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July 2010**

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DOCUMENT CHANGE RECORD

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1.0	14/01/2011	First issue	
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TABLE OF CONTENTS

1. INTRODUCTION	4
1.1 Purpose and Scope	4
1.2 Glossary	4
2. DATA QUALITY OVERVIEW.....	5
2.1 Instruments Quality summary tables	5
2.2 EGG data – Available baselines	5
3. EGG DATA QUALITY: SPACECRAFT AND ENVIRONMENT RELATED EVENTS	6
3.1 Summary.....	6
3.2 Beam Out events.....	6
3.3 Fallback to FPM on 30 th of June: EGG_NOM_1b data gap on 1 st of July (special event)....	7
3.4 Anomalous oscillation in CTR data on 5th of July (special event)	8
3.5 Telemetry anomaly on 8 th July	9

1. INTRODUCTION

1.1 Purpose and Scope

This document contains the Quality report for GOCE L1b data for July 2010.

The latest version of this document is available on the GOCE Data Quality portal at:

<http://earth.esa.int/GOCE/> → “Level 1b QC” → “Monthly”

The GOCE Data Quality portal is the principal source for any quality-related information on GOCE products.

<http://earth.esa.int/GOCE/> → “Level 1b QC”.

1.2 Glossary

The following acronyms and abbreviations have been used in this report.

ABBREVIATION	MEANING
EGG	Electrostatic Gravity Gradiometer
DFACS	Drag Free and Attitude control system
SST-I	Satellite-to-satellite tracking instrument
CTR	Control Voltages
STR	Star Tracker
Trace SD	Trace Spectral Density
ICM	Inverse Calibration Matrix
GAR	Gradiometer Angular Rates
FPM	Fine Pointing Mode

2. DATA QUALITY OVERVIEW

2.1 Instruments Quality summary tables

Jul 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Table 1 July 2010 EGG QC Status

Jul 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Table 2 July 2010 SST QC Status

	GAP (details within Monthly Report)
	NOT USABLE
	Special Event
	Nominal
	Calibration
	EGG in Acquisition Mode
	Not yet released

2.2 EGG data – Available baselines

Baseline	EGG Processor	SST processor
Baseline D	EGG v5 (> 5.06) installed 31/03/2012	V02.18 Patch B Installed 20/01/2011
Baseline A	EGG v4 (<4.8) Installed 18/05/2010	V02.18 Patch B Installed 20/01/2011

Baseline may be verified by reading out the <Creator_Version> tag in the file header, e.g:

<Creator_Version>05.06</Creator_Version>

(for the latest baseline)

- EGG v5 reprocessed baseline is available through the GOCE Virtual On-line Archive
 → <http://eo-virtual-archive1.esa.int/Index.html>
- EGG v4 is the older baseline. Products are still accessible through the GOCE Virtual On-line Archive

3. EGG DATA QUALITY: SPACECRAFT AND ENVIRONMENT RELATED EVENTS

3.1 Summary

- After the anomaly of 30th of June which caused the fallback to Fine Pointing Mode (FPM), no EGG_NOM_1b data are available during the entire 1st of July time period. SST_NOM_1b data are correctly available. The nominal production was resumed on 2nd of July with an expected Kalman filter reinitialization.
- Beam Out event on 3rd of July.
- Anomalous oscillation found in CTR L1 and L0 data with impacts on performance on 5th of July, caused by S/C related events.
- Telemetry module anomaly occurrence on 8th of July.

3.2 Beam Out events

A Beam Out event occurred at the following UTC time:

EVENT NUMBER	UTC TIME
1	2010-07-03T22:54:46

Table 3 Beam out event

Below, the effects of the Beam Out in the common mode acceleration, component 14_x, are displayed, for the event.

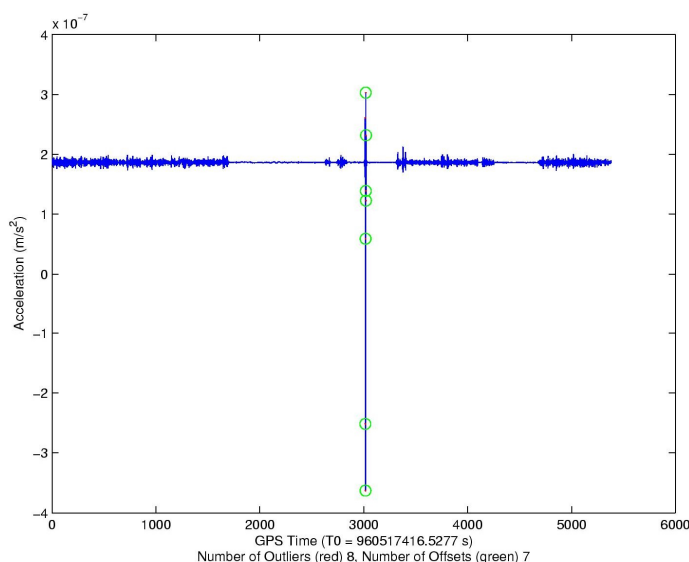


Figure 1 Beam out event on 03rd July

This oscillation enters the gradients time series notably in the Uxx component.

This effect may be seen in the Gradients PSD graphs below:

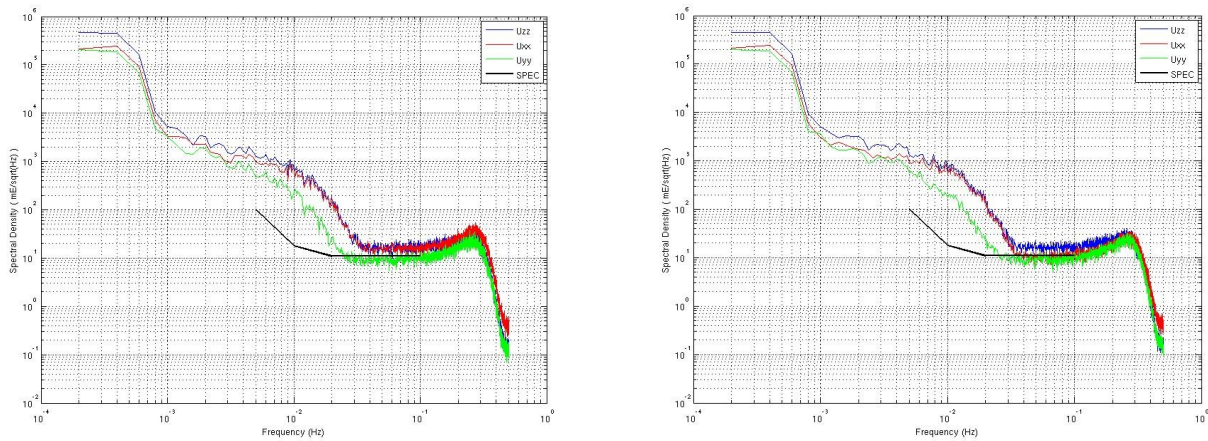


Figure 2 Gradients PSD considering the Beam Out event (left), gradients PSD not considering the Beam Out event (right)

Uxx (red in the plots) has a higher value in the PSD above, when the beam-out is included in the time interval 03/07 22:00 to 03/07 23:30.

No relevant differences in terms of trace PSD are recognized, as reported in figure 4:

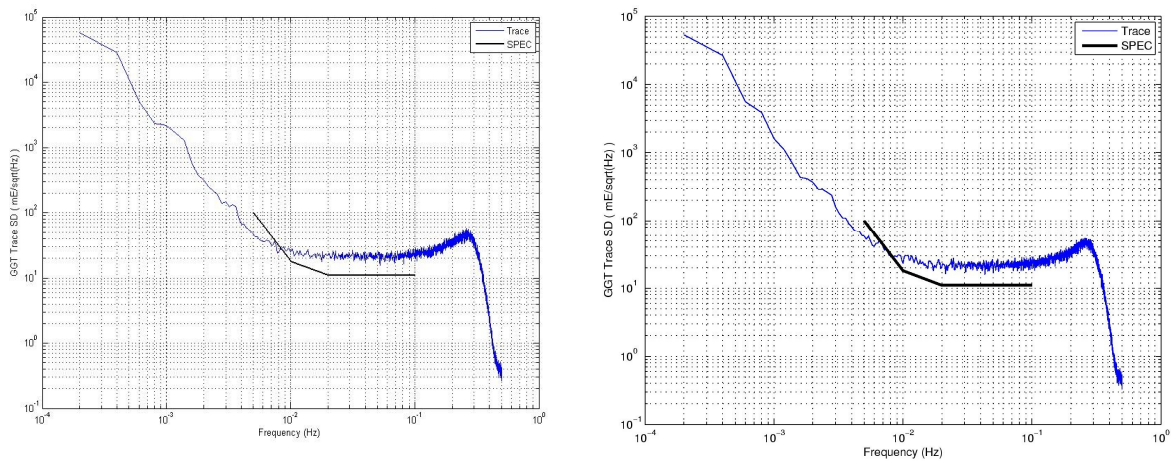


Figure 3 Trace PSD considering the Beam out event (left), trace PSD not considering the Beam out event (right)

3.3 Fallback to FPM on 30th of June: EGG_NOM_1b data gap on 1st of July (special event)

Due to the GOCE anomaly occurred on 30th of June, regarding the sudden interruption of the communication between IPCU and CDMU, the DFACS mode transition was brought from Drag Free Mode (DFM_FINE) to Fine Pointing Mode (FPM). This forced the fallback of the EGG mode from Science do Acquisition mode as well.

No EGG_NOM_1b data are available between products:

GO_CONS_EGG_NOM_1b_20100630T204009_20100630T220952_0001

and

GO_CONS_EGG_NOM_1b_20100702T070353_20100702T083337_0001

The resumption of the Drag Free mode was performed on 2nd of July with consequent and expected Kalman filter reinitialization with impacts on performance affecting the following products:

GO_CONS_EGG_NOM_1b_20100702T070353_20100702T083337_0001

GO_CONS_EGG_NOM_1b_20100702T083337_20100702T100321_0001

GO_CONS_EGG_NOM_1b_20100702T100321_20100702T113304_0001

GO_CONS_EGG_NOM_1b_20100702T113304_20100702T130248_0001

GO_CONS_EGG_NOM_1b_20100702T130240_20100702T143223_0001

GO_CONS_EGG_NOM_1b_20100702T143223_20100702T160206_0001

GO_CONS_EGG_NOM_1b_20100702T160206_20100702T173150_0001

3.4 Anomalous oscillation in CTR data on 5th of July (special event)

An anomalous oscillation was found at UTC time 05/07 14:37:06 in CTR components Y, Z of all the six accelerometers time series as reported below:

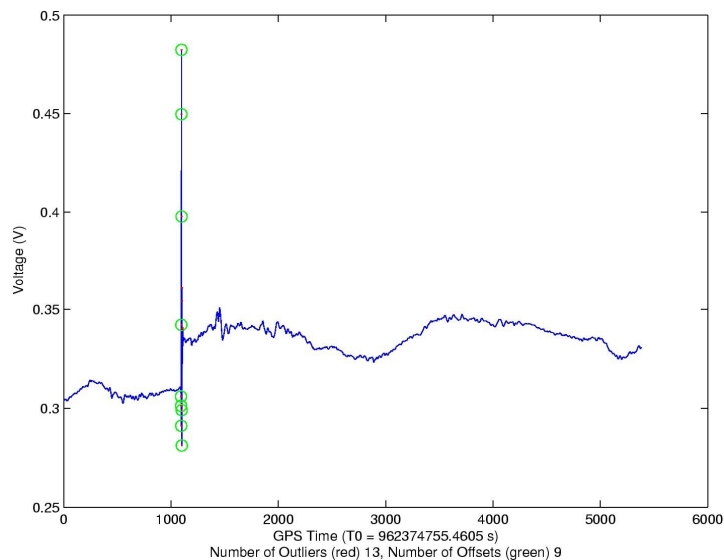


Figure 4 CTR anomaly on 05th of July in component Y1 A6

The same anomaly is visible in gradients, angular rates and CM/DM acceleration time series as well.

The anomaly is also present in CTR L0 datasets as reported below:

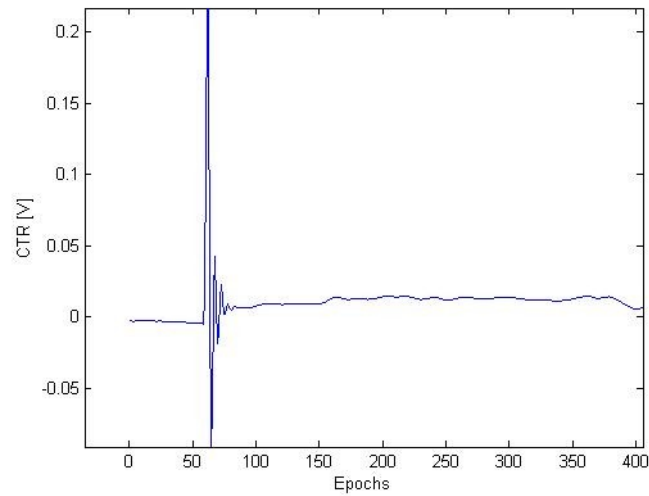


Figure 5 CTR L0 anomaly on 5th of July

The anomaly is due to the loading of the latest EGG detector offsets into GAIEU-B) which leads to an anomalous behavior of the trace PSD as reported below:

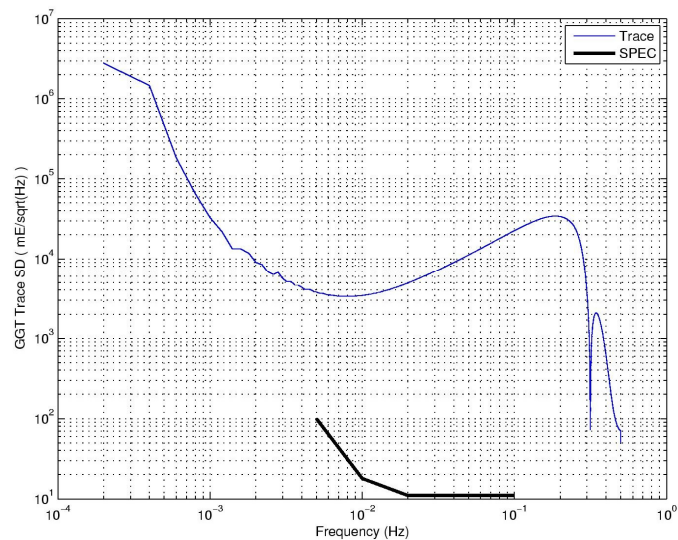


Figure 6 Anomalous Trace PSD

3.5 Telemetry anomaly on 8th July

On 8th of July a telemetry module anomaly occurred on the spacecraft preventing to receive telemetry data on ground. For this reason PDS production was halted until the end of August 2010. The last available EGG_NOM_1b product for the July 2010 time period is:

GO_CONS_EGG_NOM_1b_20100708T003805_20100708T020748