



**Weatherford**<sup>®</sup>

**ARRAY INDUCTION  
SHALLOW FOCUSED  
ELECTRIC LOG**

COMPANY **REDLAND RESOURCES, INC.**  
WELL **HUMPHREYS #6-2**  
FIELD **WILDCAT**  
PROVINCE/COUNTY **HODGEMAN**  
COUNTRY/STATE **U.S.A. / KANSAS**  
LOCATION **1252' FNL & 2336' FEL**

SEC **TWP** **RGE** Other Services  
**6** **24S** **24W** **MPD/MDN** **MSS**  
API Number **15-083-21797** **MML**

Permanant Datum GL, Elevation 2498 feet  
Log Measured From **KB** Elevations: **KB** **feet** **2506.00**  
Drilling Measured From **KB** **DF** **2504.00**  
**GL** **2498.00**

Date	03-AUG-2012
Run Number	ONE
Depth Driller	4950.00 feet
Depth Logger	4941.00 feet
First Reading	4938.00 feet
Last Reading	4600.00 feet
Casing Driller	222.00 feet
Casing Logger	221.00 feet
Bit Size	7.875 inches
Hole Fluid Type	CHEMICAL
Density / Viscosity	9.55 lb/USg 50.00 CP
PH / Fluid Loss	9.50 15.20 ml/30Min
Sample Source	MUDPIT
Rm @ Measured Temp	0.67 @ 91.0 ohm-m
Rmf @ Measured Temp	0.54 @ 91.0 ohm-m
Rmc @ Measured Temp	0.80 @ 91.0 ohm-m
Source Rmf / Rmc	CALC CALC
Rm @ BHT	0.56 @ 111.0 ohm-m
Time Since Circulation	4 HOURS
Max Recorded Temp	111.00 deg F
Equipment Name	COMPACT
Equipment / Base	13096 LIB
Recorded By	ADAM SILL
Witnessed By	MIKE POLLOK
S.O. # / JOB #	3534510

BOREHOLE RECORD			Last Edited: 03-AUG-2012 15:27
Bit Size inches	Depth From feet	Depth To feet	
7.875	222.00	4950.00	

CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	222.00	24.00

**REMARKS**

- SOFTWARE ISSUE: WLS 13.02.6600.

- MCG, MML, MDN, MPD, MFE, MSS, MAI RAN IN COMBINATION.  
 - HARDWARE: DUAL BOWSPRING USED ON MDN.  
 0.5 INCH STANDOFF USED ON MFE.  
 TWO 0.5 INCH STANDOFFS USED ON MSS.  
 0.5 INCH STANDOFF USED ON MAI.

- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.

- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.

- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.

- ANNULAR HOLE VOLUME WITH 4.5 INCH CASING: 83 CU. FT.

- SERVICE ORDER # 3534510.

- RIG: DUKE #2.

- ENGINEER: A. SILL.

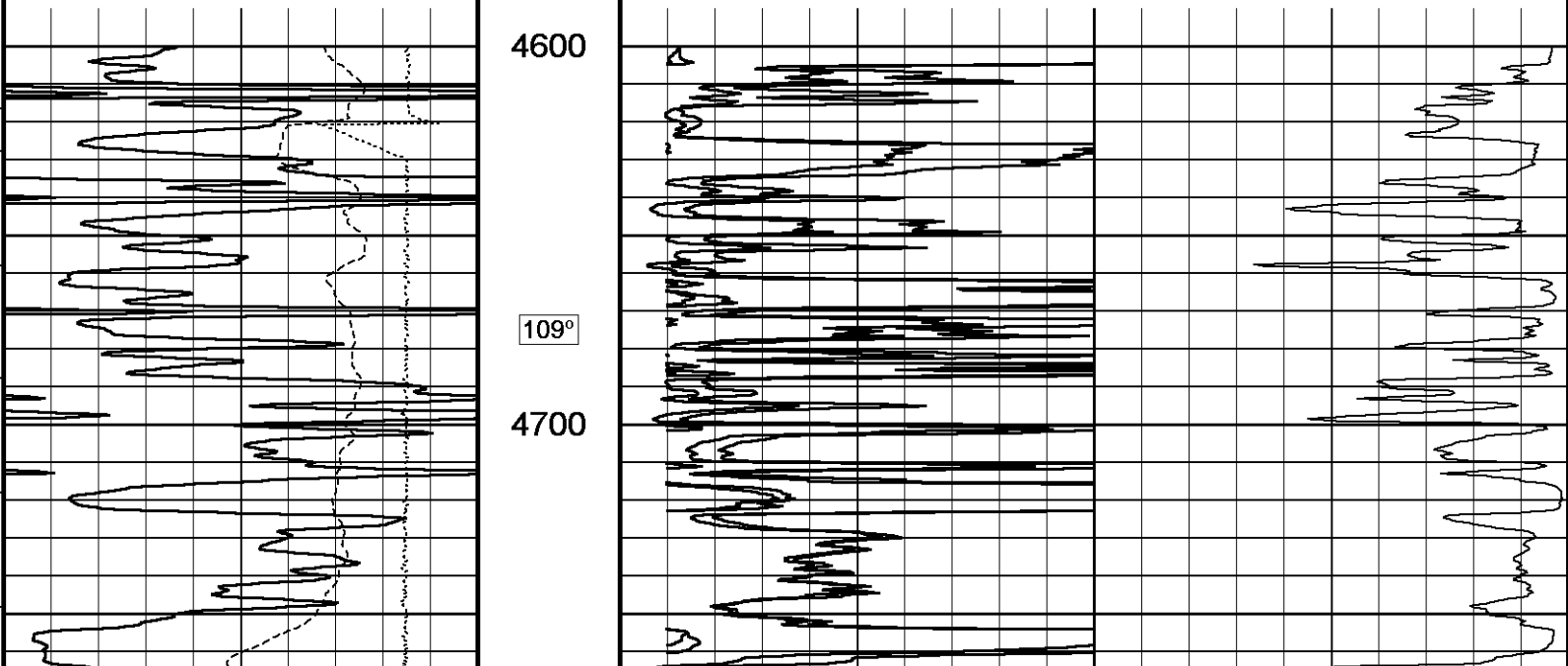
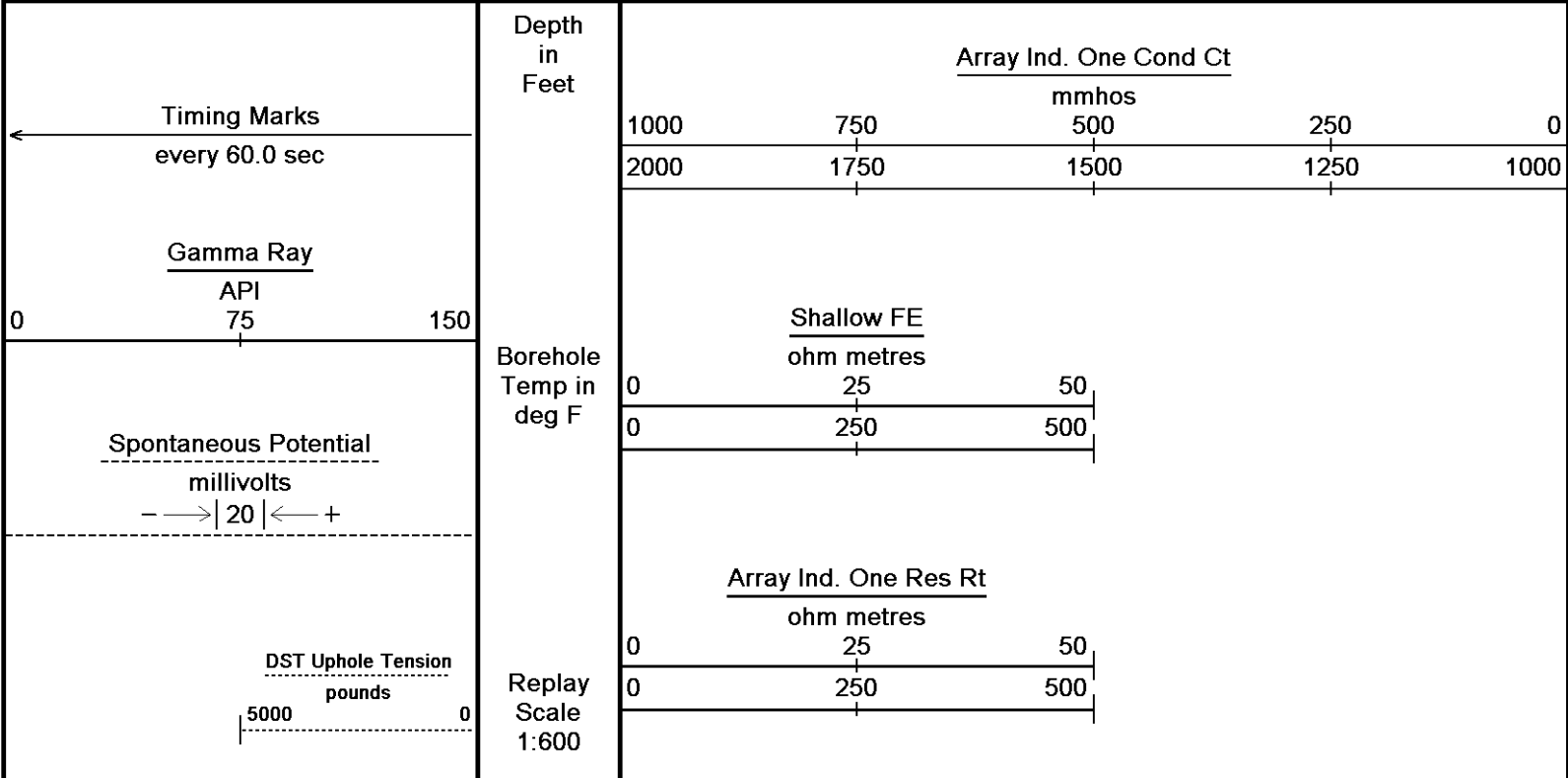
- OPERATOR(S): R. VENEGAS.

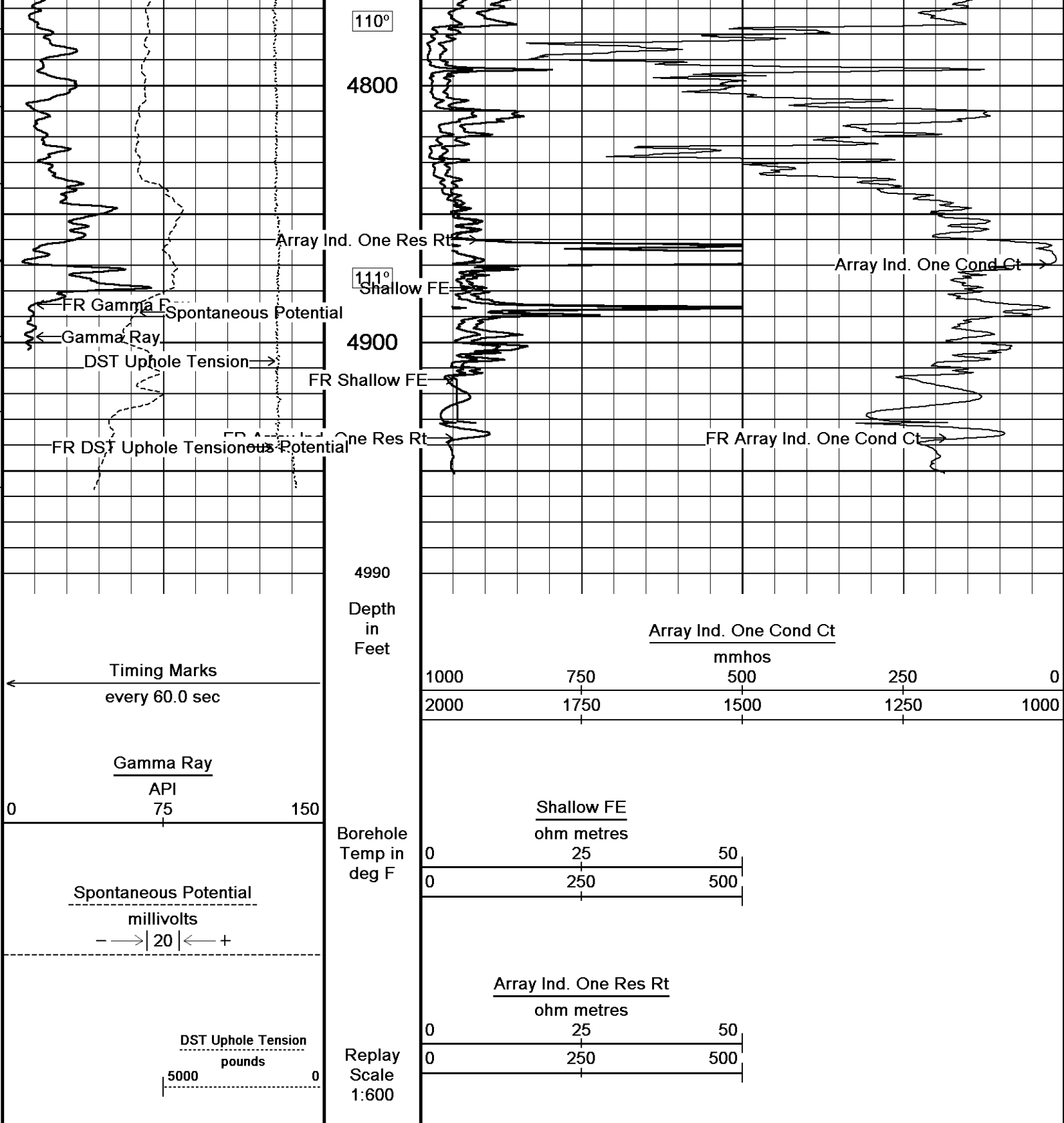
\*\*\*\* PULLED TIGHT AT 4600 FT. ON REPEAT PASS CAUSING CALIPER ARM TO BEND AND WAS INSTRUCTED TO DISCONTINUE LOGGING. \*\*\*\*

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 interpretations, and we shall not, except in the case of gross or wilful 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 in our price schedule.

2 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm  
Plotted on 03-AUG-2012 19:56  
Filename: C:\Minimus 13.02.6600\Data\Redland Humphreys #6-2\Redland Humphreys #6-2\_001.dta  
Recorded on 03-AUG-2012 17:34  
System Versions: Logged with 13.02.6600 Plotted with 13.02.6600





Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 03-AUG-2012 19:56  
 Filename: C:\Minimus 13.02.6600\Data\Redland Humphreys #6-2\Redland Humphreys #6-2\_001.dta Recorded on 03-AUG-2012 17:34  
 System Versions: Logged with 13.02.6600 Plotted with 13.02.6600

2 INCH MAIN

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 03-AUG-2012 19:56  
 Filename: C:\Minimus 13.02.6600\Data\Redland Humphreys #6-2\Redland Humphreys #6-2\_001.dta Recorded on 03-AUG-2012 17:34  
 System Versions: Logged with 13.02.6600 Plotted with 13.02.6600

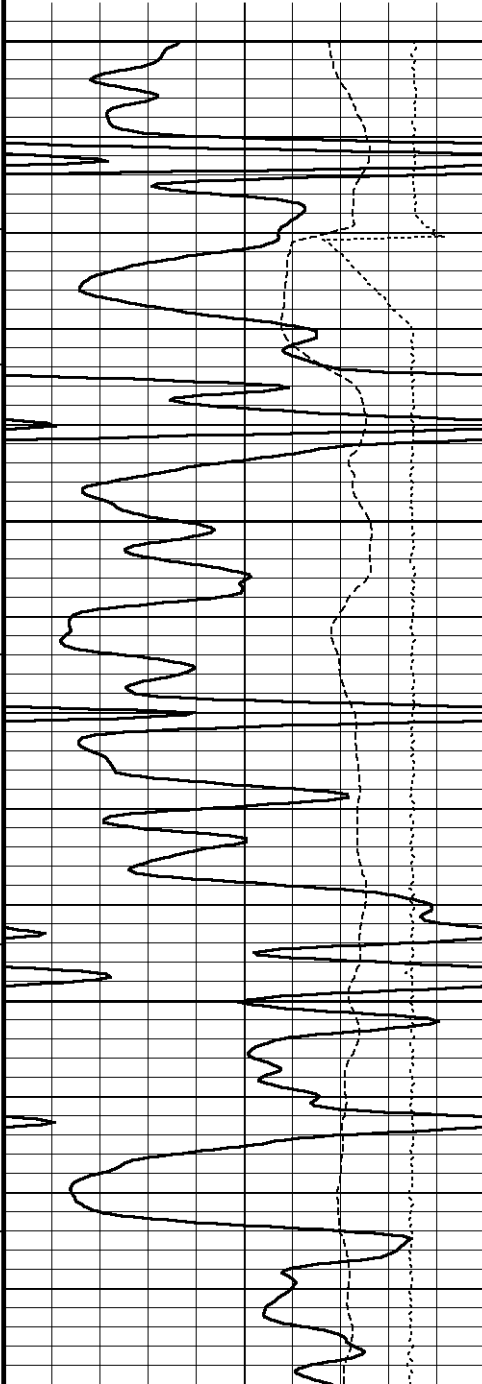
	Depth in	Shallow FE
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Timing Marks  
every 60.0 sec

Gamma Ray  
API  
0 75 150

Spontaneous Potential  
millivolts  
- -> | 20 | <- - +

DST Uphole Tension  
pounds  
5000 0

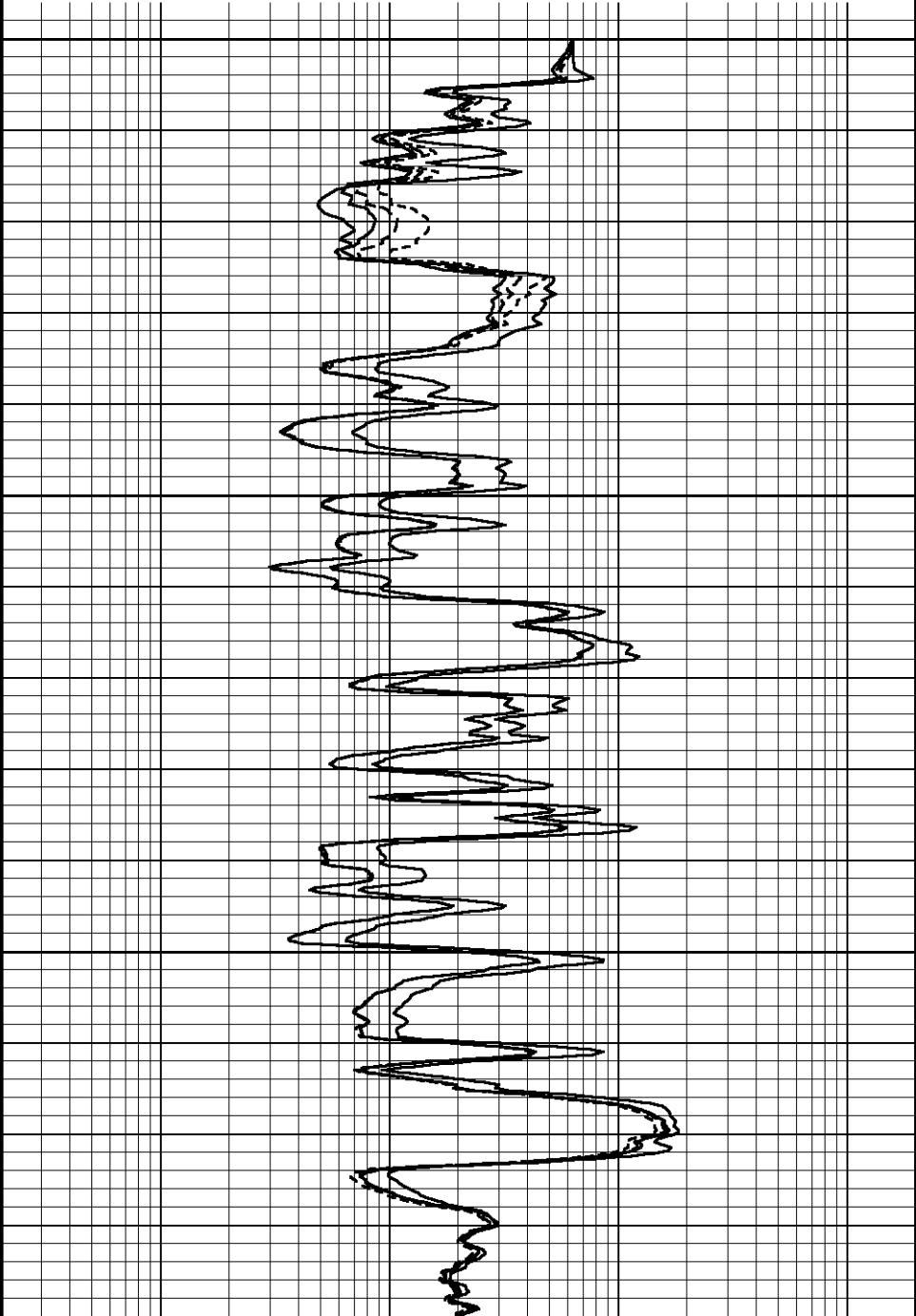
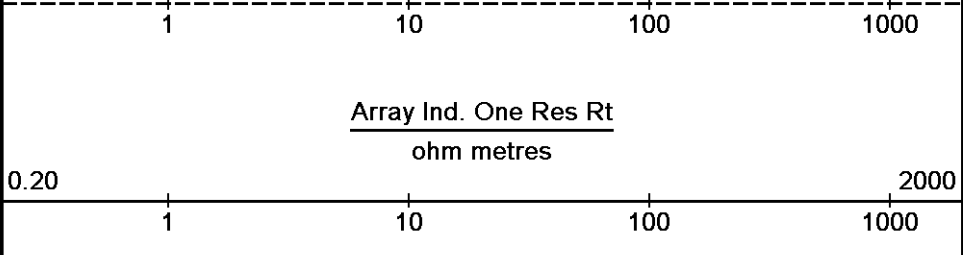
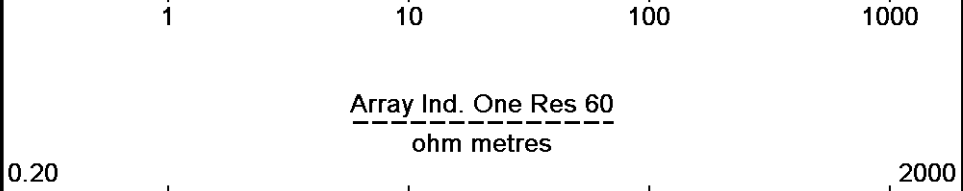
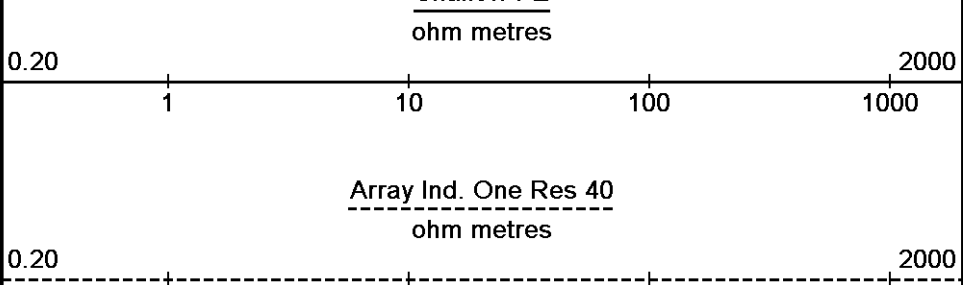


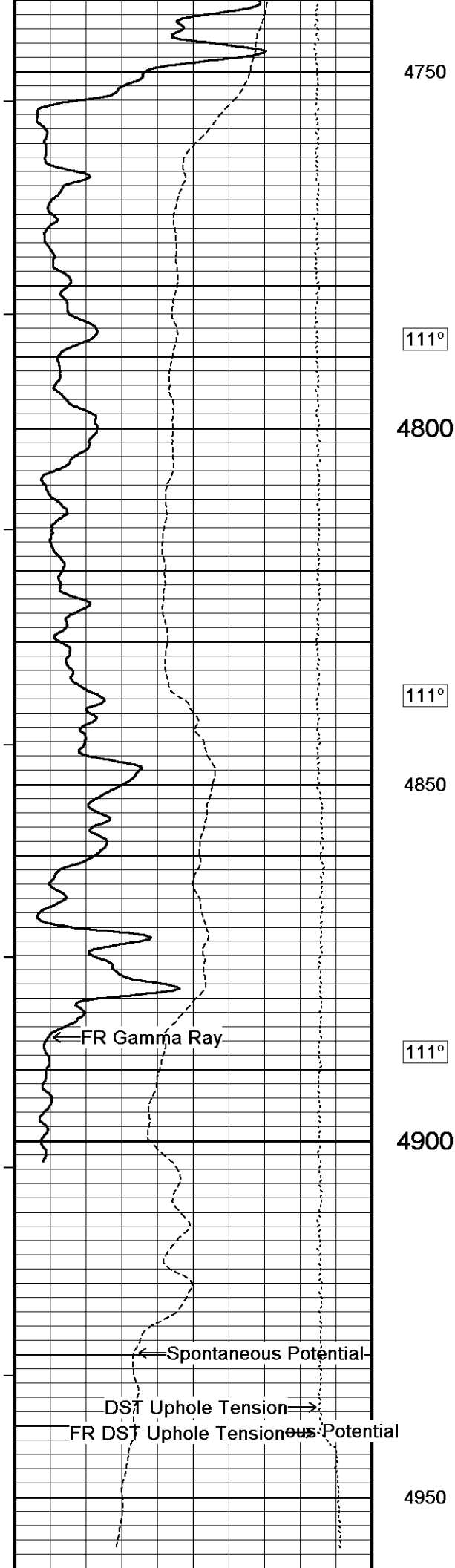
Feet

Borehole Temp in deg F

Replay Scale  
1:240

4600  
108°  
4650  
109°  
4700  
110°





4750

111°

4800

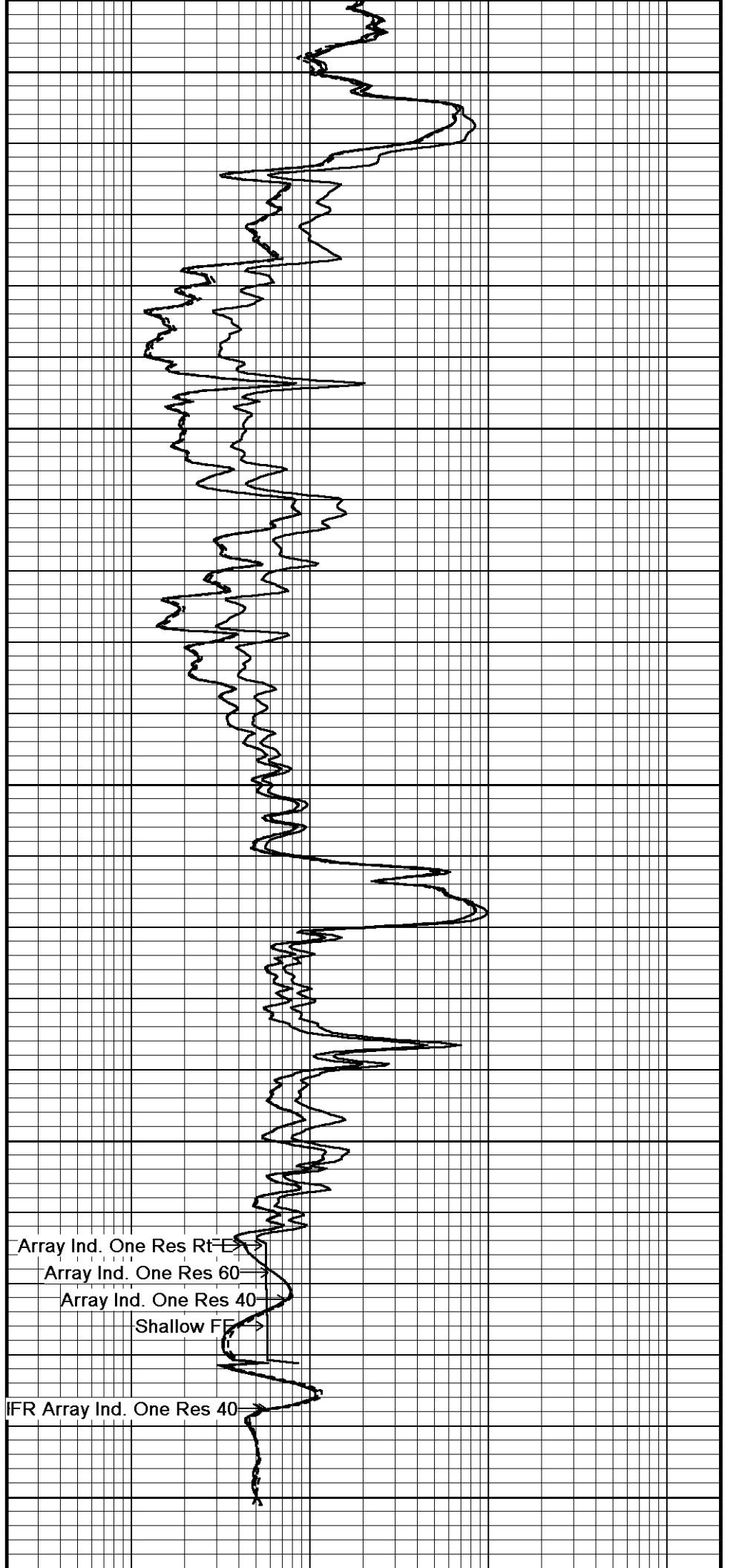
111°

4850

111°

4900

4950



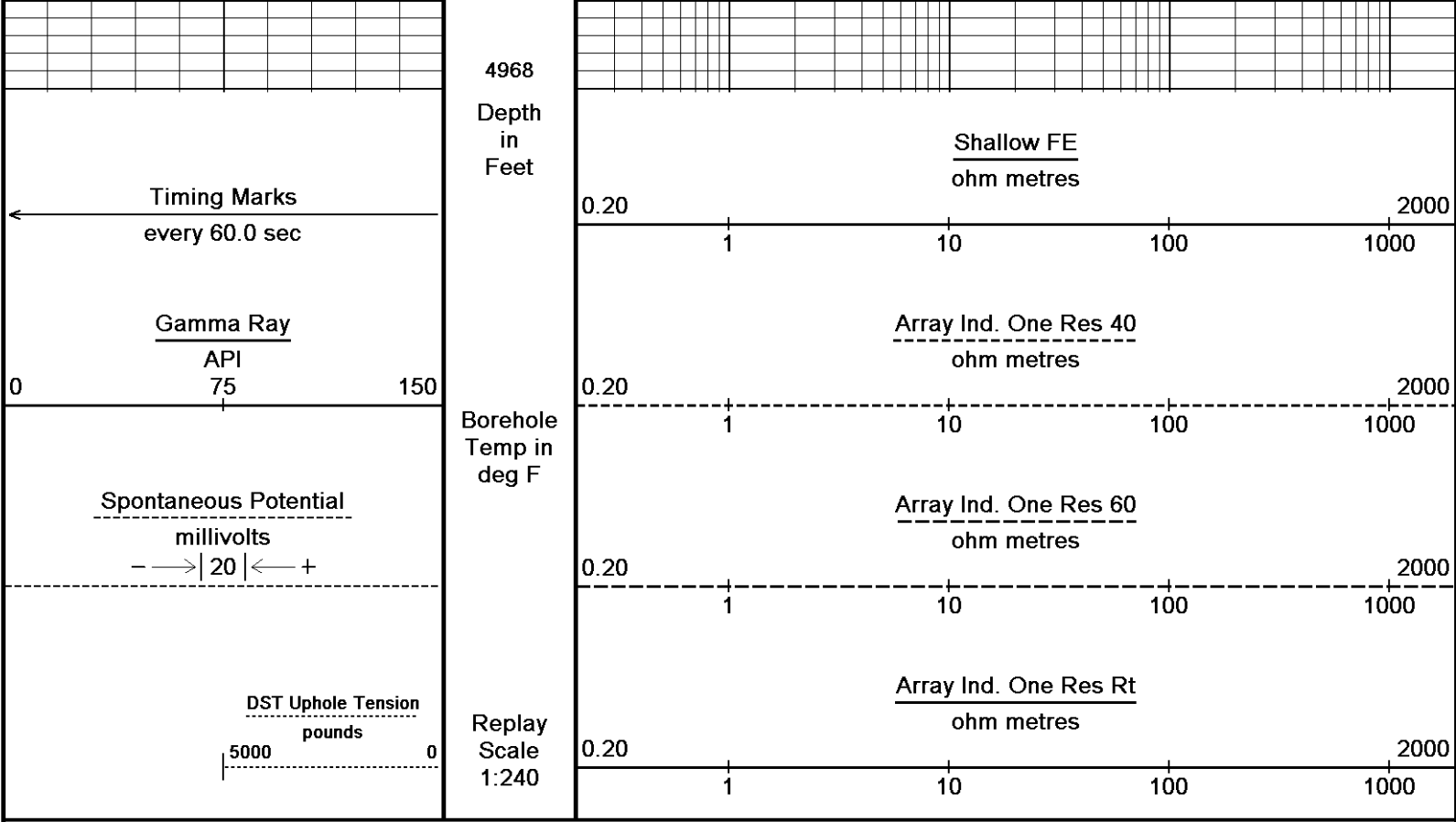
Array Ind. One Res Rt-E

Array Ind. One Res 60

Array Ind. One Res 40

Shallow FF

IFR Array Ind. One Res 40



Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 03-AUG-2012 19:56  
 Filename: C:\Minimus 13.02.6600\Data\Redland Humphreys #6-2\Redland Humphreys #6-2\_001.dta  
 Recorded on 03-AUG-2012 17:34  
 System Versions: Logged with 13.02.6600 Plotted with 13.02.6600

↑ 5 INCH MAIN ↑

**BEFORE SURVEY CALIBRATION**  
 C:\Minimus 13.02.6600\Data\Redland Humphreys #6-2\Redland Humphreys #6-2\_001.dta

General Constants All 000 Last Edited on 03-AUG-2012, 15:34

<b>General Parameters</b>		
Mud Resistivity	0.670	ohm-metres
Mud Resistivity Temperature	91.000	degrees F
Water Level	0.000	feet
Density/Neutron Processing	Wet Hole	
<b>Hole/Annular Volume and Differential Caliper Parameters</b>		
HVOL Method	Single Caliper	
HVOL Caliper 1	Density Caliper	
HVOL Caliper 2	N/A	
Annular Volume Diameter	4.500	inches
Caliper for Differential Caliper	None	
<b>Rwa Parameters</b>		
Porosity used	Base Density Porosity	
Resistivity used	Array Ind. Four Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	

Down-hole Tension Calibration SMS 0 Field Calibration on 25-JUL-2012 21:44

Reading No	Measured	Calibrated (lbs)
1	15962.51	0.00
2	17047.62	562.20

Gamma Calibration MCG-D.K 442 Field Calibration on 03-AUG-2012 11:08

	Measured	Calibrated (API)
Background	71	48

Calibrator (Gross)	1154	773
Calibrator (Net)	1083	725

Gamma Constants MCG-D.K 442		Last Edited on 03-AUG-2012,15:34	
Gamma Calibrator Number	GRC38		
Mud Density	1.15	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl	0.00	kppm	

SP Calibration MCG-D.K 442		Field Calibration on 17-JUL-2012 16:34	
	Measured	Calibrated (mV)	
Reference 1	100.2	100.0	
Reference 2	-99.9	-100.0	

High Resolution Temperature Calibration MCG-D.K 442		Field Calibration on 17-JUL-2012,16:35	
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	100.00	100.00	

High Resolution Temperature Constants MCG-D.K 442		Last Edited on	
Pre-filter Length	11		

Caliper Calibration MML-A 16		Base Calibration on 17-JUL-2012 16:12	
		Field Calibration on 03-AUG-2012 10:57	
Base Calibration			
Reading No	Measured	Calibrator Size (in)	
1	14596	5.98	
2	17798	7.97	
3	21110	9.86	
4	25111	11.92	
5	0	0.00	
6	N/A	N/A	
Field Calibration			
	Measured Caliper (in)	Actual Caliper (in)	
	5.96	5.98	

Micro Normal and Micro Inverse Calibration MML-A 16		Base Calibration on 17-JUL-2012 16:16	
		Field Check on 03-AUG-2012 10:51	
Base Calibration			
Channel	Resistor 1	Measured Resistor 2	Calibrated (ohm-m) Resistor 2
Micro Normal	12.2	60.2	5.0 25.0
Micro Inverse	15.6	78.3	5.0 25.0
Channel	Base Check (ohm-m)		Field Check (ohm-m)
Micro Normal	62.9		62.9
Micro Inverse	48.2		48.2

Micro Normal and Micro Inverse Constants MML-A 16		Last Edited on 03-AUG-2012,15:34	
Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159		
Micro Normal K Factor	1.0000		
Micro Inverse K Factor	1.0000		
Standoff Offset	N/A	inches	

Neutron Calibration MDN-A.B 66		Base Calibration on 17-JUL-2012 10:54	
		Field Check on 03-AUG-2012 11:12	
Base Calibration			
	Measured	Calibrated (cps)	
	Near Far	Near	Far
Ratio	3220 101	3714	110
	31.859	33.764	
Field Calibrator at Base			
		Calibrated (cps)	
Ratio		1595	2289
		0.696	
Field Check			
		Calibrated (cns)	

Neutron Constants MDN-A.B 66 Last Edited on 03-AUG-2012,15:34

Neutron Source Id	P0204NN		
Neutron Jig Number	5824NE		
Epithermal Neutron	No		
Caliper Source for Processing	Density Caliper		
Stand-off	0.00	inches	
Mud Density	1.00	gm/cc	
Limestone Sigma	7.10	cu	
Sandstone Sigma	4.26	cu	
Dolomite Sigma	4.70	cu	
Formation Pressure Source	Constant Value		
Formation Pressure	0.00	kpsi	
Temperature Source	Constant Value		
Temperature	68.00	degrees F	
Mud Salinity	0.00	kppm	
Salinity Correction	Not Applied		
Formation Fluid Salinity Source	Constant Value		
Formation Fluid Salinity	0.00	kppm	
Barite Mud Correction	Not Applied		

FE Calibration MFE-B.J 353 Base Calibration on 17-JUL-2012 15:58  
Field Check on 03-AUG-2012 10:50

Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	0.0	0.0	
Reference 2	964.8	126.8	
Base Check		280.6	
Field Check		280.8	

FE Constants MFE-B.J 353 Last Edited on 03-AUG-2012,15:33

Running Mode	No Sleeve		
MFE K Factor	0.1268		
Caliper Source for FE correction	Density Caliper		
Caliper Value for FE correction	N/A	inches	
Rm Source for FE correction	Temperature Corr		
Temp. for Rm Corr.	MCG External Temperature		
Stand-off	0.5	inches	

Sonic Constants MSS-C.K 330 Last Edited on 03-AUG-2012,15:33

Maximum Boundary Contrast	100.00	micro-sec/ft	
Fluid Transit Time	189.00	micro-sec/ft	
Limestone Transit Time	47.50	micro-sec/ft	
Sandstone Transit Time	55.50	micro-sec/ft	
Dolomite Transit Time	43.50	micro-sec/ft	
Sonic used for Porosities	3-5' Compensated		
Correction for Sonde Skew	Applied		
Cycle Stretch Algorithm	Applied		
MN3FT	0.00	micro-sec	
MX3FT	1500.00	micro-sec	
Hunt-Raymer Constant	83.13	micro-sec/ft	
Sonde Mode	Compensated		
Hole Type	Open Hole		
Sonde Parameters			
	Measured	Calibrated	
Offset	0.0000	0.0000	
Free Pipe	0.0000	0.0000	
Peak Amplitude Source	0		
Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain
3'	N/A	N/A	N/A
4'	N/A	N/A	N/A
			Start Gain
			N/A
			Discriminator (mV)
			N/A
			N/A

5'	N/A	N/A	N/A	N/A	N/A
6'	N/A	N/A	N/A	N/A	N/A

Processed Fixed Gate Parameters

Waveform Used For Processing	N/A			
Start Time (micro-sec)	End Time (micro-sec)	Discriminator (mV)	Depth (ft)	
0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	

Full Waveform Parameters

Use 3' Waveform to derive TR	No
Use 4' Waveform to derive TR	No
Use 5' Waveform to derive TR	No
Use 6' Waveform to derive TR	No
3' Waveform Discriminator Level	0.30 mV
4' Waveform Discriminator Level	0.30 mV
5' Waveform Discriminator Level	0.15 mV
6' Waveform Discriminator Level	0.15 mV
3' Waveform Filter	0
4' Waveform Filter	0
5' Waveform Filter	0
6' Waveform Filter	0
Semblance Level	0.50
Semblance Window Width	120.00 micro-sec
Sonic 1 Despiker	100.00 micro-sec/ft
Sonic 2 Despiker	100.00 micro-sec/ft

High Resolution Temperature Calibration MAI-A.A 167

Field Calibration on 17-JUL-2012,13:53

	Measured	Calibrated(Deg F)
Lower	1.00	33.80
Upper	11.00	51.80

High Resolution Temperature Constants MAI-A.A 167

Last Edited on 17-JUL-2012,13:49

Pre-filter Length 11

Induction Calibration MAI-A.A 167

Base Calibration on 17-JUL-2012,13:55  
Field Check on 03-AUG-2012 10:48

Base Calibration

Test Loop Calibration

Channel	Measured		Calibrated (mmho/m)	
	Low	High	Low	High
1	17.3	474.2	9.3	966.2
2	6.3	388.4	7.6	821.4
3	3.3	259.4	5.2	566.0
4	1.9	133.0	2.6	279.2

Array Temperature 76.8 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	13.8	3838.5
2	0.0	0.0	29.8	3475.8
3	0.0	0.0	29.2	3051.8
4	0.0	0.0	19.8	2081.0
Deep	0.0	0.0	18.7	2048.2
Medium	0.0	0.0	42.3	3989.3
Shallow	0.0	0.0	43.2	5052.4

Array Temperature 0.0 85.6 Deg F

Induction Constants MAI-A.A 167

Last Edited on 03-AUG-2012,15:33

Induction Model	RtAP-WBM
Caliper for Borehole Corr.	Density Caliper
Hole Size for Borehole Correction	N/A inches
Tool Centred	No

Stand-off Type		Fins	
Stand-off	0.50	inches	
Number of Fins on Stand-off	8.0000		
Stand-off Fin Angle	45.00	degrees	
Stand-off Fin Width	0.5000	inches	
Borehole Corr. Rm Source		Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature		
Squasher Start	0.0020	mhos/metre	
Squasher Offset	N/A	mhos/metre	

Borehole Normalisation

DRM1	0.0000	DRC1	0.0000
DRM2	0.0000	DRC2	0.0000
MRM1	0.0000	MRC1	0.0000
MRM2	0.0000	MRC2	0.0000
SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000

Calibration Site Corrections

Channel 1	0.00	mmhos/metre
Channel 2	0.00	mmhos/metre
Channel 3	0.00	mmhos/metre
Channel 4	0.00	mmhos/metre

Apparent Porosity and Water Saturation Constants

Archie Constant (A)	1.00	
Cementation Exponent (M)	2.00	
Saturation Exponent (N)	2.00	
Saturation of Water for Apor	100.00	percent
Resistivity of Water for Apor and Sw	0.05	ohm-m
Resistivity of Mud Filtrate for Sw	0.00	ohm-m
Source for Rt	0.00	
Source for Rxo	0.00	

Caliper Calibration MPD-B 64

Base Calibration on 17-JUL-2012 14:43  
Field Calibration on 03-AUG-2012 11:00

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13949	3.99
2	22435	5.98
3	31057	7.97
4	39360	9.86
5	48766	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.04	5.98

Photo Density Calibration MPD-B 64

Base Calibration on 17-JUL-2012 15:04  
Field Check on 03-AUG-2012 10:55

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	59921	33969	59556	30836
Reference 2	25388	2962	24941	2541

Field Check at Base

1193.4	1388.8
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Field Check

1186.0	1379.5
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PE Calibration

Base Calibration	Measured			Calibrated
	WS	WH	Ratio	Ratio
Background	214	1064		
Reference 1	22602	59722	0.382	0.371
Reference 2	6872	25249	0.275	0.272

Field Check at Base

214.1 1063.8

Field Check

216.2 1057.4

Density Constants MPD-B 64

Last Edited on 03-AUG-2012,15:33

Density Source Id	18235B	
Nylon Calibrator Number	DNCE695	
Aluminium Calibrator Number	DACD698	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.15	gm/cc
Mud Density Z/A Multiplier	1.11	
Mud Filtrate Density	1.00	gm/cc
Dry Hole Mud Filtrate Density	1.00	gm/cc
DNCT	0.00	gm/cc
CRCT	0.00	gm/cc
Density Z/A Correction	Hybrid	
Matrix Density (gm/cc)	Depth (ft)	
2.87	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	

DOWNHOLE EQUIPMENT

C:\Minimus 13.02.6600\Data\Redland Humphreys #6-2\Redland Humphreys #6-2\_001.dta

Compact Comms Gamma  
MCG-D.K 442 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

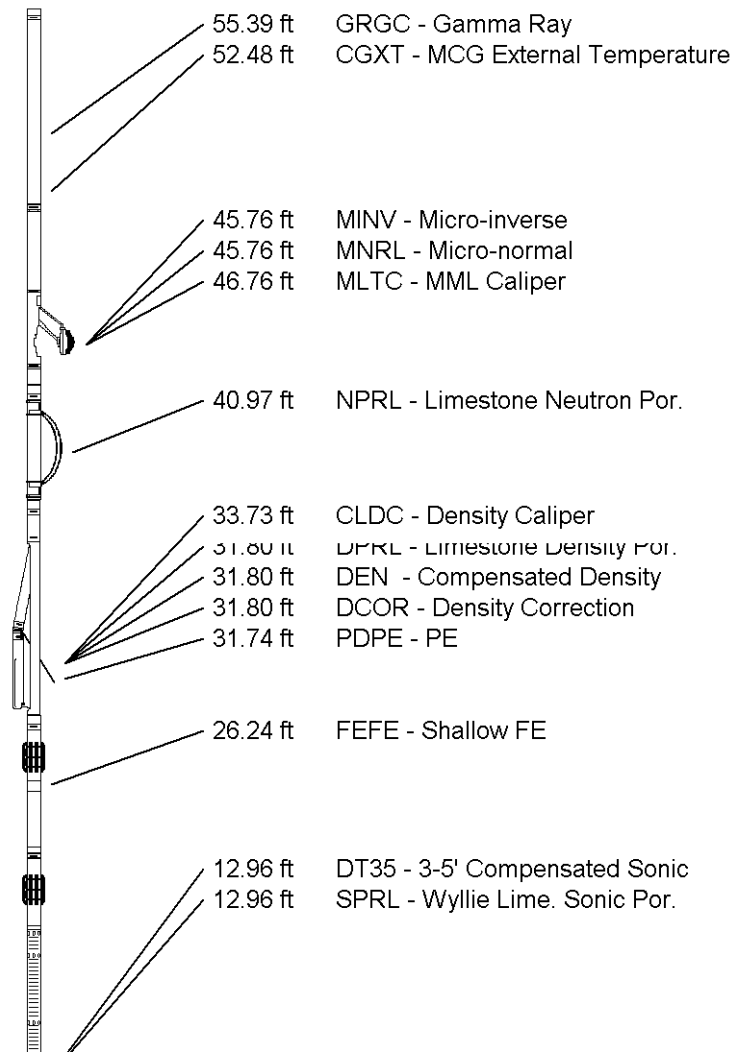
Compact Micro-log  
MML-A 16 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Neutron  
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper  
MPD-B 64 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

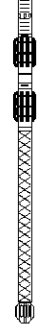
Compact Focussed Electric  
MFE-B.J 353 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic  
MSS-C.K 330 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in



Compact Induction  
 MAI-A.A 167 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 60.68 ft Weight: 456.4 lb



- 3.34 ft R400 - Array Ind. One Res 40
  - 3.34 ft RTAO - Array Ind. One Res Rt
  - 3.34 ft R600 - Array Ind. One Res 60
  - 0.23 ft SPCG - Spontaneous Potential
  - Tool Zero (0.13ft from bottom)
  - 0.13 ft SMTU - DST Uphole Tension
- All measurements relative to tool zero.

COMPANY	REDLAND RESOURCES, INC.
WELL	HUMPHREYS #6-2
FIELD	WILDCAT
PROVINCE/COUNTY	HODGEMAN
COUNTRY/STATE	U.S.A. / KANSAS

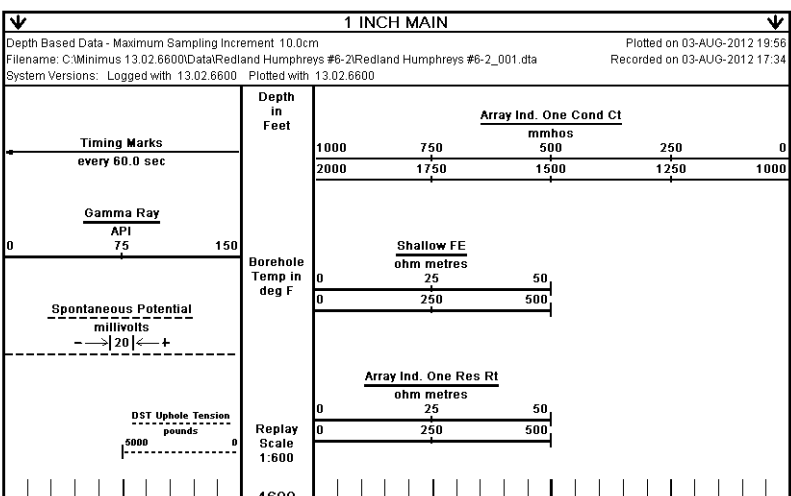
Elevation Kelly Bushing	2506.00	feet	First Reading	4938.00	feet
Elevation Drill Floor	2504.00	feet	Depth Driller	4950.00	feet
Elevation Ground Level	2498.00	feet	Depth Logger	4941.00	feet

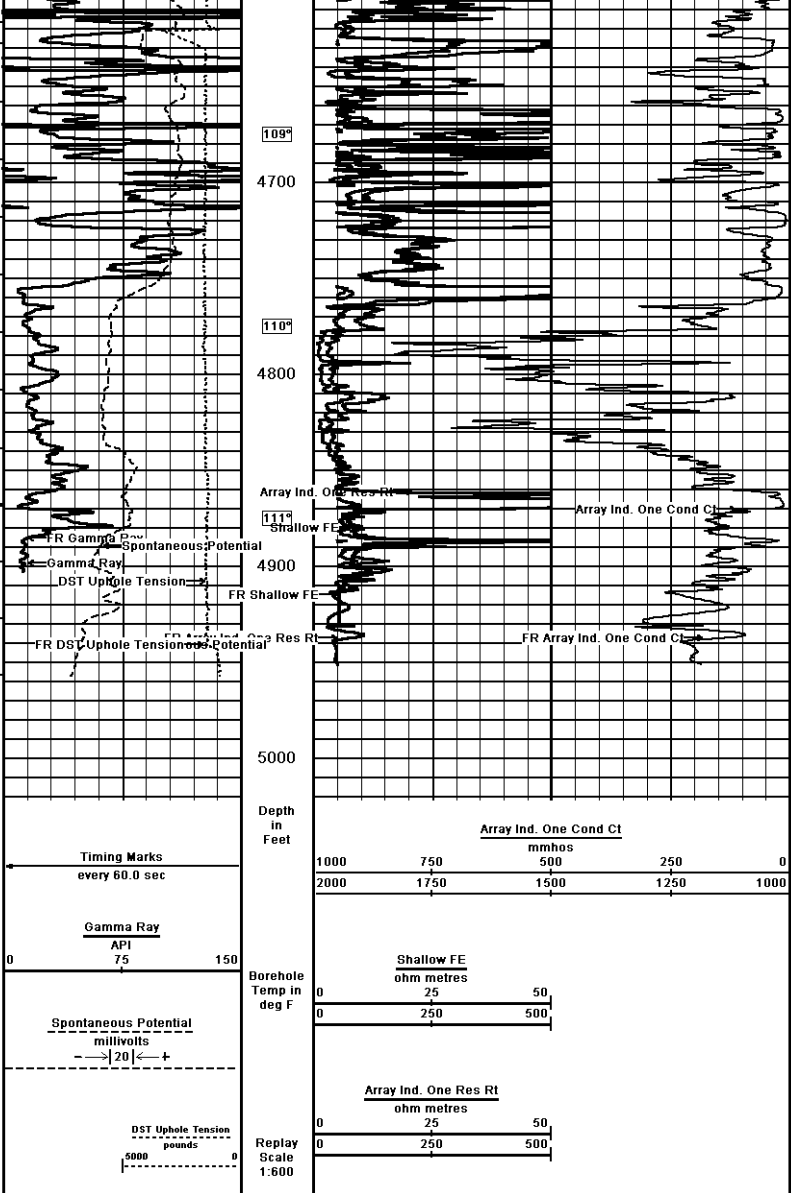


ARRAY INDUCTION  
 SHALLOW FOCUSED  
 ELECTRIC LOG


**Weatherford**

<b>Weatherford</b>		<b>ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG</b>	
COMPANY	REDLAND RESOURCES, INC.	WELL	HUMPHREYS #6-2
FIELD	WILDCAT	PROVINCE/COUNTY	HODGEMAN
COUNTRY/STATE	U.S.A. / KANSAS	LOCATION	1252' FNL & 2338' FEL
SEC	24S	ROW	12W
Other Services	MML	MFL	MFL
SPINNING	15-063-21797	Other Services	MSS
Permanent Datum OL Elevation	2498 feet	Permanent Datum KB Elevation	2506.00 feet
Log Measured From KB		Log Measured From KB	2504.00 feet
Drilling Measured From KB		Drilling Measured From KB	2498.00 feet
Date	03-AUG-2012	Run Number	ONE
Depth Driller	4990.00	Depth Logger	4941.00
First Reading	4938.00	Last Reading	4800.00
Casing Driller	222.00	Casing Logger	221.00
Bit Size	7.875	Hole Fluid Type	CHEMICAL
Density/Viscosity	9.55 lb/USg	PH/Fluid Loss	9.50
Sample Source	MUDPIT	Run @ Measured Temp	0.67 @ 91.0
Run @ Measured Temp	0.54 @ 91.0	Run @ Measured Temp	0.90 @ 91.0
Source Print / Rmc	CALC	Run @ BHT	0.56 @ 111.0
Time Since Circulation	4 HOURS	Max Recorded Temp	111.00
Equipment Name	COMPACT	Equipment Base	13006
Recorded By	ADAM BILL	Witnessed By	MIKE POLLOCK
Job #	3534510	Log #	187-2-201





Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 03-AUG-2012 19:56  
 Filename: C:\Minimus 13.02.6600\Data\Redland Humphreys #6-2\Redland Humphreys #6-2\_001.dta  
 Recorded on 03-AUG-2012 17:34  
 System Versions: Logged with 13.02.6600 Plotted with 13.02.6600

<b>COMPANY</b> REDLAND RESOURCES, INC. <b>WELL</b> HUMPHREYS #6-2 <b>FIELD</b> WILDCAT <b>PROVINCE/COUNTY</b> HODGEMAN <b>COUNTRY/STATE</b> U.S.A. / KANSAS	
Elevation Kelly Bushing 2506.00 feet Elevation Drill Floor 2504.00 feet Elevation Ground Level 2498.00 feet	First Reading 4938.00 feet Depth Driller 4950.00 feet Depth Logger 4941.00 feet
 <b>ARRAY INDUCTION</b> <b>SHALLOW FOCUSED</b> <b>ELECTRIC LOG</b>	