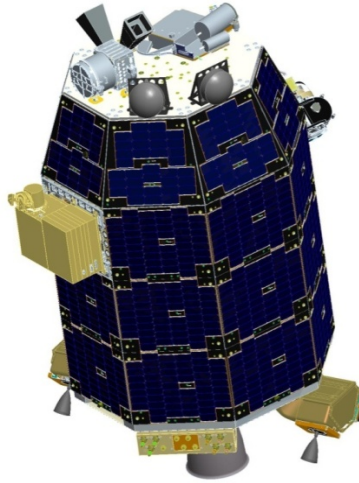
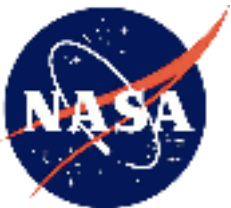


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	Document No: LDEX SCI PDS ICD 10-15-02-002	Rev.: D Date: 5/31/2013



**Lunar Atmosphere and Dust
Environment Explorer
(LADEE)
(LDEX PDS Interface Control
Document)**



(5/31/2013)

**Ames Research Center
Moffett Field, California**

National Aeronautics and
Space Administration

i

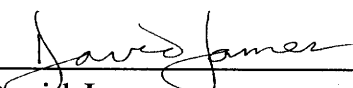
CHECK LADEE MINX DATABASE
<https://minx.arc.nasa.gov/minx/dsweb/View/Collection-10129>
TO VERIFY PRINTED VERSION IS CORRECT FOR USE

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	Document No: LDEX SCI PDS ICD 10-15-02-002	Rev.: D Date: 5/31/2013

This document is approved in accordance with LADEE Configuration Management Plan, C04.LADEE.CM, paragraph 3.6.1.1 Document Release Routing Approval Process.

Page three of this document contains the approved routed release of this document.


Approval Signatures



 Dr. David James
 Instrument Calibration Engineer, LDEX

5/31/2013

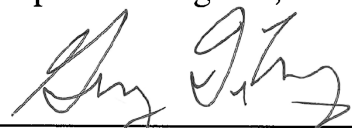
 Date



 Dr. Mihaly Horanyi
 Principle Investigator, LDEX

6/4/2013

 Date



 Dr. Greg Delory
 LADEE Deputy Project Scientist

6/6/2013

 Date



 Dr. Michael F. A'Hearn
 PDS Small Bodies Node Manager

4 June 2013

 Date

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REVISION HISTORY			
Rev.	Description of Change	Author(s)	Effective Date
DraftA	Initial Draft	David James	11/30/2011
DraftB	SBN suggested changes	Carol Neese	12/02/2011
DraftC	DAWG Suggestions (including Table 5.1 update, comments from Carol Neese, and the timeline figure.)	David James	3/26/2012
Rev A	Initial Release	David James	4/3/2012
Rev B	Minor Changes. Signatures, PDS 4 reference, and document number added.	David James	1/28/2013
Rev C	Changes suggested by Michael A'Hearn	David James	2/06/2013
Rev D	Changes suggested by Michael A'Hearn	David James	5/31/2013

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CONFIGURATION MANAGEMENT PLAN

This document is an LADEE Project Configuration Management (CM)-controlled document. Changes to this document require prior approval of the LADEE Project Manager. Proposed changes shall be submitted to the LADEE CM office along with supportive material justifying the proposed change. Changes to this document will be made by complete revision.

Questions or comments concerning this document should be addressed to:

LADEE Project Control Manager
 Mail Stop 240-5
 Ames Research Center
 Moffett Field, California 94035

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ACRONYMS

EDR	Experiment Data Record
ICD	Interface Control Document
LADEE	Lunar Atmosphere and Dust Environment Explorer
LDEX	Lunar Dust Experiment
DAWG	Data and Archives Working Group
NSSDC	National Space Science Data Center
PDS	Planetary Data System
RDR	Reduced Data Record
OLAF	Online Archive Facility
SBN	Small Bodies Node
SIS	Software Interface Specification
SOC	Science Operation Center
TBD	To Be Determined
EOM	End of (LADEE) Mission

1. INTRODUCTION

1.1 Purpose and Scope

This Interface Control Document (ICD) defines the relationship between the Lunar Dust Experiment (LDEX) Science Team and the Planetary Data System (PDS) Small Bodies Node for the purpose of archiving LDEX experiment science data from the LADEE mission in the PDS and distributing it to the science community and the general public.

1.2 Contents

This ICD specifies the responsibilities of the LDEX Science Team and the PDS Small Bodies Node in archiving LDEX science data. It lists the deliverables expected from both entities and specifies the schedule for their delivery in the context of the LADEE Mission operations.

1.3 Applicable Documents and Constraints

1. Planetary Data System Standards Reference, JPL D-7669 part 2, version 4.0.6, October 8, 2012
2. LADEE Project Data Management and Archive Plan, version 2.2, May, 2011.
3. LADEE LDEX Data Product Software Interface Specification, v 1.0, still to be written.
4. LADEE LDEX Software Interface Specification, still to be written.

1.4 Relationships with Other Interfaces

This ICD could be affected by changes to the LADEE Mission Archive Plan. This ICD specifies responsibilities for writing the LDEX Data Product SIS and the SIS.

2. MANAGEMENT AND OVERSIGHT

The LDEX Principal Investigator, Dr. Mihaly Horanyi or his designee, will be responsible for managing the archiving activities of the LDEX Team, and the Small Bodies Node Manager, Dr. Michael F. A'Hearn or his designee (currently Dr. Carol Neese), will be responsible for managing the archiving activities of the Small Bodies Node. The LDEX Team and Small Bodies Node members will meet periodically to discuss archiving issues, usually by teleconference.

Oversight of the archiving process will be provided by the LADEE Data and Archives Working Group (DAWG), currently headed by Dr. Greg Delory. The DAWG is a subgroup of the LADEE Science Team and reports to the Science Team Chair (LADEE Project Scientist). The DAWG coordinates the planning, generation, validation, and delivery of all LDEX Instrument archives. The DAWG meets regularly during the archive planning period and as needed during mission operations. Representatives of the LDEX Team and Small Bodies Node will attend Data and Archives Working Group meetings, as needed, and report progress.

3. RESPONSIBILITIES OF THE LDEX SCIENCE TEAM

3.1 LDEX Science Data Archives

The LDEX Team is responsible for writing the LDEX Standard Data Product SIS, with help from the Small Bodies Node as needed.

The LDEX Team will use the Online Archive Facility (OLAF) provided by the small bodies node to archive the data. The format of this data will be fixed-width ASCII tables for both reduced and calibrated data.

The LDEX Team is responsible for writing instrument and data set descriptions for the PDS catalog in the format specified in the PDS Standards Reference, with help from the Small Bodies Node as needed.

The LDEX Team will obtain mission and spacecraft descriptions for the archive from the LADEE Mission Project or from whomever the Project has designated to maintain them. These files will be delivered to the LDEX Team for inclusion in their Bundle.

The LDEX Team is responsible for performing internal science validation on LDEX data products.

The LDEX Team will deliver science data products in the appropriate PDS Archive Bundle structure and format to the PDS-Small Bodies Node (via OLAF) according to the schedule in the LADEE Mission Archive Plan.

The LDEX team will be responsible for resolving liens from the external pre-launch and final peer reviews conducted by SBN.

The delivered Bundle will contain the following components:

- Reduced and calibrated LDEX data products accompanied by appropriate PDS labels
- Relevant reports and files needed for data calibration
- Schema Collection for the appropriate schema used in the bundle.
- Documentation, including the LDEX Standard Data Product SIS, and additional documentation as the LDEX Team desires. These documentation files should be in either plain text or Adobe PDF/A format.

The LDEX Team is responsible for providing to the Small Bodies Node samples of all data products and product labels as described in the Standard Data Product SIS. These materials will be utilized for the PDS-required pre-launch peer review described in Section 4.2 below).

4. RESPONSIBILITIES OF THE SMALL BODIES NODE

4.1 LDEX Science Data Archives

The Small Bodies Node conducts validation of the LDEX science data sets as required by PDS, including pre-launch and final external peer reviews, and assists the LDEX Team in resolving any liens that may be placed against the data sets. PDS validation ensures that a data set is compliant with PDS standards.

The Small Bodies Node is responsible for maintaining an online repository of LDEX science data archives. The repository will allow public access to data products that have been archived by PDS.

The Small Bodies Node is responsible for developing and operating an interface for the science community. This provides search and retrieval capabilities to access data from all missions archived in the PDS SBN, which includes the LDEX science data archives.

The Small Bodies Node is responsible for delivering the LDEX archive to the National Space Science Data Center (NSSDC) for permanent archiving.

4.2 Peer Review

The Small Bodies Node is responsible for organizing the Peer Review of the LDEX data sets, according to PDS policy. The Peer Review Committee will include a small number of scientists, selected by SBN and from outside the LDEX Team, who have an interest in the anticipated data products. The Peer Review committee will also include LDEX Team members and Small Bodies Node representatives.

For LDEX there will be two such reviews. There will be a pre-launch review approximately 6 months from launch. This review will contain sample data and documentation in the format of the final archived data set. This sample data will be produced by the flight instrument pre-launch and will differ in the final data set only in specific values and size. Data format and archive method will be the equivalent.

There will be a final review within 6 weeks after the end of mission (EOM). This review will include all the data produced by LDEX from the beginning of the commissioning phase through the first 20 days of the science phase. Three months after EOM, LDEX will deliver the final data set for archive.

After production of the data used in the final PDS peer review, no changes will be made to the pipeline to produce the data except to correct liens from the review. A list of any liens-resolution changes to the pipeline will be supplied to SBN for use in confirming the resolution of the liens. After liens resolution is complete, no further changes will be made to the pipeline. If the LDEX team determines that other changes are needed, these changes will be cleared with the SBN and peer reviewers.

5. DELIVERABLES AND SCHEDULE

Table 5.1 shows the deliverable products accounted for in this ICD, and the producer (“FROM”) and recipient (“TO”) organization (LDEX Team or PDS Small Bodies Node) associated with each deliverable product. Figure 1 shows the delivery schedule in

reference to the mission timeline. Three months from EOM, the final dataset with liens resolved will be delivered.

Table 5.1. Deliverables associated with the LDEX archives.

Deliverable Product	From	To	Schedule
Pre-launch sample LDEX archive ¹	LDEX Team	Small Bodies Node	On or before ORT 1
Mission and spacecraft descriptions	LDEX Team (obtain from LADEE Project)	Small Bodies Node via OLAF	On or before ORT 1
Post-launch sample LDEX archive ² (as described in Section 4.2 and 3.1 of this ICD) for peer review	LDEX Team	Small Bodies Node	EOM
Completely assembled LDEX bundle (as described in Section 3.1 of this ICD)	LDEX Team	Small Bodies Node via OLAF	EOM +3 months
Completely assembled and validated LDEX Bundle made available on-line for public access	Small Bodies Node	Small Bodies Node	EOM +4 months
Completely assembled and validated LDEX Bundle for long term storage	Small Bodies Node	PDS, NSSDC	EOM +4 months

¹The pre-launch sample archive includes the draft data product SIS, sample LDEX data products and, and the draft LDEX science data SIS.

²Post-launch sample archive includes flight data from the 10 day science commissioning phase through 20 days into the science phase, for a total duration of 30 days of data coverage.

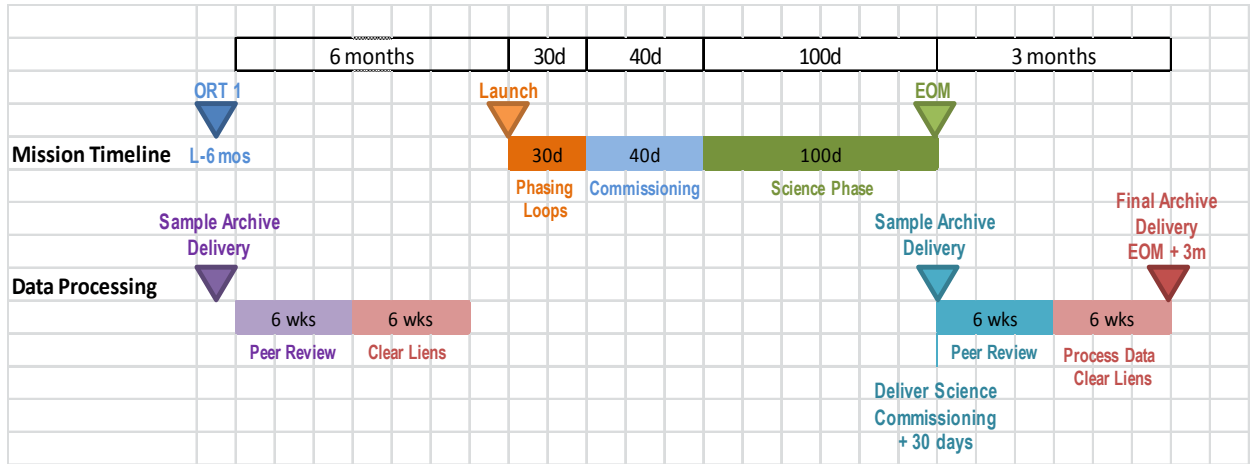


Figure 1: Data processing timeline against mission events and milestones.