



Weatherford

Spectral Gamma Ray Sonic Log

1:200

Main Pass

COMPANY IODP Expedition 347 Baltic Sea
 WELL BSB-7/Hole 65C
 FIELD Sweden
 PROVINCE/COUNTY Sweden
 COUNTRY/STATE Sweden
 LOCATION

Latitude 55 28.084 N Other Services 8-Arm Caliper
 Longitude 15 28.624 E Micro Imager Tool

Permanent Datum M.S.L., Elevation 84.32 metres
 Log Measured From GL
 Drilling Measured From GL

Elevations: metres
 KB 87.32
 DF 87.32
 GL 0.00

Date	26-OCT-2013	
Run Number	1	
Service Order	50004126	
Depth Driller	44.90	metres
Depth Logger	41.00	metres
First Reading	39.20	metres
Last Reading	13.70	metres
Casing Driller	13.70	metres
Casing Logger	13.70	metres
Bit Size	8.500	inches
Hole Fluid Type	Sea Water	
Density / Viscosity		
PH / Fluid Loss		
Sample Source		
Rmf @ Measured Temp		
Rmc @ Measured Temp		
Source Rmf / Rmc		
Rm @ BHT		
Time Since Circulation		
Max Recorded Temp		
Equipment / Base	16104	
Recorded By	C.Sedlatschek	
Witnessed By	A.Fehr	

REMARKS

- Well Manager Version 13.07.1135 used.
- Spectral GR and Sonic Log correlated to drill bit depth at 13.70m.
- Depth Offset = +0.5m.
- No Depth Offset applied to Imager Log.
- Imager Log recorded in High Resolution.

BOREHOLE RECORD

Last Edited: 25-OCT-2013 23:53

Bit Size inches	Depth From metres	Depth To metres
8.500	0.00	44.90

CASING RECORD

Type	Size inches	Depth From metres	Shoe Depth metres	Weight pounds/ft
	5.500	0.00	13.70	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.

Timing Marks
every 60.0 sec

Gamma Ray
API
0 100 200
200 300 400

SGS Gamma Ray
API
0 100 200
200 300 400

Uranium Stripped Gamma
API
0 100 200
200 300 400

Depth
in
Metres

SMTU

Replay
Scale
1:200

Casing
Shoe

Thorium Gamma
parts/million

3-5' Compensated Sonic
microsec/metre

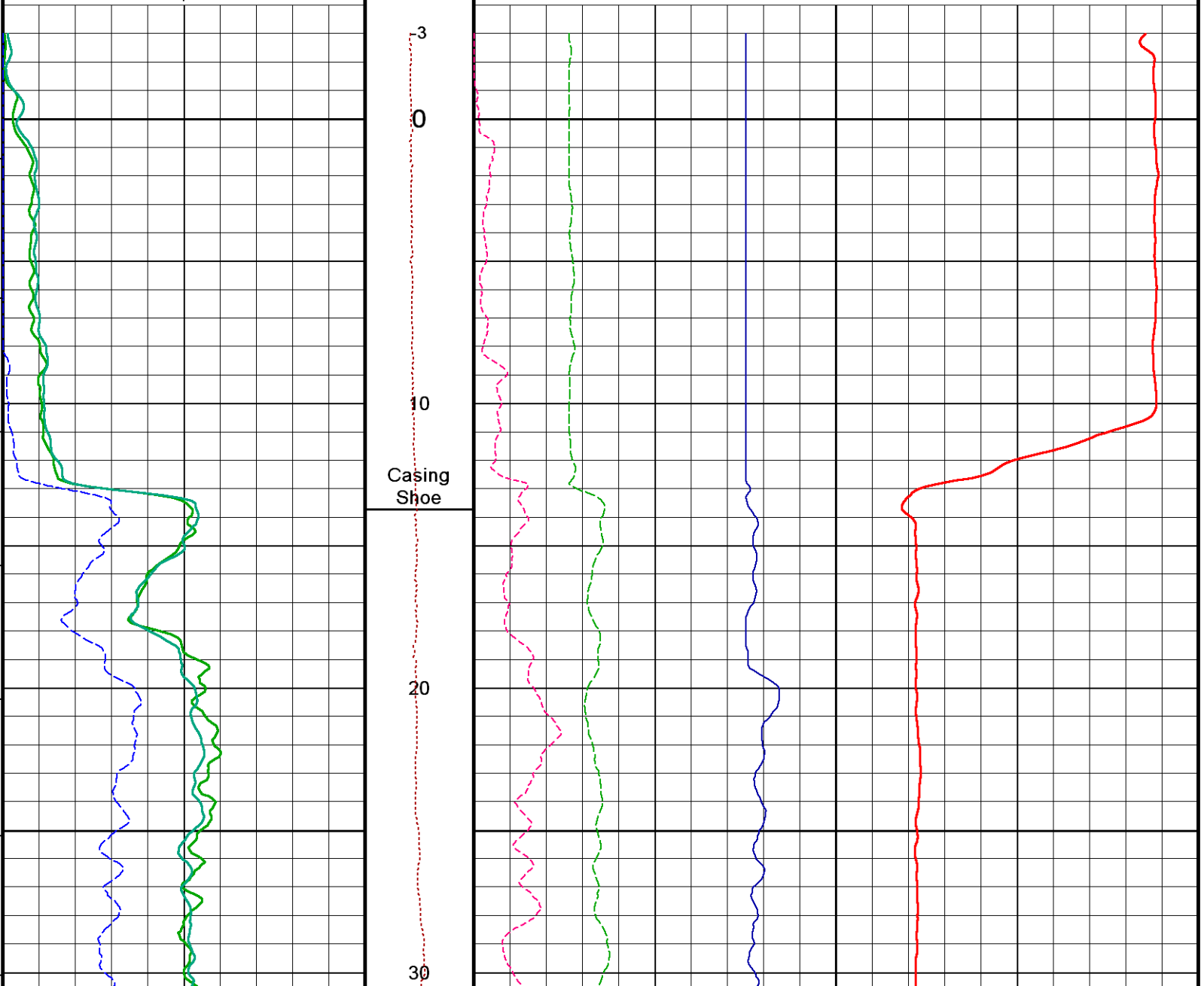
0 30 60 800
60 90 120

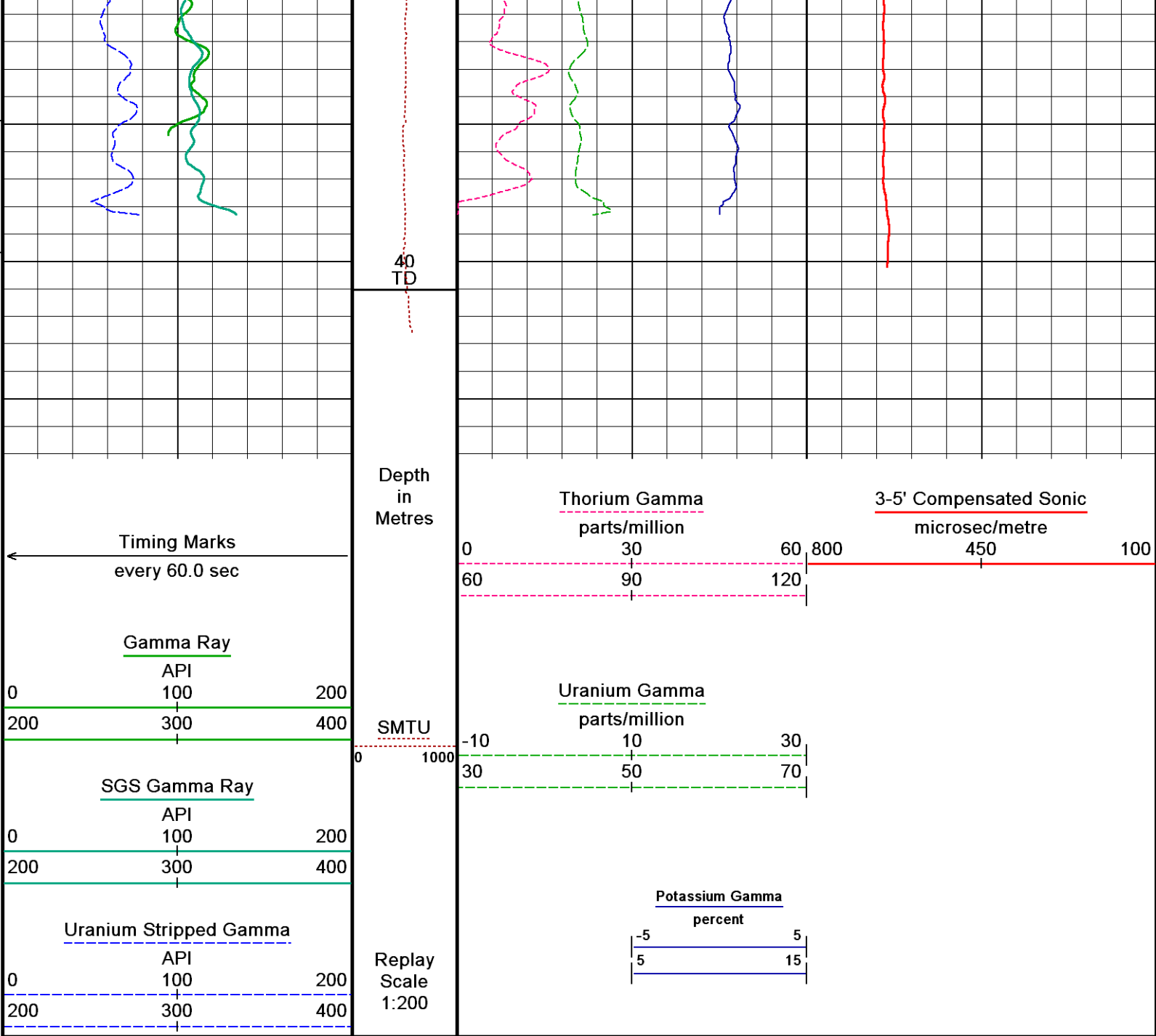
Uranium Gamma
parts/million

-10 10 30
30 50 70

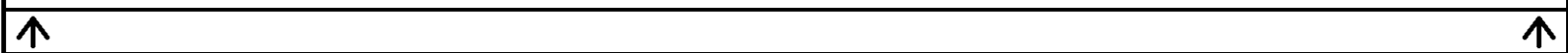
Potassium Gamma
percent

-5 5
5 15





Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 25-OCT-2013 23:57
 Filename: C:\Well Manager\sgs113mss391mcg387_BSB_7_Micro_Main_Pass3.dta
 Recorded on 25-OCT-2013 20:37
 System Versions: Logged with 13.07.1135 Plotted with 13.07.1135



BEFORE SURVEY CALIBRATION

C:\Well Manager\sgs113mss391mcg387_BSB_7_Micro_Main_Pass3.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

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 25-OCT-2013,20:36

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

Concentrations	K %	U ppm	Th ppm
	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

Concentrations	K %	U ppm	Th ppm
	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

Concentrations	K %	U ppm	Th ppm
	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
 Tool Position
 Concentration of KCl
 K Mud Type
 K Mud Concentration

Bit Size
 Eccentred
 Chloride
 6.72
 kppm
 %

DOWNHOLE EQUIPMENT

C:\Well Manager\sgs113mss391mcg387_BSB_7_Micro_Main_Pass3.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 Hole Finder
 HFS 1 LG: 0.24 m WT: 2.2 lb OD: 57 mm

Total Length: 10.27 m Weight: 282.2 lb



6.57 m GRGC - Gamma Ray
 3.69 m GCGR - Uranium Stripped Gamma
 3.69 m GRPU - Potassium Gamma
 3.69 m GRUR - Uranium Gamma
 3.69 m GRTH - Thorium Gamma
 3.69 m GRSG - SGS Gamma Ray
 0.00 m DT35 - 3-5' Compensated Sonic
 Tool Zero (0.0000000000000000)
 -0.93 m SMTU - DST Uphole Tension
 All measurements relative to tool zero.

COMPANY	IODP Expedition 347 Baltic Sea
WELL	BSB-7/Hole 65C
FIELD	Sweden
PROVINCE/COUNTY	Sweden
COUNTRY/STATE	Sweden

Elevation Kelly Bushing	87.32	metres	First Reading	39.20	metres
Elevation Drill Floor	87.32	metres	Depth Driller	44.90	metres
Elevation Ground Level	0.00	metres	Depth Logger	41.00	metres



Spectral Gamma Ray Sonic Log

1:200

Main Pass

Weatherford[®]