



**Weatherford**

**GR-Resistivity Log**

1:200

Main Pass

COMPANY IODP Exploration 347 Baltic Sea  
 WELL BSB-3/Hole 59E  
 FIELD Denmark  
 PROVINCE/COUNTY Denmark  
 COUNTRY/STATE Denmark  
 LOCATION

Latitude 55 00.299 N Other Services Spectral Gamma Ray  
 Longitude 10 06.507 E 8-Arm Caliper Imager  
 Compensated Sonic

Permanent Datum M.S.L., Elevation 36.27 metres  
 Log Measured From GL  
 Drilling Measured From GL

Elevations: metres  
 KB 39.17  
 DF 39.17  
 GL 39.17

Date	31-OCT-2013	
Run Number	1	
Service Order	50004126	
Depth Driller	100.80	metres
Depth Logger	71.30	metres
First Reading	69.00	metres
Last Reading	15.00	metres
Casing Driller	15.00	metres
Casing Logger	15.00	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	16104	
Recorded By	C.Sedlatschek	
Witnessed By	A.Fehr	

**REMARKS**

1. Well Manager Version 13.07.1135 used.
2. All logs recorded in High Resolution.
3. No repeat passes per client request.
4. All Main Passes correlated to to drill bit depth.
5. Depth correction for Main Pass Resistivity DO = +1.0m.
6. Depth correction for Main Pass SGS and Compensated Sonic DO = +2.0m.

**BOREHOLE RECORD**

Last Edited: 31-OCT-2013 16:55

Bit Size inches	Depth From metres	Depth To metres
8.500	0.00	100.80

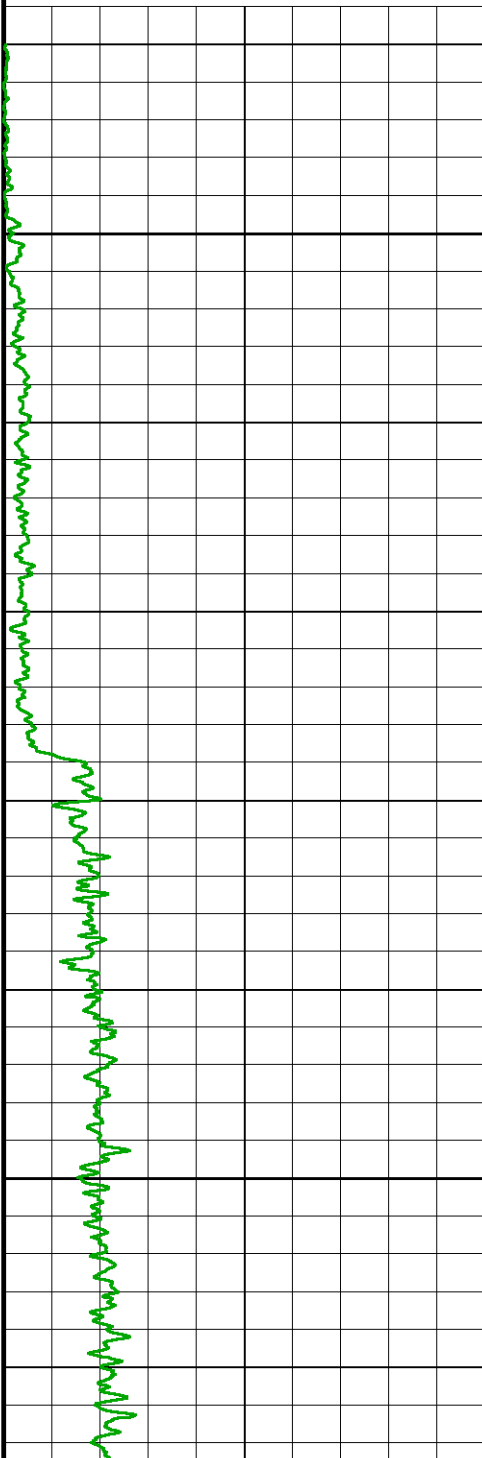
**CASING RECORD**

Type	Size inches	Depth From metres	Shoe Depth metres	Weight pounds/ft
	5.500	0.00	15.00	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

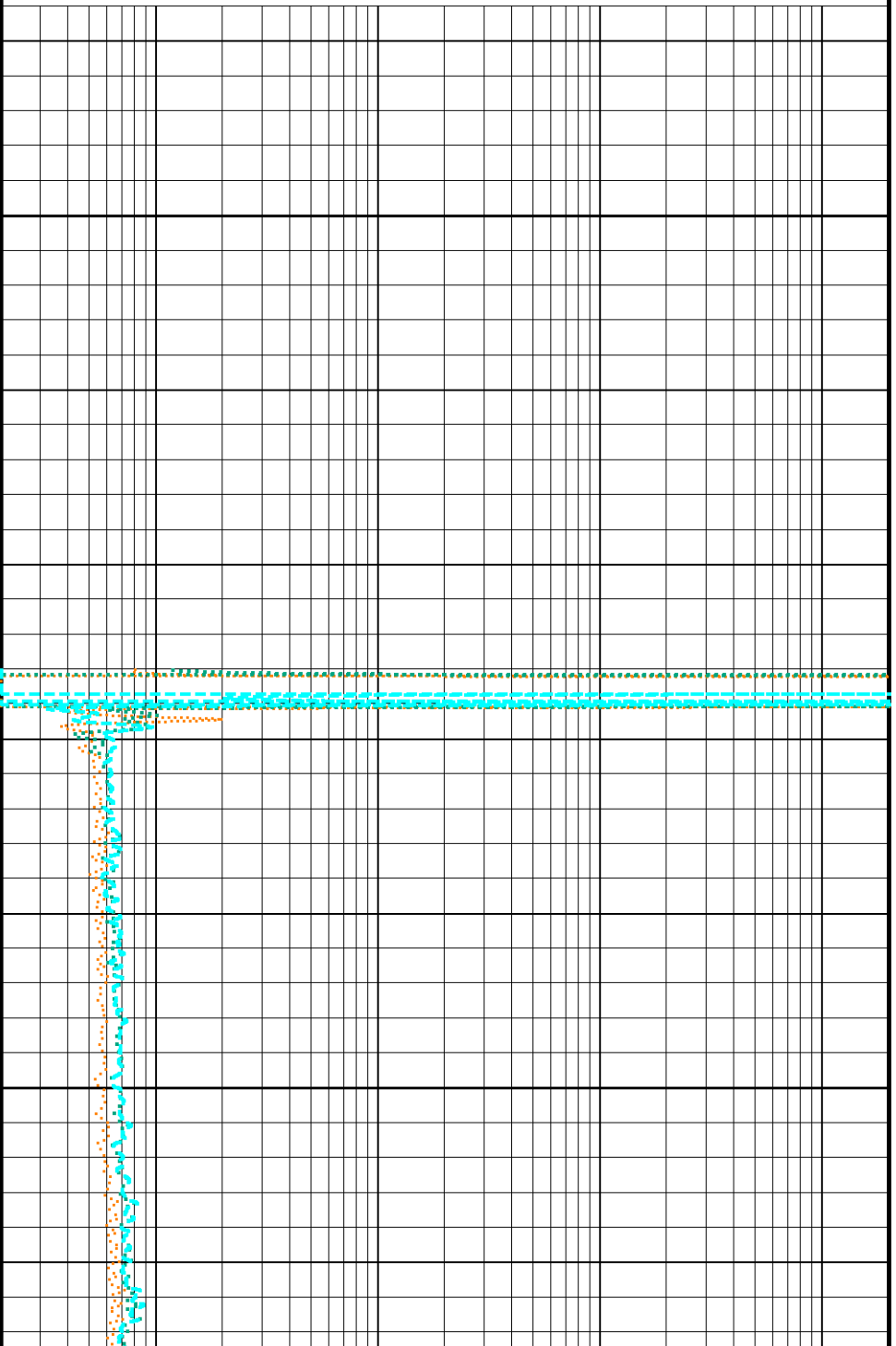
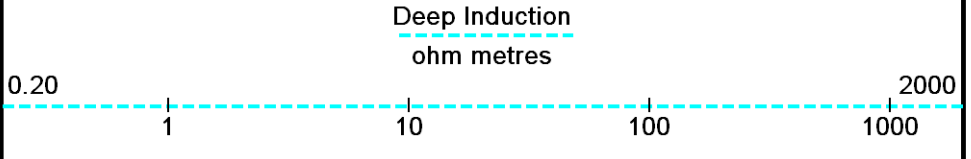
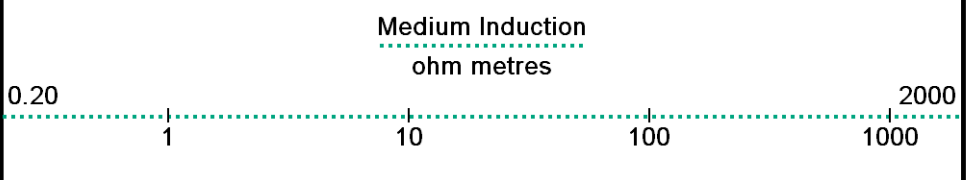
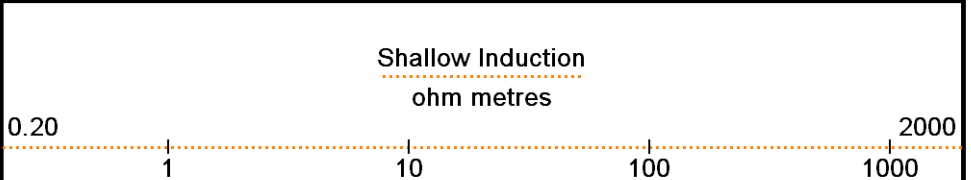
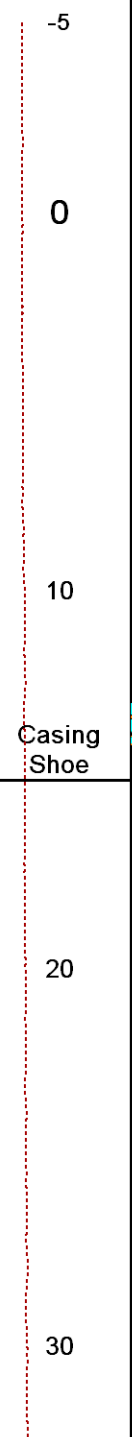
Gamma Ray  
API  
0 100 200  
200 300 400

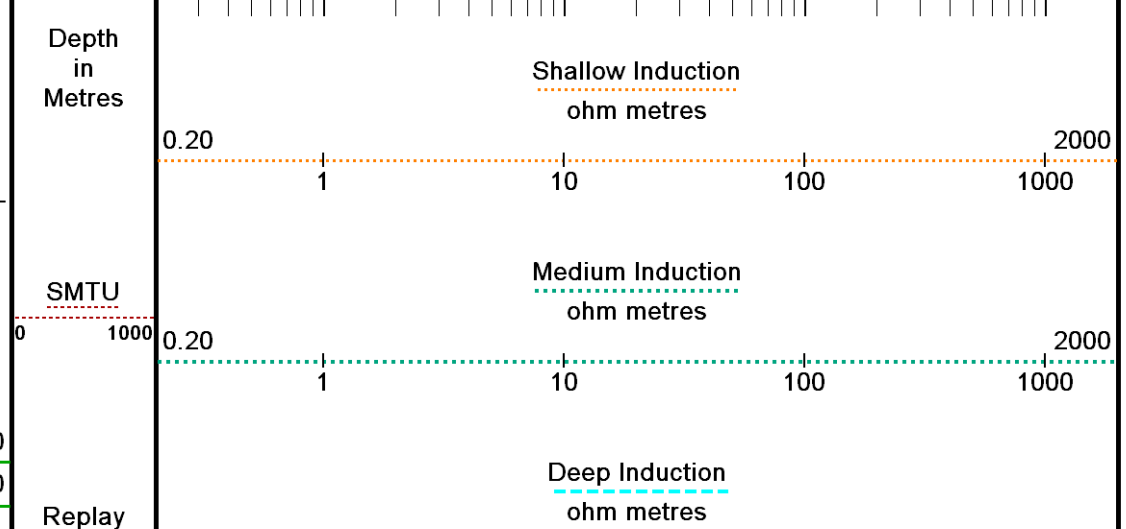
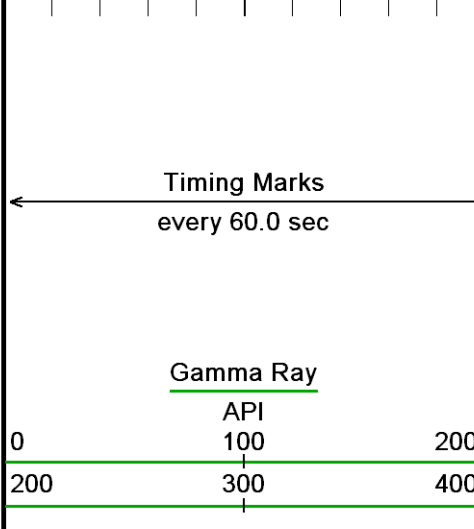
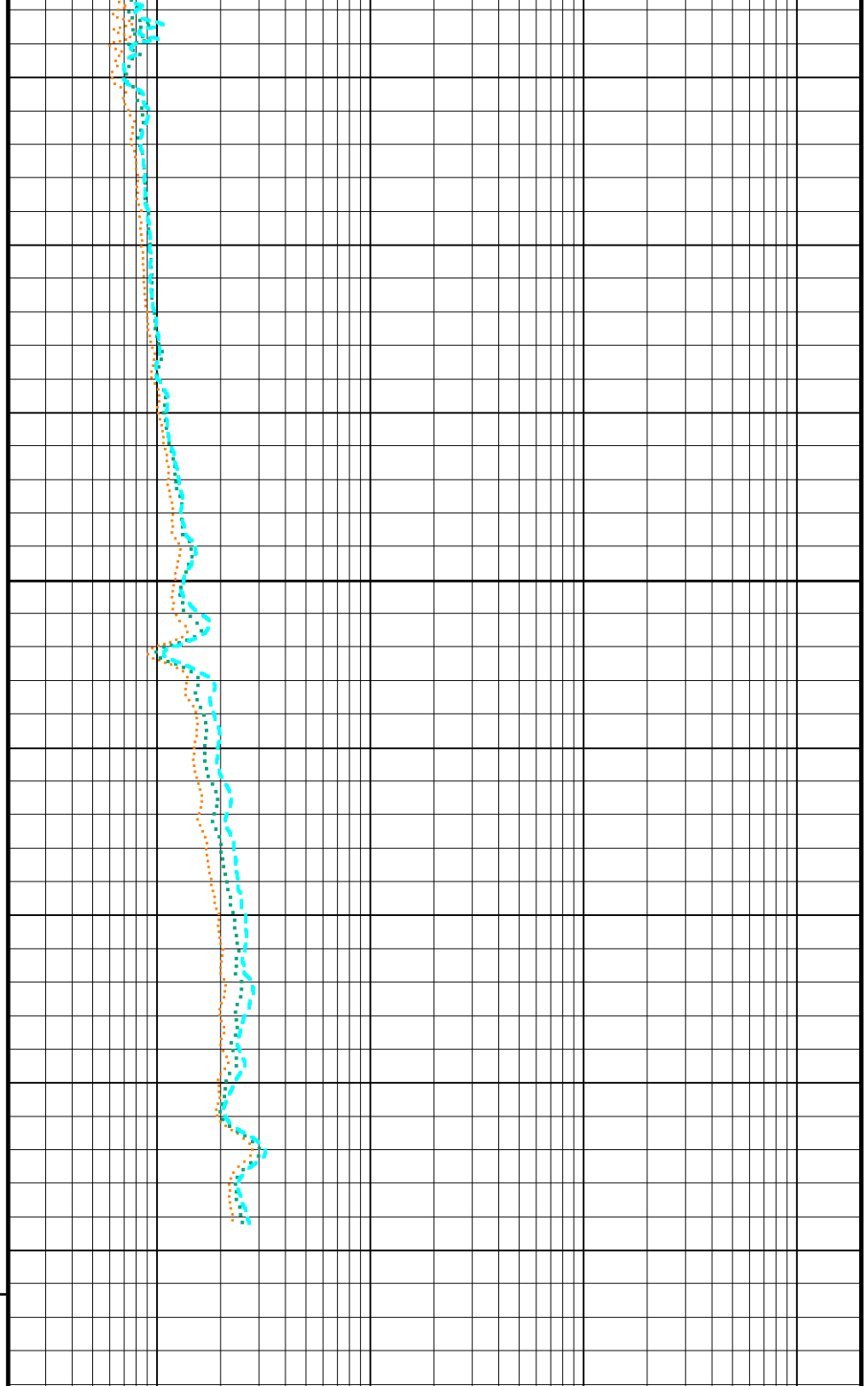
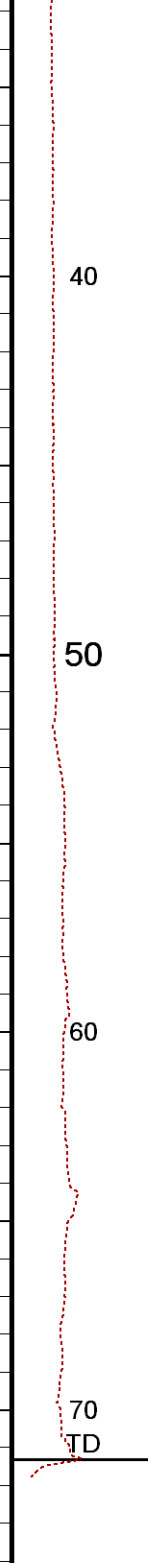
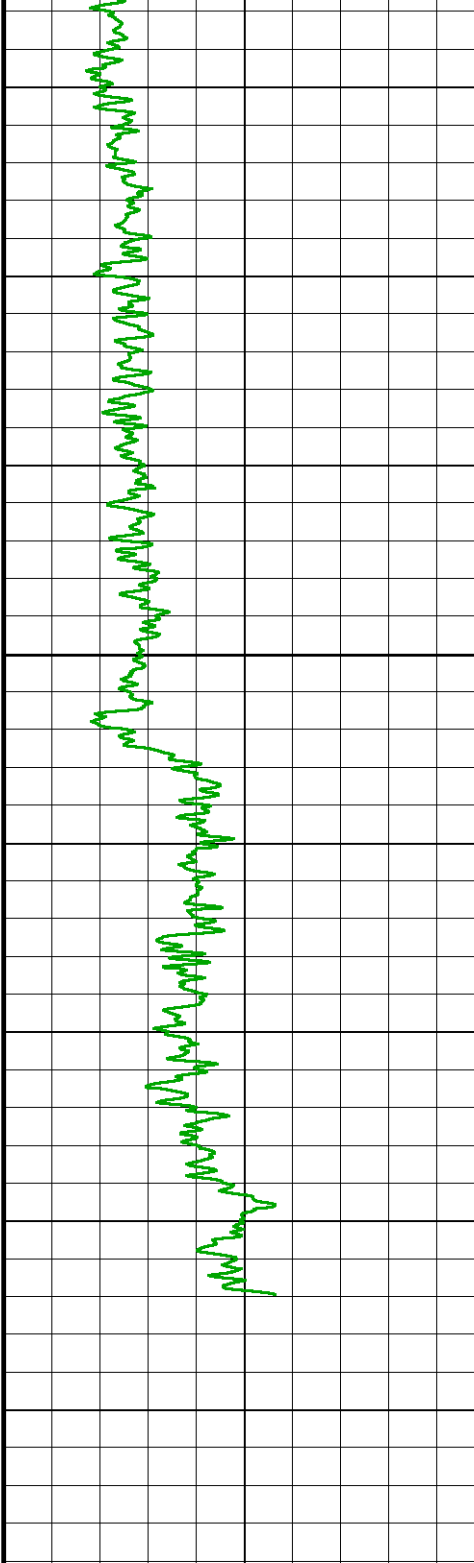


Depth in  
Metres

SMTU  
0 1000

Replay  
Scale  
1:200





Scale

1:200

1

10

100

1000

Depth Based Data - Maximum Sampling Increment 2.5cm

Plotted on 31-OCT-2013 17:17

Filename: C:\Well Manager\mai461mcg387\_BSB\_3\_59Esplice.dta

Recorded on 31-OCT-2013 13:42

System Versions: Plotted with 13.07.1135



## BEFORE SURVEY CALIBRATION

C:\Well Manager\COPY\_of\_mai461mcg387\_BSB\_3\_59E\_Main\_Pass\_.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	%

## Induction Calibration MAI-C.A 461

Base Calibration on 28-AUG-2013 12:43

Field Check on 28-AUG-2013 12:46

## Base Calibration

## Test Loop Calibration

Channel	Measured		Calibrated (mmho/m)	
	Low	High	Low	High
1	16.9	458.4	9.3	967.1
2	5.9	364.5	7.6	822.1
3	3.5	248.7	5.3	566.5
4	1.8	128.8	2.6	279.5

Array Temperature	34.7	Deg C
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Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			-3.6	2114.0
2			14.9	1979.6
3			14.7	1704.6
4			10.4	1148.6

Deep			8.0	1094.4
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Medium			23.5	2267.9
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Medium  
Shallow

23.3

2207.6  
2948.6

Array Temperature

35.8

Deg C

Induction Constants MAI-C.A 461

Last Edited on 30-OCT-2013,07:45

Induction Model	VECTAR		
Caliper for Borehole Corr.	Constant Value		
Hole Size for Borehole Correction	8.500	inches	
Tool Centred	No		
Stand-off Type	Pineapple		
Stand-off	0.49	inches	
Number of Fins on Stand-off	5.0000		
Stand-off Fin Angle	72.00	degrees	
Stand-off Fin Width	1.3878	inches	
Borehole Corr. Rm Source	Constant Value		
Temp. for Rm Corr.	N/A		
Squasher Start	0.0020	mhos/metre	
Squasher Offset	0.0000	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	

### DOWNHOLE EQUIPMENT

C:\Well Manager\Copy\_of\_mai461mcg387\_BSB\_3\_59E\_Main\_Pass\_.dta

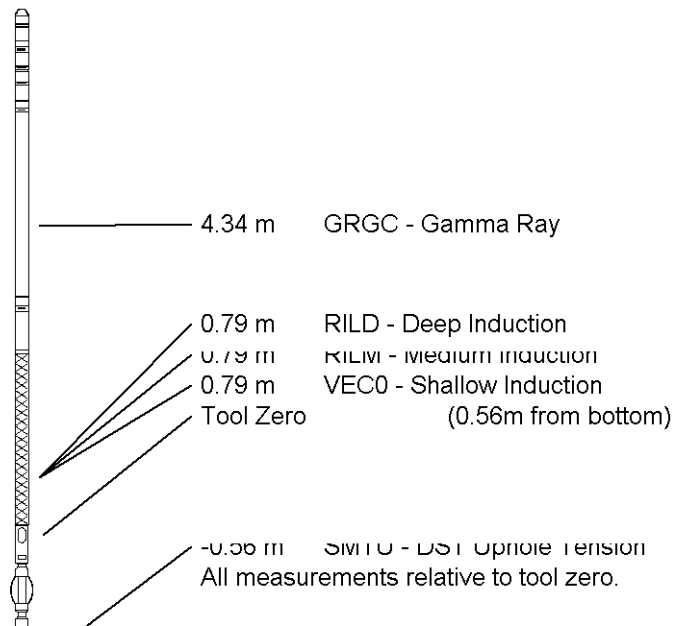
CBH-C, Cablehead, 11 pin  
CBH-CA 171 LG: 0.73 m WT: 24.3 lb OD: 57 mm

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

Compact Induction  
MAI-C.A 461 LG: 3.82 m WT: 48.5 lb OD: 57 mm

Total Length: 7.66 m Weight: 149.9 lb



COMPANY	IODP Exploration 347 Baltic Sea
WELL	BSB-3/Hole 59E
FIELD	Denmark
PROVINCE/COUNTY	Denmark
COUNTRY/STATE	Denmark

Elevation Kelly Bushing	39.17	metres	First Reading	69.00	metres
Elevation Drill Floor	39.17	metres	Depth Driller	100.80	metres
Elevation Ground Level	39.17	metres	Depth Logger	71.30	metres



GR-Resistivity Log

1:200

Main Pass

**Weatherford**<sup>®</sup>