**GIADA FS MODEL**

**REPORT ON**
**THE COMET ESCORT 4 PHASE**
**21/10/2015 - 12/01/2016**

| PREPARED | APPROVED | AUTHORIZED |
|---|---|---|
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## REVISIONS LOG

| REV | DOCUMENT CHANGE ORDER | DATE | CHANGES DESCRIPTION | PREPARED |
| --- | --- | --- | --- | --- |
| 0 | - | 20-09-2016 | First issue | GIADA Team |

# 1. <u>SCOPE</u> <u>AND</u> <u>APPLICABILITY</u>

The Comet Escort 4 Phase covers the period of time from 21 October 2015 until 12 January 2016. It started after Rosetta successfully completed the Comet Escort 3 Phase. The GIADA data collected in the present DataSet are complete and follow, without time interruption, the data of Comet Escort 3 DataSet (RO-C-GIA-3-ESC3-COMET-ESCORT-3-V1.0). This document reports the configurations used by GIADA FS during Comet Escort 4 Phase. The data were retrieved from DDS by means of the PI Workstation located at Instituto di Astrofisica e Planetologia Spaziali in Rome. We used the MaGx Converter v. 3.0 software on GIADA IWS to covert 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).

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## 2. **REFERENCES**

### 2.1 **APPLICABLE DOCUMENT**

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

### 2.2 **REFERENCE DOCUMENT**

|  | None. |  |
|---|---|---|
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# 3. DEFINITIONS AND ABBREVIATIONS

## 3.1 ABBREVIATIONS

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

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[1] 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).

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

## 4. DESCRIPTION OF ACTIVITIES

The Comet Escort 4 Phase (ESC4) identifies the period of time from 21 October 2015 until 12 January 2016. It started after Rosetta successfully completed the Comet Escort 3 Phase.

In the following table there is some information about the Comet Escort 4 Phase

| Scenario period | Start 21-10-2015 | End 12-01-2016 |
| --- | --- | --- |
| Scenario duration | 84 days | |
| Sun distance | ~ 1.48 AU | ~ 2.10 AU |
| Earth distance | ~1.81 AU | ~1.58 AU |
| Propagation delay | ~15 min 03s. | ~13 min 08s. |

The configurations of GIADA during the ESC4 Phase are described at STP level in Table 1. Here are reported a short description of the GIADA configurations and the eventual anomalies, which occurred.

| STP | Date [UTC] | Conf. | Description | Notes/Anomalies |
| --- | --- | --- | --- | --- |
| 079 | Start 20-10-2015 23:25:00<br>End 27-10-2015 23:24:59 | Normal<br>Main I/F | GIADA in Normal Mode, GDS switched off taking into account SAA.<br>IS amplification chain always set to the higher amplification value. | |
| 080 | Start 27-10-2015 23:25:00<br>End 03-11-2015 23:24:59 | Normal<br>Main I/F | GIADA in Normal Mode, GDS switched off taking into account SAA.<br>IS amplification chain always set to the higher amplification value. | |
| 081 | Start 03-11-2015 23:25:00<br>End 10-11-2015 23:24:59 | Normal<br>Main I/F | GIADA in Normal Mode, MBS Heating taking into account SAA.<br>IS amplification chain always set to the higher amplification value. | |
| 082 | Start 10-11-2015 23:25:00<br>End 17-11-2015 23:24:59 | Normal<br>Main I/F | GIADA in Normal Mode, GDS switched off taking into account SAA.<br>IS amplification chain always set to the higher amplification value. | |
| 083 | Start 17-11-2015 23:25:00<br>End 24-11-2015 23:24:59 | Normal<br>Main I/F | GIADA in Normal Mode, GDS switched off taking into account SAA.<br>IS amplification chain always set to the higher amplification value. | |
| 084 | Start 24-11-2015 23:25:00<br>End 01-12-2015 23:24:59 | Normal<br>Main I/F | GIADA in Normal Mode.<br>IS amplification chain always set to the higher amplification value. | |

| 085 | Start 01-12-2015 23:25:00<br>End 08-12-2015 23:24:59 | Normal<br>Main I/F | GIADA in Normal Mode, GDS Left THS changed at the beginning of STP (Left: 5.2V, Right: 1.3V).<br>GDS switched off taking into account SAA.<br>IS amplification chain always set to the higher amplification value. | |
| --- | --- | --- | --- | --- |
| 086 | Start 08-12-2015 23:25:00<br>End 15-12-2015 23:24:59 | Normal<br>Main I/F | GIADA in Normal Mode, MBS Heating at the beginning of STP and taking into account SAA.<br>IS amplification chain always set to the higher amplification value. | |
| 087 | Start 15-12-2015 23:25:00<br>End 22-12-2015 23:24:59 | Normal<br>Main I/F | GIADA in Normal Mode.<br>IS amplification chain always set to the higher amplification value. | |
| 088 | Start 22-12-2015 23:25:00<br>End 29-12-2015 23:24:59 | Normal<br>Main I/F | GIADA in Normal Mode, GDS Left THS changed at the beginning of STP (Left: 5.5V, Right: 1.3V). GDS switched off taking into account SAA.<br>IS amplification chain always set to the higher amplification value. | |
| 089 | Start 29-12-2015 23:25:00<br>End 05-01-2016 23:24:59 | Normal<br>Main I/F | GIADA in Normal.<br>IS amplification chain always set to the higher amplification value. | |
| 090 | Start 05-01-2016 23:25:00<br>End 12-01-2016 23:24:59 | Normal<br>Main I/F | GIADA in Normal Mode, GDS switched off taking into account SAA.<br>IS amplification chain always set to the higher amplification value. | |

*Table 1: GIADA Operations during the Comet Escort 4 Phase*

The data were elaborated off-line on the PI IWS at INAF-IAPS in Rome.
During the Comet Escort 4 Phase the GIADA Cover has never been activated.