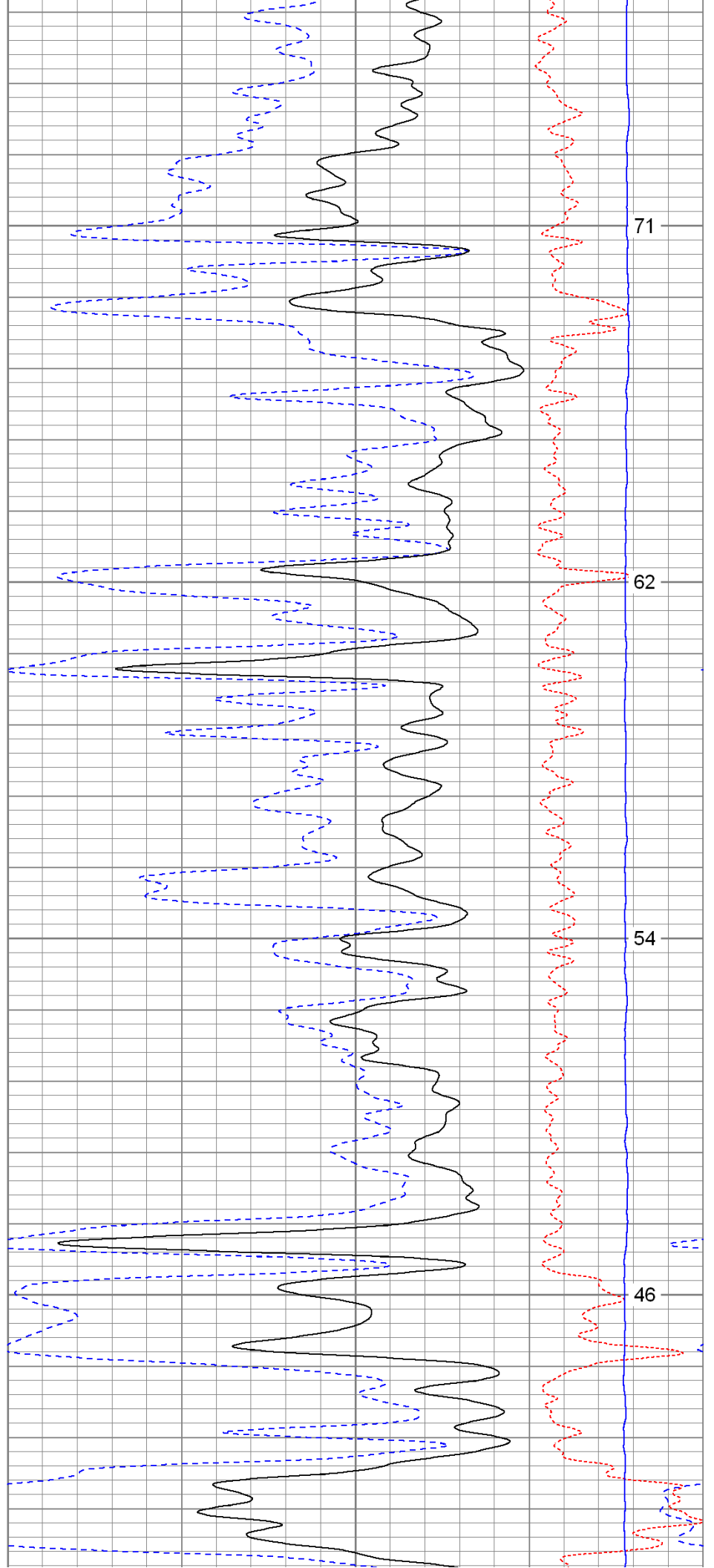


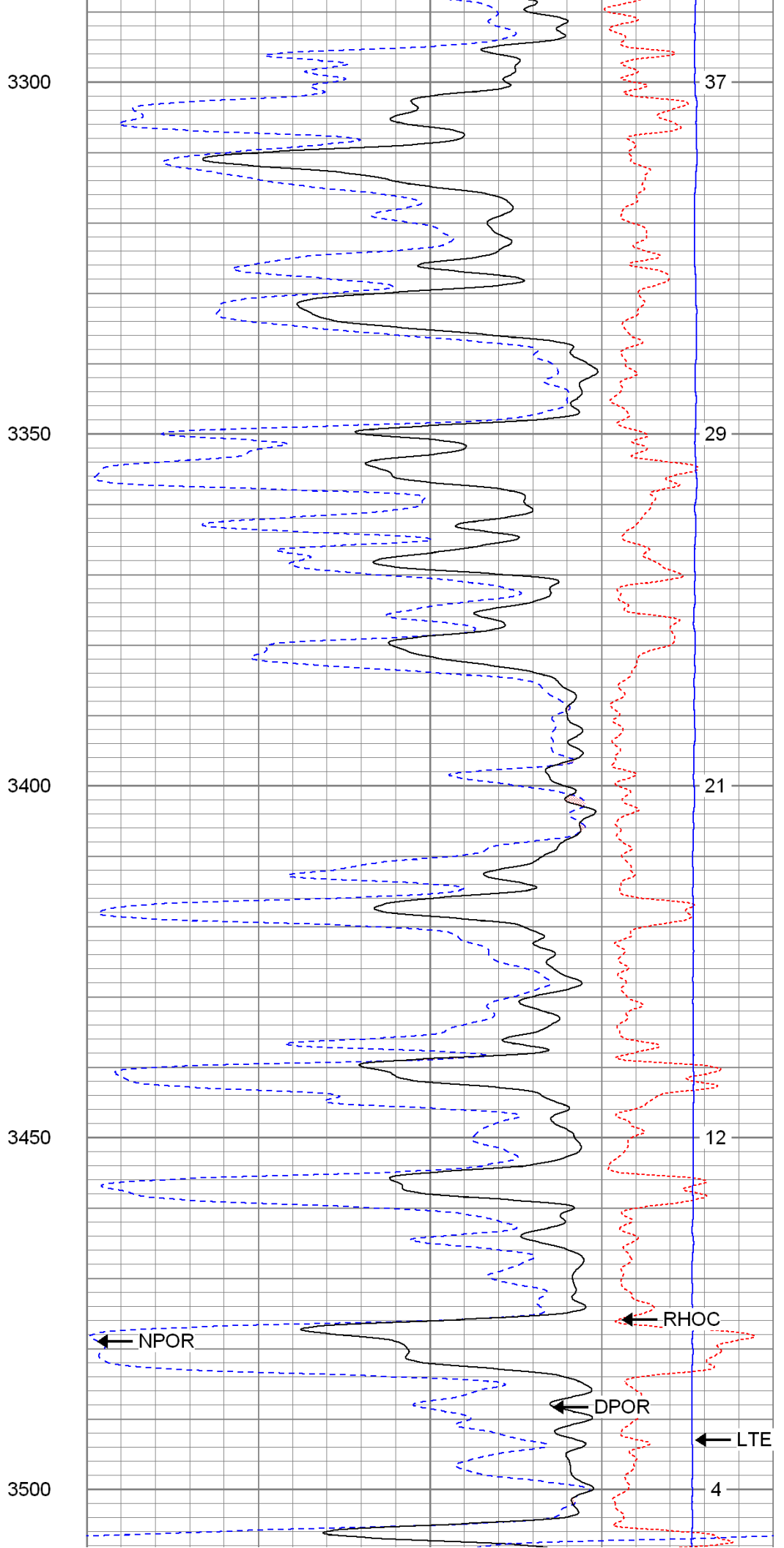
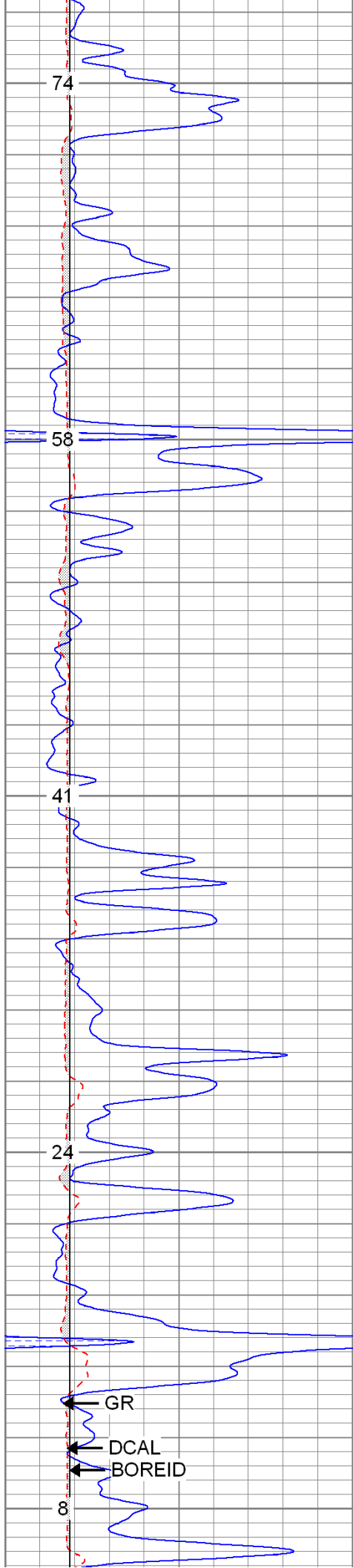
3100

3150

3200

3250

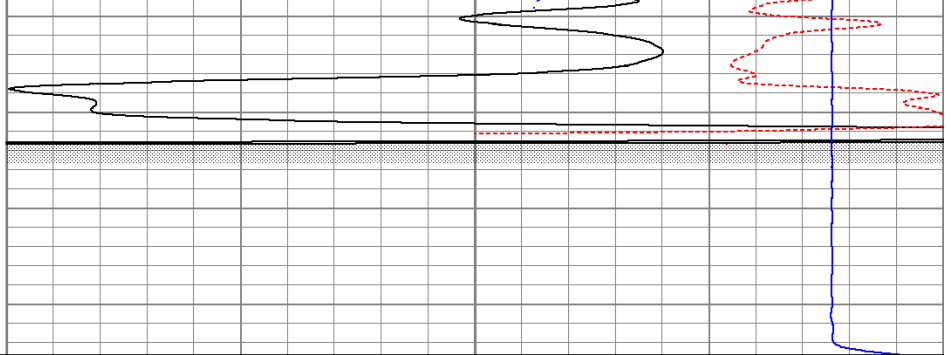






0	GR (GAPI)	150
6	DCAL (in)	16
6	BOREID (in)	16

TBHV (ft3)



30	NPOR (pu)	-10
30	DPOR (pu)	-10
70	DPOR (pu)	30

-0.25	RHO� (g/cc)	0.25
8000	LTEN (lb)	0

ABHV (ft3)



# Repeat Pass

Database File: bhfrankcsanders#13oh.db  
 Dataset Pathname: pass1.2  
 Presentation Format: kcdnl  
 Dataset Creation: Fri Nov 25 04:47:59 2011 by Calc Open-Cased 100827  
 Charted by: Depth in Feet scaled 1:240

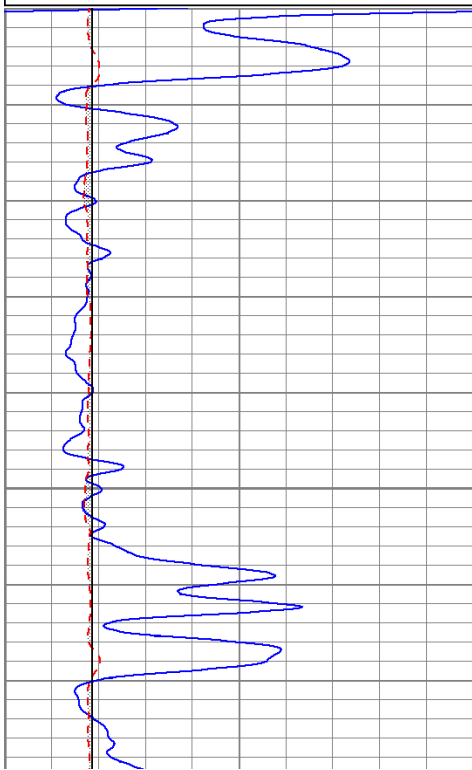
0	GR (GAPI)	150
6	DCAL (in)	16
6	BOREID (in)	16

TBHV (ft3)

30	NPOR (pu)	-10
30	DPOR (pu)	-10
70	DPOR (pu)	30

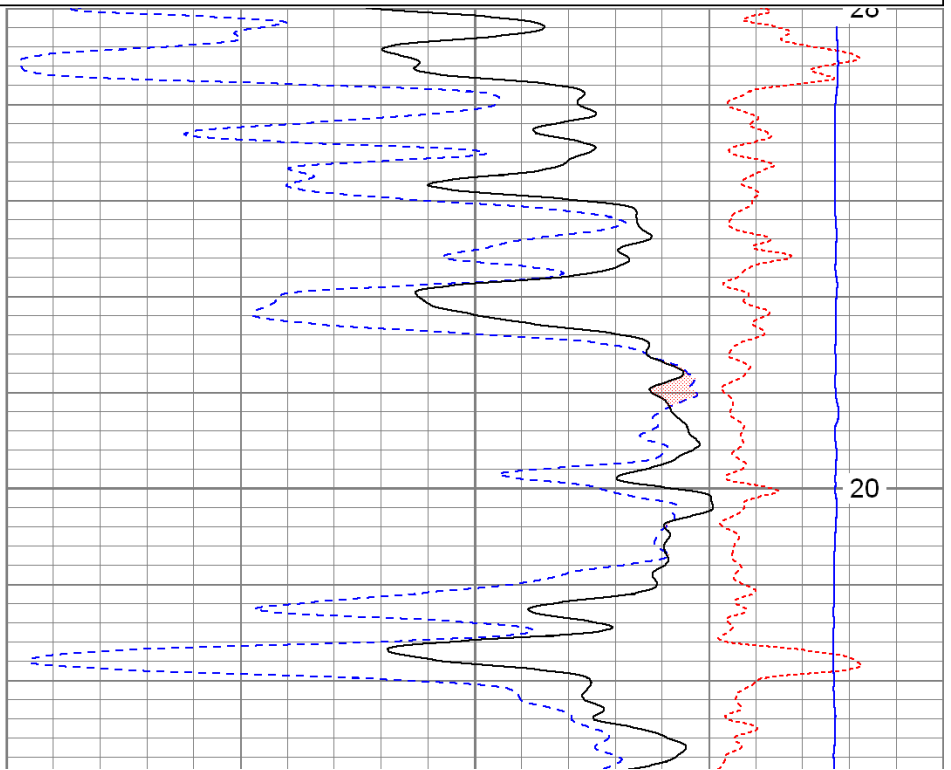
-0.25	RHO� (g/cc)	0.25
8000	LTEN (lb)	0

ABHV (ft3)



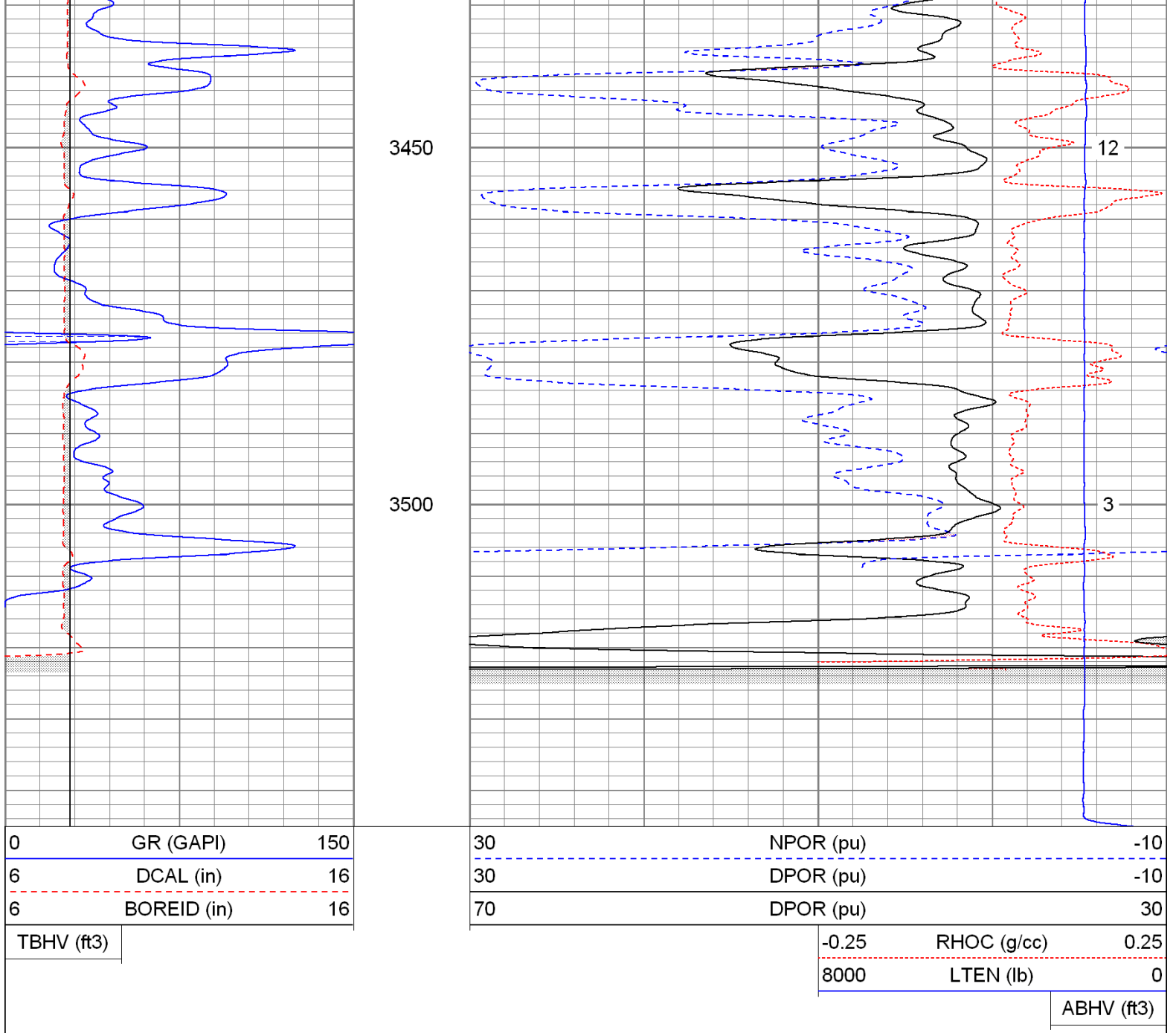
3300

3400



20

20



### Calibration Report

Database File: bhfrankcsanders#13oh.db  
 Dataset Pathname: pass1  
 Dataset Creation: Fri Nov 25 03:16:35 2011 by Log Open-Cased 100827

### Dual Induction Calibration Report

Serial-Model: 080522-Probe  
 Surface Cal Performed: Wed Nov 02 06:37:29 2011  
 Downhole Cal Performed: Wed Nov 02 06:37:32 2011  
 After Survey Verification Performed: Wed Nov 02 06:37:34 2011

#### Surface Calibration

Loop:	Readings			References			Results	
	Air	Loop		Air	Loop		m	b
Deep	-0.000	0.638	V	0.000	400.000	mmho/m	626.857	0.275
Medium	0.001	0.741	V	0.000	464.000	mmho/m	626.953	-0.823
Internal:	Zero	Cal		Zero	Cal		m	b

Deep	0.000	0.638	V	0.000	400.000	mmho/m	627.013	-0.291
Medium	0.001	0.741	V	0.000	464.000	mmho/m	627.190	-0.915

Downhole Calibration								
	Readings			References			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	0.096	400.608	mmho/m	0.566	400.467	mmho/m	0.998	0.471
Medium	-0.069	464.142	mmho/m	0.092	463.916	mmho/m	0.999	0.161
LL3		7.358	V		750.000	Ohm-m		
		0.001	V		12.000	Ohm-m		
		-7.218	V		3745.000	mmho-m		

**Compensated Density Calibration Report**

Serial-Model:	2501DHT-DHT
Source / Verifier:	/
Master Calibration Performed:	Fri Nov 25 03:14:50 2011

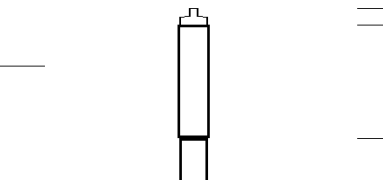
Master Calibration						
	Density		Far Detector	Near Detector		
Magnesium	1.750	g/cc	744.27	293.58	cps	
Aluminum	2.680	g/cc	138.48	189.15	cps	
Spine Angle = 75.35			Density/Spine Ratio = 0.535			
	Size		Reading			
Small Ring	7.90	in	6064.22			
Large Ring	14.00	in	10296.80			

**Gamma Ray Calibration Report**

Serial Number:	2000	
Tool Model:	P2000	
Performed:	Sun Oct 23 08:45:30 2011	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.2200	GAPI/cps

**Neutron Calibration Report**

Serial Number:	5108	
Tool Model:	PROBE	
Performed:	Wed Oct 19 06:16:06 2011	
Calibrator Value:	1	NAPI
Calibrator Reading:	1	cps
Sensitivity:	1	NAPI/cps

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
NEU	37.96		None	0.75	1.50	5.00
			NEU-PROBE (5108) Probe	4.92	3.63	85.00
			CP P2000 (2000)	3.67	3.25	40.00

