

# RPC-LAP OPERATIONS REPORT EARTH SWING-BY 1 MISSION PHASE

October 17, 2004 - April 4, 2005

IRFU-ROS-OPR-EAR1

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## Document history

Revision	Date	Comment
1.0	2019-08-31	Initial release

## 1 Introduction

This is the report from the operations of RPC-LAP in the Earth Swing-by 1 (EAR1) phase of the Rosetta mission, covering the period October 17, 2004 -- April 4, 2005. This included the following operational slots for LAP:

- March 1 - 7, 2005: The Earth swing-by 1 itself (ESB1)
- March 29, 2005: Payload checkout 0 (PC0)

## 2 Operations overview

LAP was on for the full ESB1, March 1 -- March 7, 2005. Closest approach occurred at 22:10 UT in March 4. The main LAP goal was to gain experience for coming operations, in particular the Mars flyby in 2007. New macros, designed from experience during commissioning, were also uploaded and tested.

There was one anomaly: no science data arrived from LAP for a period starting 2005-03-01 22:00. Science data returned after the power cycle in 2005-03-03 12:30, so in total about 39 hours of data are missing. The upload of new macros just before the reboot (12:10 - 12:30) worked as planned despite the problem, and housekeeping data were not affected. This was the first time this problem was seen. It would occur again during PC12 in May 2010 and then a few times at the comet in autumn 2014. The problem could not be reproduced on ground units and has never been well understood, but is believed to be an issue with the data link between LAP and the PIU. At the comet it was handled by insertion of regularly occurring LAP power cycles into the command timeline. The issue finally disappeared after a PIU reboot in early 2015.

Payload checkout (PC) operations occurred regularly during the pre-comet phases of the mission. For LAP, the minimum PC operations consisted of offset determination and probe bias voltage sweeps for photoemission determination. LAP was active in 2005-03-29 for the 1st checkout, PC0.

## 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
ESB1			
2005-03-01T00:13:17.359	2005-03-01T01:57:49.360	301	
2005-03-01T02:02:37.360	2005-03-01T02:12:45.361	104	
2005-03-01T02:17:33.361	2005-03-01T02:29:49.361	105	
2005-03-01T02:32:29.361	2005-03-01T18:57:33.371	212	
2005-03-01T21:50:21.373	2005-03-01T21:59:57.373	206	
2005-03-03T12:47:25.398	2005-03-03T23:53:33.405	212	
2005-03-04T00:01:33.405	2005-03-04T16:26:05.416	212	
2005-03-04T16:32:29.416	2005-03-04T16:58:37.416	600	
2005-03-04T17:02:21.416	2005-03-04T17:28:29.417	602	
2005-03-04T17:32:13.417	2005-03-04T17:55:09.417	603	
2005-03-04T18:13:17.417	2005-03-04T20:21:49.419	212	
2005-03-04T20:32:29.419	2005-03-04T20:58:37.419	204	
2005-03-04T21:02:21.419	2005-03-04T22:09:33.420	405	
2005-03-04T22:12:13.420	2005-03-04T23:14:37.420	204	
2005-03-04T23:17:17.420	2005-03-04T23:45:33.421	604	
2005-03-04T23:59:57.421	2005-03-04T23:59:57.421	301	
2005-03-05T00:00:00.016	2005-03-05T21:57:49.435	301	
2005-03-05T22:02:37.435	2005-03-05T23:57:49.436	203	
2005-03-06T00:02:37.436	2005-03-06T21:57:49.450	212	
2005-03-06T22:02:37.450	2005-03-06T23:57:49.452	301	
2005-03-07T00:00:29.452	2005-03-07T00:53:49.452	301	
2005-03-07T00:57:33.452	2005-03-07T01:07:41.452	104	
2005-03-07T01:12:29.453	2005-03-07T01:19:25.453	105	
2005-03-07T01:38:05.453	2005-03-07T17:57:17.463	212	
2005-03-07T23:30:05.467	2005-03-07T23:34:53.467	206	
PCO			
2005-03-29T09:43:17.798	2005-03-29T10:07:49.798	104	
2005-03-29T10:12:37.798	2005-03-29T10:27:33.798	105	
2005-03-29T10:32:21.798	2005-03-29T11:28:21.799	204	