

RPC-LAP OPERATIONS REPORT CRUISE 5 MISSION PHASE

December 14, 2009 - May 16, 2010

IRFU-ROS-OPR-CR5

Version 1.0

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Document history

Revision	Date	Comment
1.0	2019-08-31	Initial release

Note: This document replaces IRFU-ROS-OPR-PC12 (v1.0) which was delivered with version 1.0 of the AST2 L2 and L3 data sets.

1 Introduction

This is the report from the operations of RPC-LAP in the Cruise 5 (CR5) phase of the Rosetta mission, covering the period December 14, 2009 - May 16, 2010. This included the following operational slots for LAP:

- March 14-15, 2010: Rehearsal for the flyby of asteroid 21 Lutetia
- May 2, 2010: Payload checkout 12 (PC12)

2 Operations overview

With the rest of RPC, LAP was collected data in March 14-15, 2010, during the spacecraft pointing rehearsal for the flyby of asteroid 21 Lutetia in July 2010. Operations were nominal.

Payload checkout (PC) operations occurred regularly during the pre-comet phases of the mission. In this mission phase, LAP was activated in May 2, 2010, for PC12 (note that there never was any PC11). In addition to the minimum LAP PC operations (offset determination and probe bias voltage sweeps for photoemission determination), new LAP macros 0x505, 0x506 and 0x807 were uploaded. When testing these just after the upload, only the first, 0x505 resulted in science data. Available indications did not point to any problem with the macro upload or the macros 0x506 and 0x807 as such. Both macros had been tested on the LAP ground reference unit in Uppsala as well as on the EQM spacecraft at ESOC, as had all the macro upload operation. Instead this was interpreted as the second instance of the issue with missing science telemetry previously seen in the first Earth swing-by (see report for the EAR1 mission phase). Further investigations were deferred to PC13 in December 2010 (which confirmed that the issue was due to missing science telemetry).

3 Operations list

Below is a list of all LAP operations blocks during this mission phase. A LAP operations block is defined as a continuous run of an instrument macro, though as the archive is organized by calendar days, blocks are defined to break at midnight even if the instrument operation is continuous over this artificial border. If you find operations blocks running the same macros on both sides of midnight, this is likely to actually be a continuous operation. The list is based on the science data stream are included, so pure maintenance operations or periods with LAP idle between macro runs are not shown.

The macro concept is described in the EAICD, and the macro definitions are tabulated in the macro table, both available in the documents directory of the LAP archives in the ESA Planetary Science Archive (PSA). A LAP macro defines all aspects of the instrument operations, though particularly when a probe is in electric field mode, the probe bias (current in the case of electric field mode, otherwise bias voltage) may often be tuned by manual commands.

Block start	Block end	Macro	Notes
Lutetia rehearsal			
2010-03-14T13:12:58.901	2010-03-14T13:17:46.901	600	
2010-03-14T13:22:34.901	2010-03-14T13:58:18.927	604	
2010-03-14T14:02:34.901	2010-03-14T23:59:54.904	504	
2010-03-15T00:00:00.008	2010-03-15T03:18:50.905	504	
2010-03-15T03:22:34.905	2010-03-15T03:38:02.931	604	
2010-03-15T03:42:18.905	2010-03-15T03:47:38.905	104	
PC12			
2010-05-02T01:33:07.185	2010-05-02T01:37:55.185	212	
2010-05-02T02:02:27.185	2010-05-02T02:17:56.284	505	
2010-05-02T03:42:59.186	2010-05-02T04:06:59.186	104	
2010-05-02T04:12:19.186	2010-05-02T04:27:15.186	105	
2010-05-02T04:32:35.186	2010-05-02T05:29:39.186	204	
2010-05-02T05:32:19.186	2010-05-02T05:47:15.186	104	
2010-05-02T05:52:35.186	2010-05-02T06:04:51.186	105	