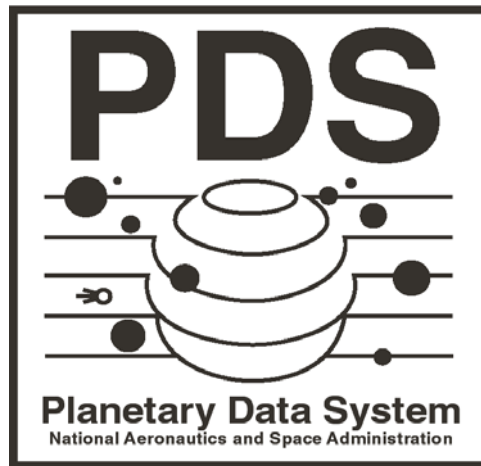


# **Planetary Data System**

## **PDS-NSSDC Interface Test Plan**

**January 3, 2006**

**Version 1.1**



Jet Propulsion Laboratory  
Pasadena, California

## CHANGE LOG

Revision	Date	Description	Author
Initial Draft – 0.051017	Oct 17, 2005	Initial cut based on the current schedule and FY 2006 Award Fee criteria.	S. Hardman
0.051018	Oct 18, 2005	Added a procedure for configuring and executing the MPGA software.	S. Hardman
1.0	Oct 23, 2005	Removed the signature page. Changed the title of section 2.0 to Test Procedure. Populated Appendix A with the contents of an email from Pat McCaslin.	S. Hardman
1.1	Jan 03, 2006	Reworked each of the test phases according to the data set content instead of the volume size and data transfer mechanism.	S. Hardman

# TABLE OF CONTENTS

Section Title	Page
<b>1.0 INTRODUCTION.....</b>	<b>4</b>
1.1 Purpose .....	4
1.2 Scope .....	4
1.3 Audience .....	4
1.4 Controlling Documents.....	4
1.5 Applicable Documents .....	4
<b>2.0 TEST PROCEDURE .....</b>	<b>5</b>
2.1 Create AIP .....	5
2.2 Transfer AIP.....	5
2.3 Retrieve and Store AIP .....	5
2.4 Request and Transfer AIP.....	5
2.5 Retrieve and Verify AIP .....	6
<b>3.0 TEST PHASES .....</b>	<b>7</b>
3.1 Phase I .....	7
3.2 Phase II .....	7
3.3 Phase III.....	8
<b>4.0 TEST SCHEDULE .....</b>	<b>9</b>
<b>APPENDIX A MPGA INFORMATION .....</b>	<b>10</b>
<b>APPENDIX B ACRONYMS .....</b>	<b>11</b>

## **1.0 INTRODUCTION**

The National Space Science Data Center (NSSDC) has defined an Archival Information Package (AIP) and is in the process of tailoring it to support the packaging and transfer of a Planetary Data System (PDS) volume. The NSSDC has provided the Multi-File Package Generator and Analyzer (MPGA) software, which is to be run at a customer site for generating AIPs using the Consultative Committee for Space Data Systems (CCSDS) Standard Formatted Data Unit (SFDU) container.

### **1.1 Purpose**

The purpose of this document is to provide a plan, procedures and schedule for testing the PDS-NSSDC interface.

### **1.2 Scope**

This document is scoped according to the time frame and milestones specified by the following FY 2006 NASA Award Fee criteria item:

Completion of three test electronic deliveries to the NSSDC, retrieval of these datasets after processing and deep archive by the NSSDC, and validation of data integrity of the retrieved data. Due date: 2/28/2006.

### **1.3 Audience**

This document is written primarily for those who will participate in the testing of the PDS-NSSDC interface. The expected audience includes:

- PDS Engineering Node (EN) Staff
- NSSDC Staff

### **1.4 Controlling Documents**

[1] Planetary Data System (PDS) Level 1 and 2 Requirements, July 6, 2005.

[2] PDS-NSSDC Memorandum of Understanding (MOU).

### **1.5 Applicable Documents**

[3] Planetary Data System (PDS) Standards Reference, August 1, 2003, Version 3.6, JPL D-7669, Part 2.

## 2.0 TEST PROCEDURE

This test plan focuses on testing different PDS data sets and volume sizes, within the current MPGA software 2-gigabyte limit, in phases. Each of these phases will generally follow the same test procedure. This section of the document describes that procedure. The procedure assumes that the MPGA software, provided by the NSSDC, has been installed in the target PDS environment and that the PDS test volumes are accessible in that environment.

### 2.1 Create AIP

The test will begin with the selection of an appropriate PDS compliant volume(s) [3] for the current test phase. The following steps should then be performed:

- Request an NSSDC identifier from NSSDC staff. The *aareadme.txt* and *voldesc.cat* files for the target PDS volume must be provided to NSSDC.
- Configure the MPGA software with the NSSDC identifier.

For this test the NSSDC identifier has been generated and the MPGA software has been pre-configured by the NSSDC staff.

- Execute the MPGA software with appropriate arguments. An AIP is created upon successful completion. An AIP consists of an AIP file and a log file named *TPDS0000000001\_AIPfile.sfd.testfile* and *out-PDS-PACKAGE-GENERATOR.log*, respectively. The command follows:

```
[starburst: /home/user/mpga/bin] ./COMMANDS/PDS-PACKAGE-GENERATOR.v2.interactive {volume-path}
```

### 2.2 Transfer AIP

The AIP(s) is/are transferred from the PDS to the NSSDC via the File Transfer Protocol (FTP) mechanism. NSSDC staff will provide PDS staff with an IP address, user name, password and target directory for accessing an NSSDC FTP server. Once the transfer is completed, PDS staff will notify NSSDC staff of the status and content of the transfer.

### 2.3 Retrieve and Store AIP

The AIP(s) is/are retrieved from the PDS via FTP and placed into deep archive at the NSSDC. The process for placing an AIP into deep archive is not part of this test and will not be elaborated on further.

### 2.4 Request and Transfer AIP

The PDS will request the AIP(s), identified by their NSSDC identifier(s), from the NSSDC. The AIP(s) is/are transferred from the NSSDC to the PDS via FTP.

## **2.5 Retrieve and Verify AIP**

The AIP(s) is/are retrieved from the NSSDC via FTP and unpackaged at the PDS using the MPGA software. The retrieved volume(s) is/are compared to the original volume(s) using checksums to verify data integrity.

### 3.0 TEST PHASES

The testing of the PDS-NSSDC interface will be performed in three phases corresponding with the three test electronic deliveries specified in the Award Fee item. The phases were determined based on the selection of different data sets and volume sizes. Each of the following test phases will follow the test procedure described in section **Error! Reference source not found.** of this document. The procedure for testing each of these phases will be slightly different corresponding to the data sets selected.

#### 3.1 Phase I

The test for this phase will involve the generation of two AIPs, each containing a *Mars Global Surveyor (MGS) Thermal Emission Spectrometer (TES)* volume (mgst\_1230 and mgst\_1232), which are about 600 megabytes each. Each of the volumes contains products from the *MGS-M-TES-3-TSDR-V2.0* data set.

#### 3.2 Phase II

The test for this phase will involve the generation of two AIPs. The first AIP contains the *Voyager 1 Jupiter Encounter Data (1979-02-28 to 1979-03-22)* volume (vg\_1501), which is about 383 megabytes. This volume contains the following data sets:

- VG1-J-CRS-5-SUMM-FLUX-V1.0
- VG1-J-LECP-4-SUMM-AVERAGE-15MIN-V1.1
- VG1-J-LECP-4-SUMM-SECTOR-15MIN-V1.1
- VG1-J-MAG-4-RDR-HGCOORDS-1.92SEC-V1.0
- VG1-J-MAG-4-SUMM-HGCOORDS-48.0SEC-V1.0
- VG1-J-MAG-4-RDR-HGCOORDS-9.60SEC-V1.0
- VG1-J-MAG-4-RDR-S3COORDS-1.92SEC-V1.1
- VG1-J-MAG-4-SUMM-S3COORDS-48.0SEC-V1.1
- VG1-J-MAG-4-RDR-S3COORDS-9.60SEC-V1.1
- VG1-J-PLS-5-SUMM-ELE-MOM-96.0SEC-V1.1
- VG1-J-PLS-5-SUMM-ION-MOM-96.0SEC-V1.1
- VG1-J-PLS-5-SUMM-ION-L-MODE-96S-V1.0
- VG1-J-PLS-5-SUMM-ION-M-MODE-96S-V1.0
- VG1-J-PLS-5-SUMM-ION-INBNDWIND-96S-V1.0
- VG1-J-POS-6-SUMM-HGCOORDS-V1.0
- VG1-J-POS-6-SUMM-S3COORDS-V1.1
- VG1-J-PRA-4-SUMM-BROWSE-48SEC-V1.0
- VG1-J-PWS-2-RDR-SA-4.0SEC-V1.1
- VG1-J-PWS-4-SUMM-SA-48.0SEC-V1.1
- VG1-J-SPICE-6-SPK-V2.0

The second AIP contains the *SBN Online Asteroid Data, December 2004* volume

(as2004\_0001), which is about 72 megabytes. This volume contains the following data sets:

- EAR-A-I0035-3-SDSSMOC-V1.0
- EAR-A-I0034-3-WHITELEY-PHOT-V1.0
- EAR-SA-COMPIL-3-SATELLITE-COLOR-V1.0
- EAR-A-COMPIL-3-TNO-CEN-COLOR-V1.0
- MSX-A-SPIRIT3-5-SBN0003-MIMPS-V1.0
- IRAS-A-FPA-3-RDR-IMPS-V6.0
- EAR-A-3-RDR-OCCULTATIONS-V2.0
- EAR-A-5-DDR-DERIVED-LIGHTCURVE-V6.0
- EAR-A-5-DDR-RADARSHAPE-MODELS-V2.0
- EAR-A-5-DDR-RADAR-V10.0
- EAR-A-5-DDR-ASTNAMES-DISCOVERY-V8.0
- EAR-A-5-DDR-ASTERMAG-V8.0

### **3.3 Phase III**

The test for this phase will involve the generation of a single AIP containing four *Galileo Near Infrared Mapping Spectrometer (NIMS)* volumes (go\_1005, go\_1006, go\_1007 and go\_1008), which is about 1.4 gigabytes. Each of the volumes contains products from the GO-J-NIMS-2-EDR-V2.0 data set.



## 4.0 TEST SCHEDULE

The schedule for testing the PDS-NSSDC interface assumes staff availability at both the PDS EN and NSSDC. The schedule covers the three phases listed in section **Error! Reference source not found.** of this document as well as previous and follow-on activities.

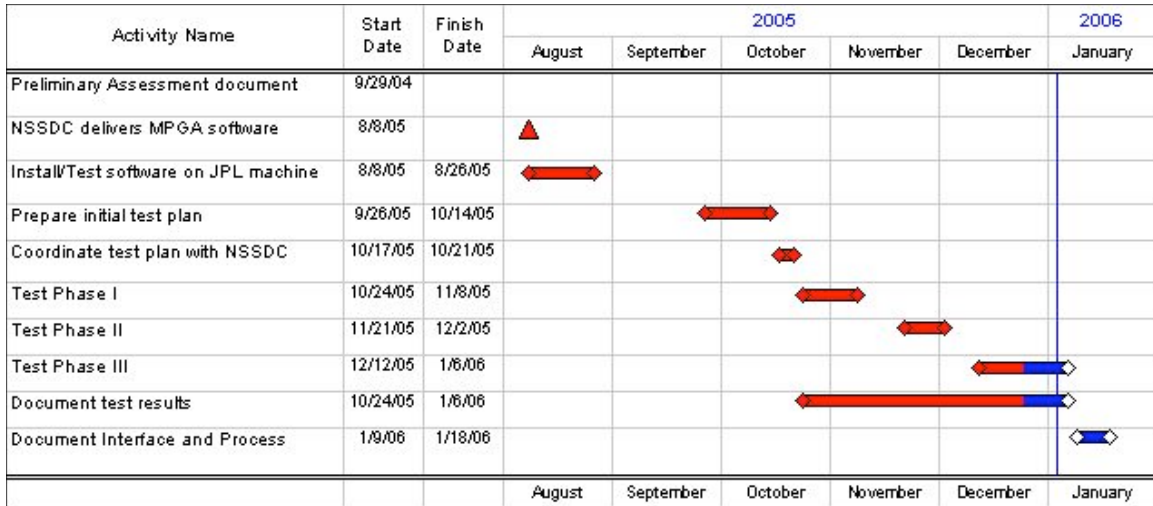


Figure 4.1 – Test Schedule

## APPENDIX A    MPGA INFORMATION

The following was extracted from an email sent by Pat McCaslin at NSSDC regarding configuration and execution of the MPGA software:

Attached are two gzipped tar files containing the MPGA executables and the various configuration files needed to run them. Also attached is a script created when Mark ran MPGA on "starburst".

Place the gzip files in an empty directory and unzip and untar them. One of the subdirectories that will be created is "bin". Set your working directory to that.

Mark has created command files to run several of the MPGA utilities in the mode appropriate to your environment.

- COMMANDS/PDS-PACKAGE-GENERATOR.v2.interactive – Allows the operator to specify a directory for packaging, plus it calls the MPGA-packager.
- COMMANDS/PDS-PACKAGE-GENERATOR.v2.cmd – Calls the MPGA-packager, using the directory previously set by #1 above. The AIP created is: ./bin/TPDS0000000001\_AIPfile.sfd.testfile. The output log (required when delivering to NSSDC) is: ./bin/out-PDS-PACKAGE-GENERATOR.log
- COMMANDS/PDS-PACKAGE-GENERATOR.v2.splitter.cmd – Reads an existing AIP and creates two output files: an attributes file and a data file. This allows verification of an AIP when it is retrieved from NSSDC.
- COMMANDS/PDS-PACKAGE-GENERATOR.v2.extractor.cmd – Used at the NSSDC to ingest AIPs. The extractor reads the AIP and returns attribute information that allows NSSDC to identify the AIP. It also computes a checksum for the AIP and compares it with the checksum from the MPGA processing log that was delivered with the AIP. I don't think you will have a need to run this.

It appears that in the absence of a completed PDS file attributes matrix, Mark has recorded the NSSDC collection ID in a configuration file. For this test all AIPs created will have collection ID "PSPG-00729" recorded in the attribute object. For testing purposes this shouldn't matter.

Once an AIP has been created FTP the AIP and the MPGA output log file to NSSDC. (TPDS0000000001\_AIPfile.sfd.testfile & out-PDS-PACKAGE-GENERATOR.log)

## **APPENDIX B    ACRONYMS**

Acronyms pertaining to this document:

AIP	Archival Information Package
CCSDS	Consultative Committee for Space Data Systems
EN	Engineering Node
FTP	File Transfer Protocol
JPL	Jet Propulsion Laboratory
MOU	Memorandum of Understanding
MPGA	Multi-File Package Generator and Analyzer
NASA	National Aeronautics and Space Administration
NSSDC	National Space Science Data Center
PDS	Planetary Data System
SFDU	Standard Formatted Data Unit