

**Weatherford®****Spectral Gamma Ray
Compensated Sonic Log 1:200
Main Pass**

COMPANY

IODP Expedition 347 Baltic Sea

WELL

BSB-9/Hole 63A

FIELD

Sweden

PROVINCE/COUNTY

Sweden

COUNTRY/STATE

Sweden

LOCATION

Latitude

58 37.340 N
Longitude 18 15.250 EOther Services
Spectral Gamma Ray
Compensated Sonic
Imager 8-Arm Caliper

Permanent Datum M.S.L., Elevation 437.2 metres

Log Measured From GL

Drilling Measured From GL

Date 11-OCT-2013

Run Number 2

Service Order 50004126

Depth Driller 115.00 metres

Depth Logger 108.50 metres

First Reading 108.50 metres

Last Reading 18.65 metres

Casing Driller 18.65 metres

Casing Logger 18.65 metres

Bit Size 8.500 inches

Hole Fluid Type Sea Water

Density / Viscosity

PH / Fluid Loss

Sample Source

Rm @ Measured Temp

Rmf @ Measured Temp

Rmc @ Measured Temp

Source Rmf / Rmc

Rm @ BHT

Time Since Circulation

Max Recorded Temp

Equipment / Base

Recorded By C.Sedlatschek

Witnessed By A.Fehr

Elevations:
KB 440.00 metres
DF 440.00 metres
GL 0.00 metres**REMARKS**

1. Well Manager Version 13.07.1135 used.
2. All logs correlated to drill bit depth at 18.65m.
3. Depth Offset for Resistivity Log DO=+1.0m.
4. Depth Offset for Spectral Gamma Ray and Sonic Log DO=+1.0m.
5. No Depth Offset applied to Imager Log.

BOREHOLE RECORD

Last Edited: 11-OCT-2013 05:14

Bit Size inches	Depth From metres	Depth To metres
8.500	0.00	115.00

CASING RECORD

Type	Size inches	Depth From metres	Shoe Depth metres	Weight pounds/ft
	5.500	0.00	18.65	23.00

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.

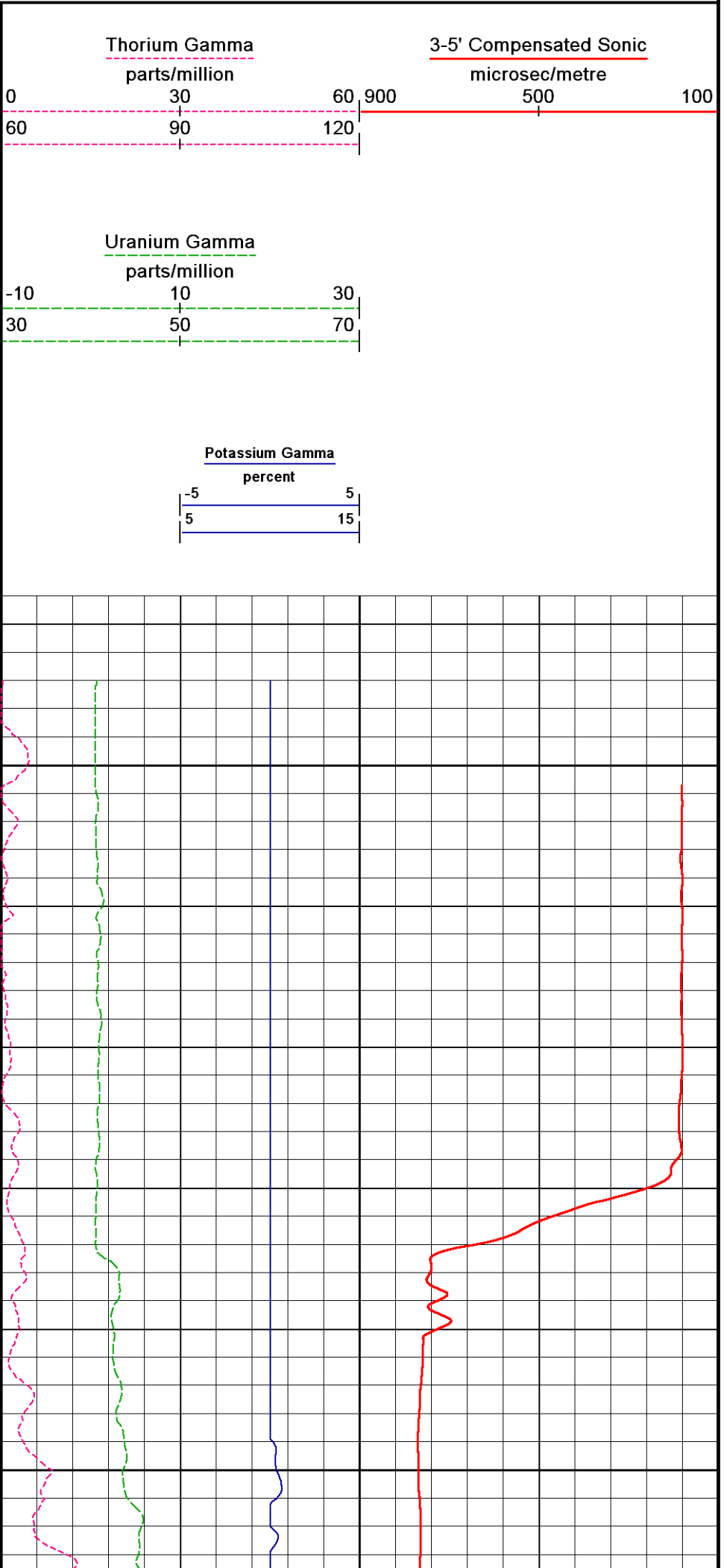
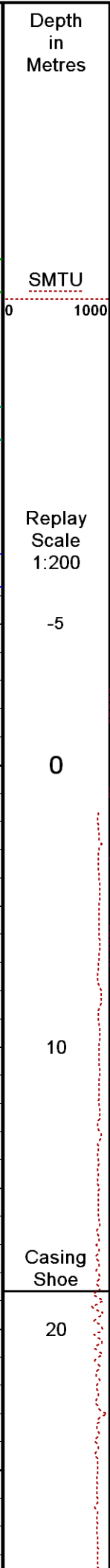
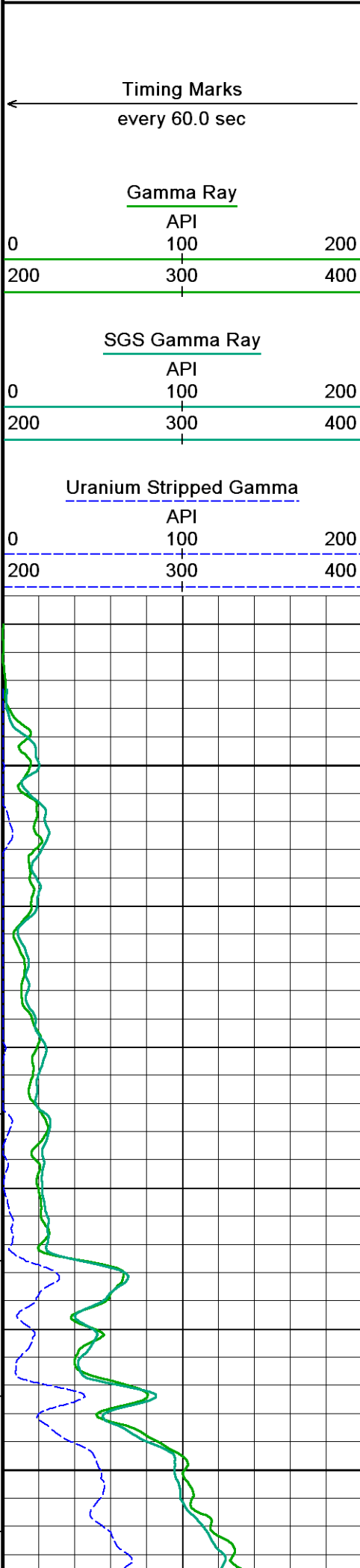
Depth Based Data - Maximum Sampling Increment 10.0cm

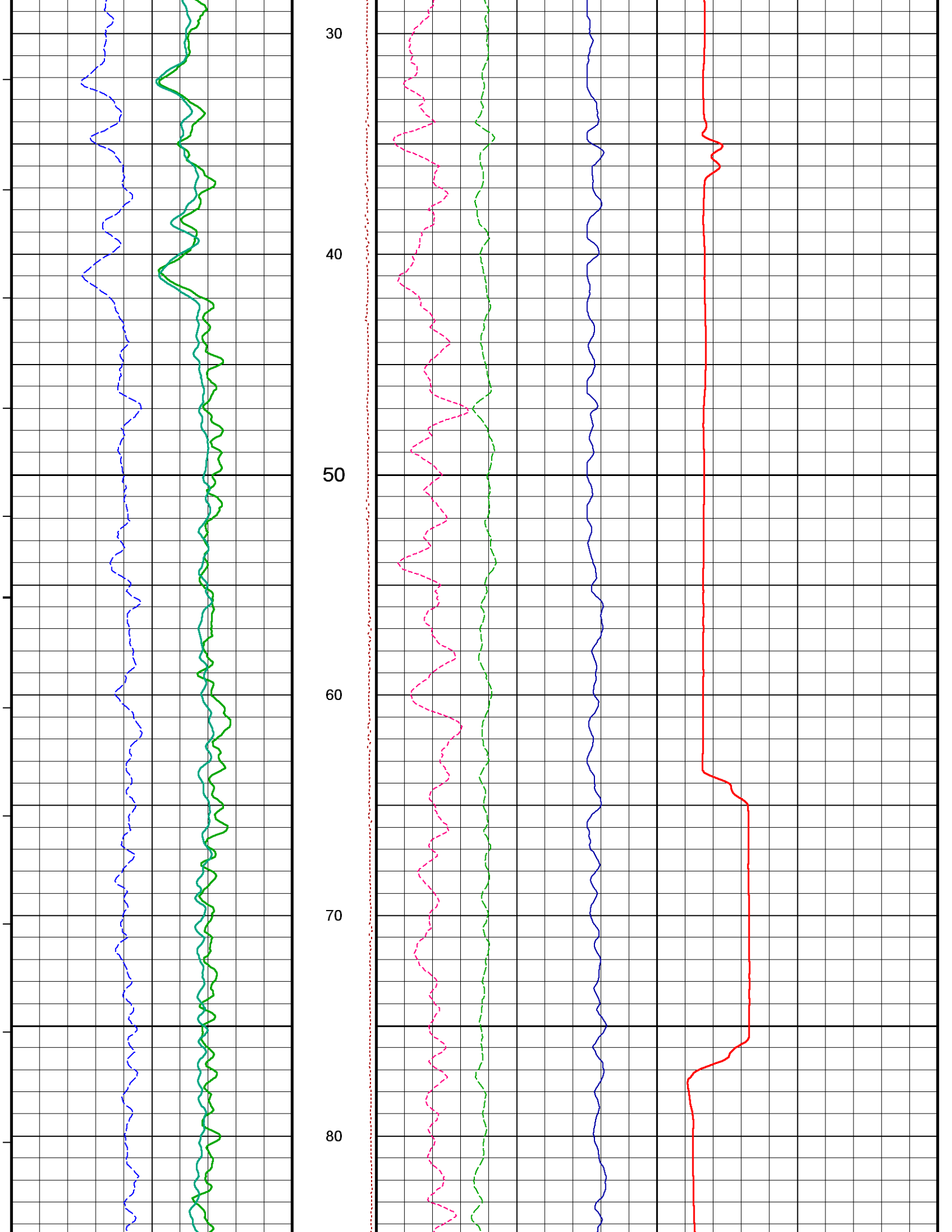
Filename: C:\Well Manager\mss391sgs113mcg287_BSB_9_Main_Pass_Up.dta

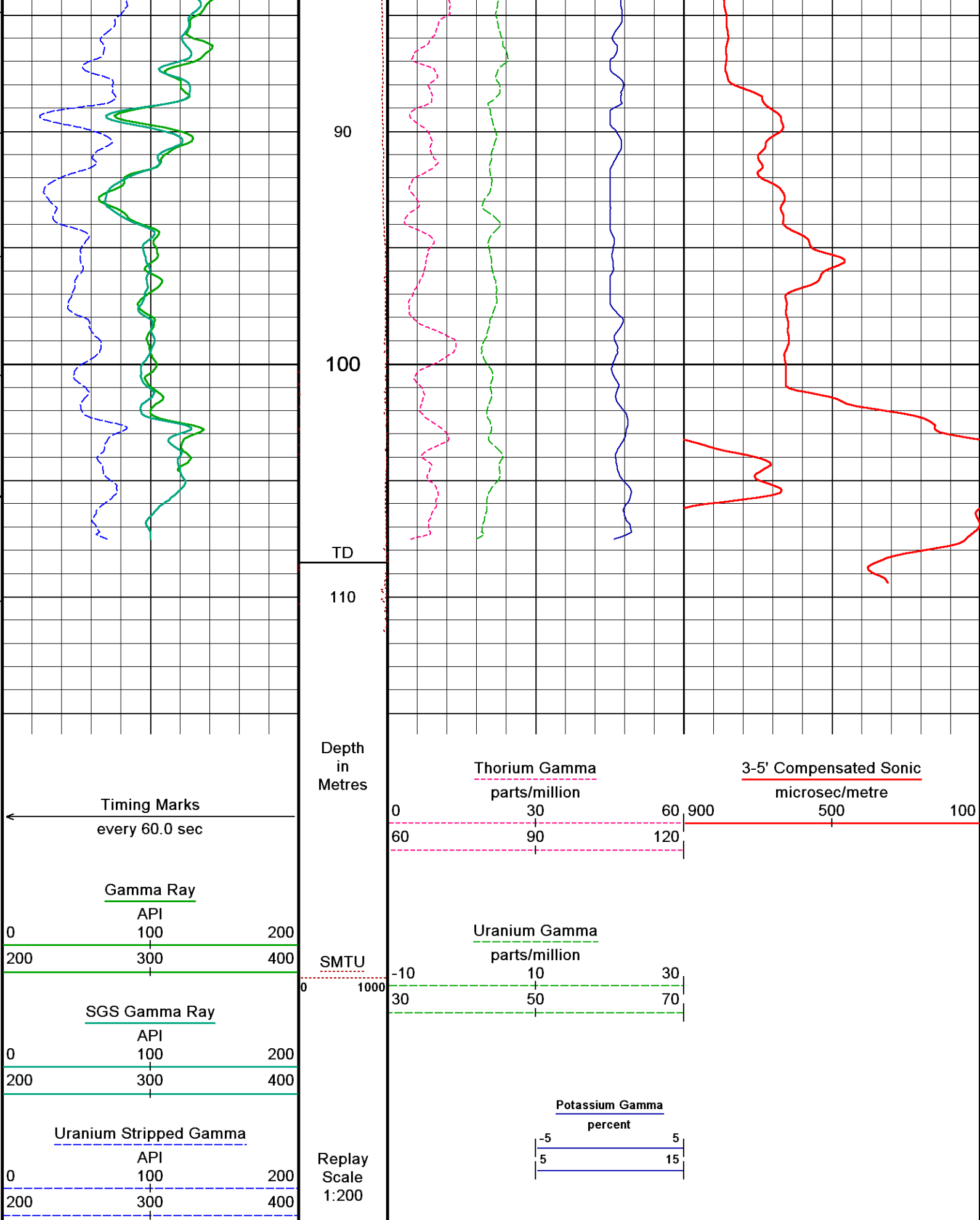
System Versions: Logged with 13.07.1135 Plotted with 13.07.1135

Plotted on 11-OCT-2013 05:41

Recorded on 11-OCT-2013 00:16









BEFORE SURVEY CALIBRATION

C:\Well Manager\mss391sgs113mcg287_BSB_9_Main_Pass_Up.dta

General Constants All 000

Last Edited on 01-OCT-2013,00:16

General Parameters

Mud Resistivity	3.210	ohm-metres
Mud Resistivity Temperature	20.000	degrees C
Water Level	0.000	metres
Borehole Fluid Processing	Wet Hole	

Hole/Annular Volume and Differential Caliper Parameters

HVOL Method	8 Arm CMI	
HVOL Caliper 1	N/A	
HVOL Caliper 2	N/A	
Annular Volume Diameter	7.000	inches
Caliper for Differential Caliper	None	

Rwa Parameters

Porosity used	N/A
Resistivity used	N/A
RWA Constant A	N/A
RWA Constant M	N/A
SW/APOR Tool Source	0.000

Gamma Calibration MCG-D.J 387

Field Calibration on 28-AUG-2013 14:21

	Measured	Calibrated (API)
Background	176	122
Calibrator (Gross)	1239	857
Calibrator (Net)	1063	735

Gamma Constants MCG-D.J 387

Last Edited on 12-SEP-2013,01:55

Gamma Calibrator Number	097	
Mud Density	1.00	gm/cc
Caliper Source for Processing	Bit Size	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

Sonic Constants MSS-D.A 391

Last Edited on 03-OCT-2013,05:18

Maximum Boundary Contrast	328.08	micro-sec/m
Fluid Transit Time	620.08	micro-sec/m
Limestone Transit Time	155.84	micro-sec/m
Sandstone Transit Time	182.09	micro-sec/m
Dolomite Transit Time	142.72	micro-sec/m
Sonic used for Porosities	3-5' Compensated Sonic	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	N/A	micro-sec
MX3FT	N/A	micro-sec
Hunt-Raymer Constant	272.72	micro-sec/m

Sonde Mode	Compensated
Hole Type	Open Hole

Sonde Parameters

	Measured	Calibrated
Offset	N/A	0.0000
Free Pipe	N/A	N/A
Peak Amplitude Source		N/A

Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain	Start Gain	Discriminator (mV)
3'	N/A	N/A	N/A	N/A	N/A
4'	N/A	N/A	N/A	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)		N/A	
N/A	N/A	N/A		N/A	
N/A	N/A	N/A		N/A	
N/A	N/A	N/A		N/A	
N/A	N/A	N/A		N/A	
N/A	N/A	N/A		N/A	

Full Waveform Parameters

Use 3' Waveform to derive TR	N/A	
Use 4' Waveform to derive TR	N/A	
Use 5' Waveform to derive TR	N/A	
Use 6' Waveform to derive TR	N/A	
3' Waveform Discriminator Level	N/A	mV
4' Waveform Discriminator Level	N/A	mV
5' Waveform Discriminator Level	N/A	mV
6' Waveform Discriminator Level	N/A	mV
3' Waveform Filter	N/A	
4' Waveform Filter	N/A	
5' Waveform Filter	N/A	
6' Waveform Filter	N/A	
Semblance Level	N/A	
Semblance Window Width	N/A	micro-sec
Sonic 1 Despiker	N/A	N/A
Sonic 2 Despiker	N/A	N/A

Spectral Gamma Calibration SGS-E.J 113

Base Calibration on 03-MAR-2010 09:23
Field Calibration on 03-MAR-2010 08:20

Base Calibration

Potassium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	77.9	23.5	2.4	0.9	1.5
Calibrator (Gross)	203.9	108.4	25.0	0.9	1.5
Calibrator (Net)	126.0	84.9	22.6	-0.1	0.1

	K %	U ppm	Th ppm
Concentrations	5.8	0.0	0.0

Uranium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	77.9	23.5	2.4	0.9	1.5
Calibrator (Gross)	480.0	165.5	14.6	8.6	4.2
Calibrator (Net)	402.1	142.0	12.1	7.6	2.7

	K %	U ppm	Th ppm
Concentrations	0.0	9.8	0.0

Thorium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	77.9	23.5	2.4	0.9	1.5
Calibrator (Gross)	394.9	141.9	11.2	6.6	15.0
Calibrator (Net)	317.0	118.4	8.8	5.7	13.6

	K %	U ppm	Th ppm
Concentrations	0.0	0.0	44.3

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	77.9	23.5	2.4	0.9	1.5
Calibrator (Gross)	916.7	366.5	46.0	14.3	18.5
Calibrator (Net)	838.8	343.0	43.6	13.4	17.0

Field Calibration

Gamma Ray

	Measured	Calibrated (API)
Background	111	22
Calibrator (Gross)	1366	272
Calibrator (Net)	1256	250

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	77.9	23.5	2.4	0.9	1.5
Calibrator (Gross)	916.7	366.5	46.0	14.3	18.5
Calibrator (Net)	838.8	343.0	43.6	13.4	17.0

Spectral Gamma Constants SGS-E.J 113

Last Edited on 08-SEP-2013,08:26

Background Calibrator Number	000	
Mixture Calibrator Number	000	
Potassium Calibrator Number	000	
Uranium Calibrator Number	000	
Thorium Calibrator Number	000	
Mud Density	1.13	gm/cc
Caliper Source for Processing	Bit Size	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	6.72	%

DOWNHOLE EQUIPMENT

C:\Well Manager\mss391sgs113mcg287_BSB_9_Main_Pass_Up.dta

CBH-C, Cablehead, 11 pin
CBH-CA 171 LG: 0.73 m WT: 24.3 lb OD: 57 mm

11C-11B MTA-K.A Compact Tool Adaptor
MTA-K.A 130 LG: 0.47 m WT: 13.2 lb OD: 57 mm

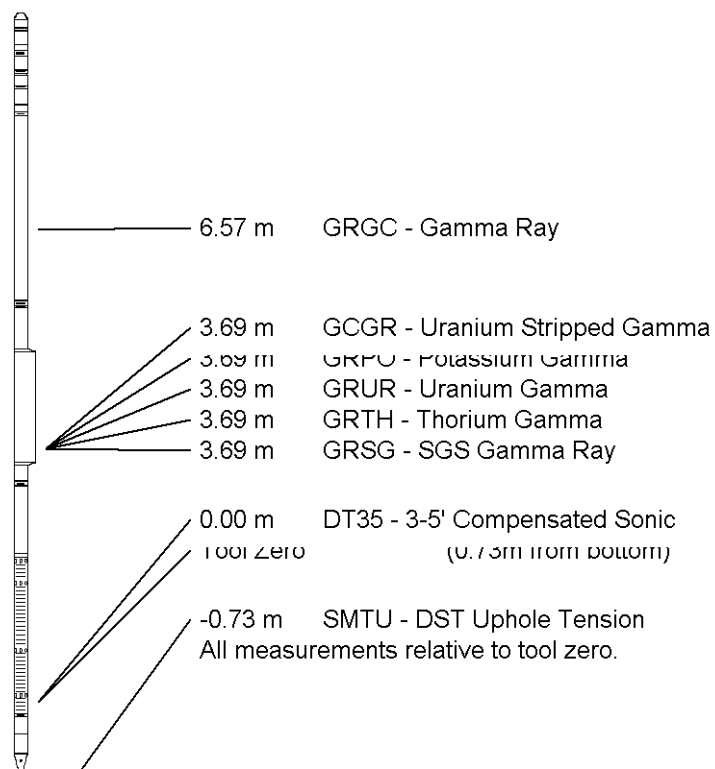
Compact Comms Gamma
MCG-D.J 387 LG: 2.65 m WT: 63.9 lb OD: 57 mm

Spectral Gamma Ray Sub
SGS-E.J 113 LG: 2.37 m WT: 105.8 lb OD: 90 mm

Compact Sonic
MSS-D.A 391 LG: 3.82 m WT: 72.8 lb OD: 57 mm

Compact Pressure Bung
HFS 2 LG: 0.04 m WT: 4.4 lb OD: 57 mm

Total Length: 10.07 m Weight: 284.4 lb



COMPANY	IODP Expedition 347 Baltic Sea
WELL	BSB-9/Hole 63A
FIELD	Sweden
PROVINCE/COUNTY	Sweden
COUNTRY/STATE	Sweden

Elevation Kelly Bushing	440.00	metres	First Reading	108.50	metres
Elevation Drill Floor	440.00	metres	Depth Driller	115.00	metres

Elevation Ground Level

0.00 metres

Depth Logger

108.50 metres



Weatherford®

Spectral Gamma Ray

Compensated Sonic Log 1:200

Main Pass