

**GIADA FS MODEL**

**REPORT ON  
THE COMET ESCORT 1 PHASE  
21/11/2014 - 10/03/2015**

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**REVISIONS LOG**

REV	DOCUMENT CHANGE ORDER	DATE	CHANGES DESCRIPTION	PREPARED
0	-	23-10-2015	First issue	GIADA Team
1	-	23-03-2017	Update due to the Data Set redelivery	GIADA Team

## **1. SCOPE AND APPLICABILITY**

The Comet Escort 1 Phase covers the period of time from the 21 November 2014 until the 10 March 2015. It started after Rosetta successfully completed the Prelanding Phase. The GIADA data collected in the present DataSet are complete and follow, without time interruption, the data of Prelanding DataSet (RO-C-GIA-3-PRL-PRELANDING-V1.1). This document reports the configurations used by GIADA FS during Comet Escort Phases 1. This report refers to the GIADA FS model on board the Rosetta S/C. The data were retrieved from DDS by means of the PI Workstation located at Istituto di Astrofisica e Planetologia Spaziali in Rome. We used the MaGx Converter v. 3.0 software on GIADA IWS to convert the DDS data. GIADA in flight software configuration is 2.3 plus three additional patches (one more patch is used to update the context file).

## 2. REFERENCES

### 2.1 APPLICABLE DOCUMENT

<b>AD1</b>	RO-EST-RS-3001/EID A	ROSETTA Experiment Interface Document – Part A
<b>AD2</b>	RO-EST-RS-3009/EIDB	ROSETTA GIADA Experiment Interface Document – Part B
<b>AD3</b>	RO-ESC-PL-5000 – last issue	Flight Control Procedure
<b>AD4</b>	GIA-GAL-MA-007 Issue 4	GIADA Flight Spare Experiment User Manual last version

### 2.2 REFERENCE DOCUMENT

	None.	

### **3. DEFINITIONS AND ABBREVIATIONS**

#### **3.1 ABBREVIATIONS**

<b>CAL</b>	Calibration
<b>CF</b>	Context File
<b>CREP</b>	Cover REPort
<b>CT</b>	Configuration Table
<b>DDS</b>	Data Disposition System
<b>EGSE</b>	Electrical Ground Support Equipment
<b>EQM</b>	Electrical Qualification Model
<b>ESA</b>	European Space Agency
<b>FCP</b>	Flight Control Procedure
<b>FS</b>	Flight Spare
<b>GDS</b>	Grain Detection System
<b>GES</b>	GIADA EGSE SW
<b>GIADA</b>	Grain Impact Analyser and Dust Accumulator
<b>HK</b>	House Keeping
<b>I/F</b>	InterFace
<b>INAF-OAC</b>	INAF - Osservatorio Astronomico di Capodimonte – Napoli (I)
<b>INAF-IAPS</b>	INAF-Istituto di Astrofisica e Planetologia Spaziali – Roma (I)
<b>IRQ</b>	Interrupt ReQuest
<b>IS</b>	Impact Sensor
<b>IWS</b>	Instrument Work-Station
<b>MBS</b>	Micro Balance System
<b>ME</b>	Main Electronics
<b>MTL</b>	Mission TimeLine
<b>MON</b>	Monitor
<b>OBCP</b>	On-Board Control Procedure
<b>PC</b>	Payload Checkout
<b>PDOP</b>	Payload Direct Operations Proposal
<b>PI</b>	Principal Investigator
<b>PS</b>	GIADA Power Supply
<b>PZT</b>	(IS) Piezoelectric Sensor
<b>RED</b>	Redundant
<b>REV</b>	Revision
<b>RMOC</b>	Rosetta Mission Operation Centre
<b>RSOC</b>	Rosetta Science Operation Centre
<b>S/C</b>	(Rosetta) Spacecraft
<b>S/S</b>	(GIADA) Sub-system (e.g. IS or GDS or MBS)
<b>SAA</b>	Solar Aspect Angle <sup>1</sup>
<b>SCI</b>	Scientific
<b>SSC</b>	Source Sequence Count
<b>SSMM</b>	Solid State Mass Memory on-board of Rosetta Spacecraft

<sup>1</sup> The angle formed between the spacecraft Z-axis and the Sun direction in the XZ plane (Della Corte et. Al. 2014, present in “Document” folder).

<b>STP</b>	Short Term Plan (1 week of operations)
<b>SW</b>	Software
<b>TC</b>	TeleCommand
<b>THS</b>	Threshold
<b>TM</b>	Telemetry
<b>UM</b>	User Manual
<b>UTC</b>	Coordinated Universal Time
<b>VC0</b>	Virtual Channel 0 (Real Time TM packets)
<b>VC1</b>	Virtual Channel 1 (TM packets coming from Mass Memory)



#### 4. DESCRIPTION OF ACTIVITIES

The Comet Escort 1 Phase (ESC1) identifies the period of time from the 21 November 2014 until the 10 March 2015. It started after Rosetta successfully completed the Prelanding Phase.

In the following table there is some information about the Comet Escort 1 Phase

<b>Scenario period</b>	Start 21-11-2014	End 10-03-2015
<b>Scenario duration</b>	110 days	
<b>Sun distance</b>	~ 2.92 AU	~ 2.10 AU
<b>Earth distance</b>	~3.46AU	~3.03AU
<b>Propagation delay</b>	~28 min 47s.	~25 min 13s.

The configurations of GIADA during the ESC1 Phase are described at STP level in Table 1. Here are reported a short description and the anomalies, if occurred.

STP	Date [UTC]	Conf.	Description	Notes/Anomalies
0029	Start 18-11-2014 23:25:00 End 21-11-2014 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of IS Range (Low/High) every 6h. A GIADA switch off w/o Close Cover was performed at the end of STP.	Note that the data by 20 November are collected in the Prelanding DataSet (RO-C-GIA-3-PRL-PRELANDING-V1.1).
030	Start 21-11-2014 23:25:00 End 25-11-2014 23:24:59	Normal Main I/F	GIADA switched on and a Context File with new GDS THS (Left: 1.7V, Right: 1.3V) was uploaded. GIADA went in Normal Mode. Switch of IS Range (Low/High) performed every 6h.	The new THS values are set in order to reduce the noise of the GDS receivers due to a small contamination.
031	Start 25-11-2014 23:25:00 End 02-12-2014 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of IS Range (Low/High) performed every 6h without any actions during Consert's opportunity window.	
032	Start 02-12-2014 23:25:00 End 09-12-2014 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of IS Range (Low/High) performed every 6h. On 5/12 the GDS Left THS changed taking into account Sun Aspect Angle (SAA).	
033	Start 09-12-2014 23:25:00 End 16-12-2014 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of IS Range (Low/High) performed every 6h. GDS switched Off/On taking into account SAA.	

034	Start 16-12-2014 23:25:00 End 19-12-2014 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of IS Range (Low/High) performed every 6h, GDS switched Off considering SAA.	
035	Start 19-12-2014 23:25:00 End 23-12-2014 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of IS Range (Low/High) performed every 6h, GDS switched On at the beginning of STP.	On 20-12-2014 at 4:30 there was an excessive increase of the GIADA data rate, due to some contamination on the GDS Left channel. In order to fix this issue a PDOP file was sent to RMOC (23-12-2014) to increase the GDS Left THS (4.0V).  This DataSet contains only the HK data for the period from 20 at 4.30 till 24 December 2014.
036	Start 23-12-2014 23:25:00 End 30-12-2014 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of IS Range (Low/High) performed every 6h.	Because of the issue occurred on 20/12 and fixed by increasing the GDS Left THS on 23/12, this DataSet contains only the HK data from 20 at 4.30 till 24 December 2014.
037	Start 30-12-2014 23:25:00 End 06-01-2015 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of IS Range (Low/High) every 6h. On 3-01-2015 the GDS THS changed taking into account SAA.	Because of the issue occurred in STP035, fixed by increasing the GDS Left THS we had to update the the GDS Left THS after the changes of the THS values performed in STP037. We sent a PDOP file to RMOC (on 29/12) to set the updated value.
038	Start 06-01-2015 23:25:00 End 13-01-2015 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of IS Range (Low/High) performed every 6h.  MBS Heating when Sun saturates the GDS Receivers.	
039	Start 13-01-2015 23:25:00 End 20-01-2015 23:24:59	Normal Main I/F	GIADA went in Safe Mode and a Context File with a new GDS Left THS (Left: 4.0V, Right: 1.3V) was uploaded.  GIADA went in Normal Mode, Switch of IS Range (Low/High) performed every 6h.	

040	Start 20-01-2015 23:25:00 End 27-01-2015 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of IS Range (Low/High) performed every 6h.	
041	Start 27-01-2015 23:25:00 End 03-02-2015 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of IS Range (Low/High) performed every 6h. GDS THS changed taking into account SAA. MBS Heating when Sun saturates the GDS Receivers. The IS Autogain was enabled.	
042	Start 03-02-2015 23:25:00 End 10-02-2015 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of IS Range (Low/High) performed every 6h. GDS THS changed taking into account SAA.	
043	Start 10-02-2015 23:25:00 End 17-02-2015 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of IS Range (Low/High) performed every 6h. During the Fly-by: IS Range set to Low.	
044	Start 17-02-2015 23:25:00 End 24-02-2015 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of Range (Low/High) performed every 6h. MBS Heating when Sun saturates the GDS Receivers.	
045	Start 24-02-2015 23:25:00 End 03-03-2015 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of IS Range (Low/High) performed every 6h.	
046	Start 03-03-2015 23:25:00 End 10-03-2015 23:24:59	Normal Main I/F	GIADA in Normal Mode, Switch of IS Range (Low/High) performed every 6h.	

***Table 1: GIADA Operations during the Comet Escort 1 Phase***

The data were elaborated off-line on the PI IWS at INAF-IAPS in Rome.  
During the Comet Escort 1 Phase the GIADA Cover has never been activated.