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JUICE - JUpiter ICy moons Explorer

GIPER Ganymede Ice PEnetrating Radar

Part I: Instrument Scientific and Technical Plan

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ACRONYMS

AO: Announcement of Opportunity
EID-A: Experiment Interface Document - Part A
JUICE: JUpiter ICy moons Explorer
LEO: Letter of Endorsement
LFA: Lead Funding Agency
PI: Principal Investigator
SciRD: Science Requirements Document

DOCUMENT APPROVALS

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DOCUMENT CHANGE RECORD

Table 1 – *Document Change Record for GIPER Ganymede Ice Penetrating Radar, Part I: Instrument Scientific and Technical Plan*

Doc. reference	Change date	Change Description
GIPER-ScTch-01	December 15, 2012	1st release

CONTENTS

Acronyms	i
Document Approvals	ii
Document Change Record	iii
1. Introduction	1
1.1. JUICE Mission Overview	1
2. Scientific Objectives	2
2.1. Introduction	3
2.2. Scientific Goals	3
2.3. Instrument Performance Requirement	3
3. Technical Description and Design	3
3.1. Instrument Concepts	3
3.2. Instrument Characteristics	3
3.3. Instrument Budgets Analysis	3
3.4. Instrument Spacecraft Requirements	3
4. Summary of Instrument Interfaces	3
5. On-ground and In-flight Test and Calibration	3
6. System Level AIV	3
7. Flight Operations Concept	3
8. Science Ground Segment Concept	3
9. Data Reduction, Scientific Analysis and Archival Plans	3
10. Organization	3
10.1. Management Structure	3
10.2. Budget	3
References	4
Appendix A. Some Appendix	5

1. INTRODUCTION

The GIPER instrument consortium answer to the ESA Announcement of Opportunity (AO)[1] for the L1 class JUpiter ICy moons Explorer (JUICE) mission.

1.1. JUICE Mission Overview. ESA L1 mission selected May 2012 in Cosmic Vision programme. Expected launch date 2022. 7.5 year cruise to Jupiter. Orbit insertion 2030 around Jupiter including phase studies of Europa and Callisto. September 2032 orbit insertion around Ganymede. Nominal mission end 2033. Russian Ganymede lander.

2. SCIENTIFIC OBJECTIVES

The scientific outcome of this instrument proposal is in accordance with ESA Science Requirements Document (SciRD)[2] and addresses many of the scientific investigations proposed in the ESA JUICE Assessment Study Report[3].

2.1. Introduction.

2.2. Scientific Goals.

2.3. Instrument Performance Requirement.

3. TECHNICAL DESCRIPTION AND DESIGN

The proposed instrument has been designed in accordance to ESA Experiment Interface Document - Part A (EID-A) for the JUICE mission[4].

3.1. Instrument Concepts.

3.2. Instrument Characteristics.

3.3. Instrument Budgets Analysis.

3.4. Instrument Spacecraft Requirements.

4. SUMMARY OF INSTRUMENT INTERFACES

5. ON-GROUND AND IN-FLIGHT TEST AND CALIBRATION

6. SYSTEM LEVEL AIV

7. FLIGHT OPERATIONS CONCEPT

8. SCIENCE GROUND SEGMENT CONCEPT

9. DATA REDUCTION, SCIENTIFIC ANALYSIS AND ARCHIVAL PLANS

10. ORGANIZATION

10.1. Management Structure. (Please note, some of the contents in this section are fictive and should not be taken literally.)

Dr. Jan Sommer is the instrument Principal Investigator (PI). He has an extensive background studying planet geology, especially on Mars. This study will enhance our knowledge of planet inner structures, geology and provide better understanding of planet formations and evolution.

Morten Olsen is the project manager. With experience as project manager for previous successful space instruments, he will manage the project schedules and budgets.

Omair Sarwar is the technical manager. With extended engineering experience in radar systems, he will ensure that the instrument meets the performance requirements, proper

instrument verification and qualification in accordance with ESA space standards.

10.2. Budget. ACME Space Agency is the Lead Funding Agency (LFA) for this instrument proposal. A Letter of Endorsement (LEO) has been issued ensuring funding for the project during the instrument development phase, in-flight operations and post operations activities.

REFERENCES

- [1] *Announcement of Opportunity for the JUICE Payload*. Tech. rep. 1. ESA/SRE(2012)4. ESA, 2012.
- [2] *JUpier ICy Moons Explorer(JUICE) Science Requirements Document*. Tech. rep. Issue 1 Revision 0. JUI-EST-SGS-RS-001. ESA, 2012.
- [3] *JUICE Exploring the emergence of habitable worlds around gas giants, Assessment Study Report*. Tech. rep. ESA/SRE(2011)18. ESA, 2011.
- [4] JUICE study team. *JUICE - JUpiter ICy Moons Explorer, Experiment Interface Document - Part A*. Tech. rep. Issue 0, Revision 7. JUICE-EST-SYS-EID-001. ESA, 2012.

APPENDIX A. SOME APPENDIX