Chapter 1 - Introduction

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Chapter 1

Introduction to the Revised Edition

This document was originally published by the NIMS team in December 1992 as a guide to the second Galileo Earth-Moon encounter (E2). It has been revised and corrected for inclusion on the 2nd, 3rd and 4th CD-ROMs of NIMS Experiment Data Records (EDRs). Some material in the original document has been omitted since it is available elsewhere on the CD. Other material of only historical interest has been relegated to an appendix.

The aim of the revised guide is to provide detailed information on the various NIMS observations and calibrations. Also included is background information on the encounters. An overview of the guide is given below. Please refer to the beginning of each chapter for a detailed list of contents.

Chapter 2 gives and overview of the entire E2 encounter. Chapter 3 contains diagrams of earth and moon flyby geometries for the E2 encounter and also comparisons with the E1 encounter. Chapter 4 contains a spreadsheet presentation of observation parameters for the entire E2 encounter. Chapter 5 provides comprehensive information on NIMS calibration activities during EE9, the pre-Earth-encounter period. Chapter 6 does the same for all planned NIMS science observations during the Earth and Moon encounters, and some additional calibration activities afterwards. Chapters 5 and 6 include detailed timelines, observation catalogs (tables containing spacecraft clock ranges, instrument modes and parameters for each observation described in the chapter), science observation descriptions and objectives, as well as Pointer plots (observation footprints).

Note that there isn’t a chapter for the EE10 sequence, since no NIMS observations were planned for that sequence. But the instrument was on, and a large amount of data collected, which may be useful for studying interference by the particles and fields instruments.

For information on the NIMS instrument, please see the preprint of the NIMS instrument paper provided elsewhere on the CD-ROM, or refer to the published version: R. W. Carlson, P. R. Weissman, W. D. Smythe, J. C. Mahoney, and the NIMS Science and Engineering Teams, "Near-infrared Mapping Spectrometer Experiment on Galileo", Space Science Reviews 60: 457-502, 1992.

ACKNOWLEDGMENTS

The NIMS Earth observations described in this Guide were designed by Rosaly Lopes-Gautier with help from Marcia Segura and input from Hugh Kieffer, Bob Carlson, Kevin Baines, Larry Soderblom and Bill Smythe. The Moon observations were designed by John Hui, with input from Hugh Kieffer. The calibrations were designed by Rosaly Lopes-Gautier and John Hui, with input from Bill Smythe, Al Stevenson and Ron Burns. John Hui edited the original printed document. Frank Leader subsequently retrieved most of the original material for the CD-ROM, edited the original Postscript files for consistency and clarity, and recovered missing material by scanning parts of the original printed document. Al Stevenson regenerated the sequence summaries. Bob Mehlman rewrote the introduction.

Original Introduction

Welcome to Galileo's second Earth-Moon encounter on its journey to its primary mission: study of Jupiter and its satelites. This encounter not only allows us first-time science opportunities in the study of planet Earth and its moon, but also provides for critical instrument and spacecraft calibrations needed for the Jupiter mission. Due to the high data rates available at Earth 2, Gaspra data obtained in October 1991 and contained in Galileo's taperecorder tracks 1-3 will be replayed at the beginning of the encounter. The Galileo trajectory allows the first-ever near infrared observation of the Moon's North pole. This trajectory also gives NIMS the opportunity to study Indonesia, Australia, Antarctica and the Earth's aurora. We therefore expect that Earth 2 will be an interesting encounter for the science return and calibration opportunity.

This guide provides an overview of Earth 2 events, science observations and calibrations. The timeline on Page 2 gives a general schedule of meetings and important instrument operations such as NIMS turn-on. Section 2 is the "Cruise Overview" with diagrams of science, engineering and other sequence activities for both EE9 and EE11, the two sequences comprising this encounter. Section 3 includes spacecraft geometry information such as phase angle (Sun-Earth/Moon-Spacecraft angle) which may be helpful in understanding expected NIMS data return when combined with the observation designs in Sections 5 and 6. If more detailed information is needed before actual spacecraft attitude and articulation control data is available on the ground, a science coordinator can provide you with a copy of the "Science Planning Package". Section 4 is a fold-out summary of the Earth 2 encounter and can be used for a quick reference for information on observation time, description, NIMS state at time of observation, etc. As mentioned before, Sections 5 and 6 are the EE9 and EE11 sequence descriptions for the NIMS instrument. In these sections you will find descriptions of each observation as well as a plot of the footprint on the desired target.

Since this handbook can only provide a limited amount of information, we have felt it important to insert a Personnel listing of Principal and Co_investigators and Science Coordinators in Section 7. For further detail on the information in this handbook, please contact the appropriate person.

Finally, great effort has been made to ensure that the NIMS focal plane assembly remains at a low enough temperature to avoid saturation of data as was the case

for some observations at Earth 1. In appendix A you will find a memo explaining the NIMS strategy for avoiding overheating of the instrument. Appendix B contains a summary of Gaspra observations since Gaspra data playback occurs in EE9, November 23rd and 24th.

We hope this NIMS Earth 2 handbook is a helpful guide to a successful encounter.

Original Timeline Summary

The list below provides an overview of important Encounter events and meetings as they are currently known.

DATE	EVENT
11/22 (Day 327)	EE9 Begins
11/23 (Day 328)	Gaspra Playback Begins NIMS turns on, begins calibrations and observations (EE9) SSI turns on
11/24 (Day 329)	Gaspra Playback Continues Ida Aimpoint Selection meeting (12pm - 3pm)
12/01 (Day 335)	10 am Pres Conference in von Karman, Earth-Moon observations preview, Declare trajectory final, Gaspra (if exciting)
12/05 (Day 339)	EE9 ends
12/07 (Day 342)	NIMS Team Meeting (Bldg 264-784) EE11 Begins Lunar and Earth observations begin
12/08 (Day 343)	GLL Moon Closest Approach (LCA) at 03:47:45 (GMT) GLL EArth Closest Approach (ECA) at 15:09:25 (GMT) 10 am Press conference in von Karman, Declare successful EGA, Quicklook (not released) Moon & Earth photos, Family Evening
12/11 (Day 346)	NIMS off
12/14-15 (Days 349-350)	SROP and PSG
12/22 (Day 357)	10 am Press Conference in von Karman, Earth & Moon observation results, Earth/Moon conjunction images (movie?)
1/4/93 (Day 004)	EE11 Ends

Original Timeline Summary (cont.)

Daily
Operations/Data Review meeting @ 10 am in 264-415
MIPL meeting to review data products @ 3:30 pm in MIPL User Room

Tuesdays
Regular SROP meeting @ 9 am
Regulat NIMS Science Coordinators meeting @ 11 am

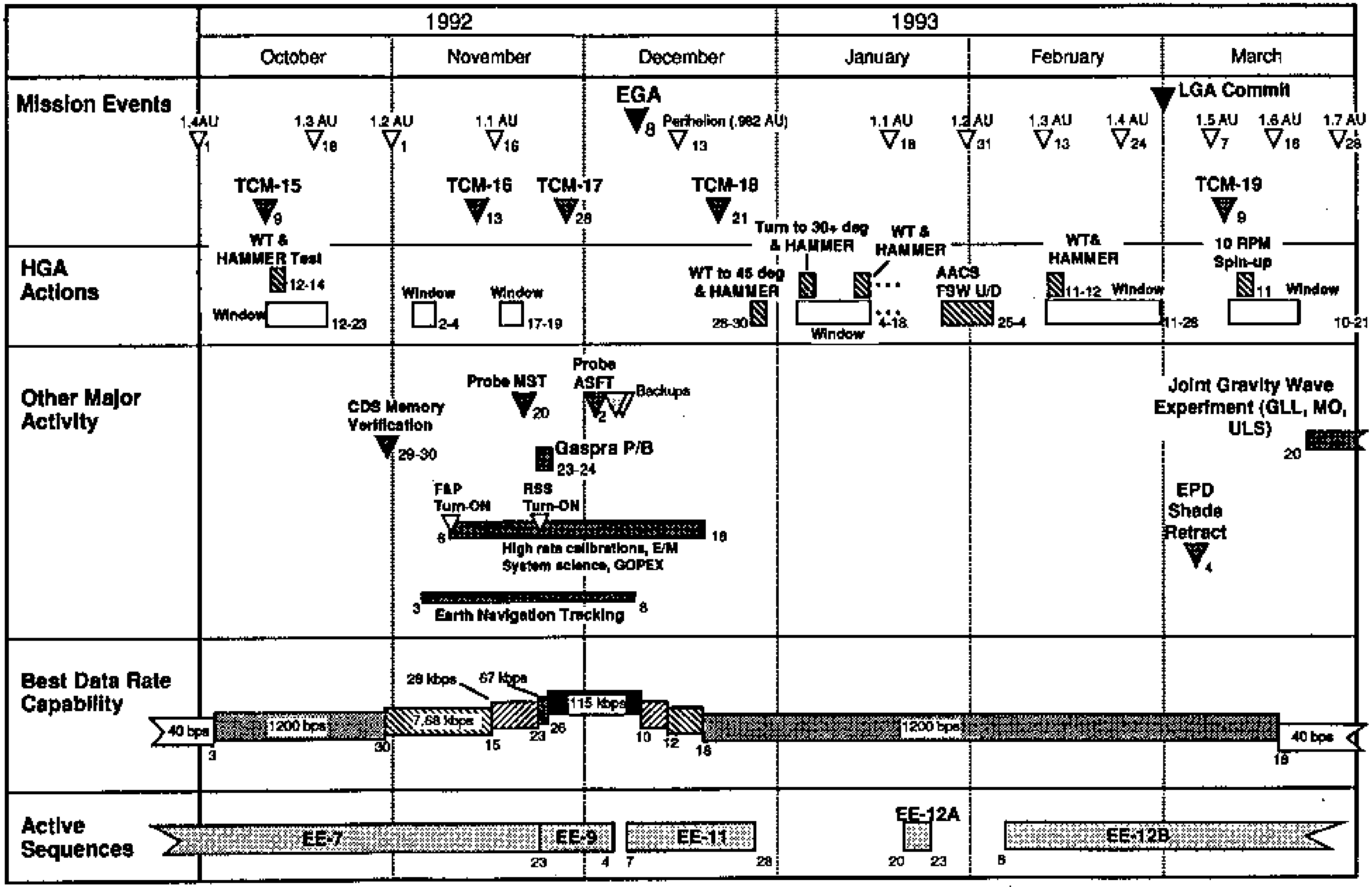
Wednesdays
Regular S&MD meeting at 9:30 am

Thursdays
Regular NIMS Team Meeting (Bldg 183-343) @ 12 pm

Other important meeting places:

NIMS Lab - Bldg 183-415	**x 4-3214**
NIMS Image Display Room - Bldg 264-729	**x 3-1074, x 3-1079**
NIMS Computer Room Bldg 264-721	

GLL TIMELINE OF EVENTS (OCT 92-MAR 93)



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