Attachment J-06

KDP-P-5042
Rev: Basic

Engineering and Technology Directorate
Acceptance Data Package Process Document

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Engineering and Technology Directorate
Acceptance Data Package Process Document

July 1, 2013

Approved by:

_____

Oscar Toledo
Acting Director, Engineering and Technology

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Acceptance Data Package Requirements

Revision History		
Revision	**Description**	**Date**
Basic	Initial release	July 1, 2013

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1. **Purpose:**
The purpose of this Kennedy Documented Procedure (KDP) is to define and specify the minimum requirements for information, documentation, and format to be included within Acceptance Data Packages (ADP) for the Engineering and Technology Directorate. This KDP applies to ADPs created during in-house fabrication and obtained through contract from outside suppliers.

2. **Applicability and Scope:**
This KDP applies to all new procurements, fabrication, and assemble(s), created in house or contracted in support of the KSC Engineering & Technology Directorate.

3. **Applicable Documents:**
The following document represents the authoritative source and requirements for this KDP:

GSDO-PLN-1027	Ground Systems Development and Operations Program Ground Hardware/Software Acceptance Data Package Plan (Draft revision)

3.1 Reference Documents:

MPCV 70146	Orion Multi-Purpose Crew Vehicle Program (MPCV) Acceptance Data Package (ADP) Requirements
SLS-RQMT-014	Space Launch Systems (SLS) Program Safety and Mission Assurance (S&MA) Requirements
SSP 30695	Acceptance Data Package Requirements Specification

Note: Although the above reference documents were taken into consideration in the creation of this KDP, when supporting the above programs any requirement in the reference document outside of those defined in this KDP shall also be met.

4. **General Requirements:**

4.1 An Integrated Hardware/Software ADP, as defined in this document, shall be prepared for each hardware/software item delivered to the KSC Engineering & Technology Directorate. The ADP shall reflect the status of the hardware/software at the time of acceptance and shall be delivered concurrent with the hardware/software unless otherwise specified in the contract.

4.2 The ADP Structure shall be divided into separate sections with each section containing specific data. Each ADP will be assembled as follows:

a. Figure 1 Hardware Acceptance Data Package – Structure
b. Figure 2 Software Acceptance Data Package - Structure

All acceptance data elements shall be provided within the ADP delivered / submitted in hard copy and an electronic file/submission

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4.3 Data elements delivered in an electronic file/submission shall be provided as follows:

- All acceptance data delivered in a text format shall be in English and clearly legible.
- All textual data shall be delivered in a format which is printable, read-only, un-protected, and capable of supporting content copying or text extraction, preferably on CD, DVD, or Blu-ray disc.
- All textual acceptance data elements identified in this document shall be;
  - Comprised of data items specified in Table 1.
  - Accumulated during the fabrication and testing of each deliverable item.
  - Submitted in both hardcopy and electronic formats; with the electronic copy being in searchable Portable Document Format (PDF) format.
- Pyrotechnic hardware data packs shall be in accordance with the component's specification.
- Graphical data such as graphs, drawings, diagrams shall be provided in PDF format and also delivered in the ADP provider's original/native format when contractually imposed.

4.4 The following Forms shall be used in the creation of the ADP and shall be provided to the suppliers for including in their ADP.

4.2.1 KDP-F-5042A ADP Inventory Checklist
4.2.2 KDP-F-5042B ADP Index
4.2.3 KDP-F-5042C ADP Approvals
4.2.4 KDP-F-5042D ADP Deviation/Waiver Listing
4.2.5 KDP-F-5042E ADP Shortages
4.2.6 KDP-F-5042F ADP Unplanned/Deferred Work
4.2.7 KDP-F-5042G ADP As-Designed Indentured Listing
4.2.8 KDP-F-5042H ADP As-Built Indentured Listing
4.2.9 KDP-F-5042J ADP Operating Time/Cycle
4.2.10 KDP-F-5042K ADP Age Sensitive/Time Action Item

Note: Examples of preferred formats, as applicable, containing the minimum data elements are provided herein. It is recommended that these formats be used in order. However, supplier's formats are acceptable if the required data content is submitted.

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4.5 The ADP Index page shall identify all the data items/sections.

a. When a submittal as identified in Figure 1 or 2 is included, sign or stamp on ADP index page next to that item.
b. When the data item/section has no submittal or is not applicable, indicate "N/A" on ADP index page next to that item.
c. The electronic copy shall include hyperlinks between the index page and the applicable section cover page, and shall be in text searchable format.

4.6 ADP Format and Structure

a. Title page.
b. Index of data provided in ADP.
c. Approval signatures from Seller and Buyer.
d. Shipping Document; applicable DD Form 250/DD Form 1149 or equivalent.
e. Applicable data items as identified in Figure 1 or 2.

Note: If a specific section is not applicable to the subject hardware or software, record Not Applicable (N/A) on the ADP Inventory Checklist, form KDP-F-5042A.

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Section	Section Headings
Index Page	ADP Index
1	Approvals
2	Delivery/Acceptance (DD Form 250) or Delivery (DD Form 1149) document
3	Historical Log/Notes/Comments
4	Certificate of Conformance
5	Request for Information
6	Waivers/Deviations
7	Non-conformances and Unexplained Anomalies
8	Shortages
9	Unplanned/Deferred Work
10	Preplanned/Assigned Work
11	As-Designed/As-Built Listing
12	Engineering Drawings/Tree
13	Operating Time/Cycle
14	Age-Sensitive/Time-Action Items
15	Nonstandard Calibration Data
16	Repair Limitation Data
17	Pressure Vessel Data/Certification Plan
18	Pyrotechnic Data
19	Battery Data/MSDS
20	Temporary Installations
21	Acceptance Verification Matrix & Evidence of Acceptance Completion, & Hardware Analysis / Certification
22	Hardware Analysis / Certifications
23	Packaging, Handling, Storage, Transportation (PHS&T)/MSDS Data
24	Notes/Comments
25	Drawings & Specifications (CAD files on CD)
26	Vendor/Sub-tier Vendor
27	Warranty(ies)
28	MSDS Data

FIGURE 1: HARDWARE ACCEPTANCE DATA PACKAGE – FULL STRUCTURE

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Section	Item Description
Index Page	ADP Index
1	Approvals
2	Delivery/Acceptance (DD Form 250) or Delivery (DD Form 1149) document
3	Historical Log/Notes/Comments
4	Certificate of Conformance
5	Request for Information
6	Waivers/Deviations
7	Non-conformances and Unexplained Anomalies
8	Shortages
9	Unplanned/Deferred Work
10	Preplanned/Assigned Work
29	Program Listing/System Operating Manual
30	Logic Flows, Architecture Diagrams & Drawing Tree
31	Software Version Description Document
32	Firmware Version Description Document
33	Software Analysis/Certifications

FIGURE 2: SOFTWARE ACCEPTANCE DATA PACKAGE – STRUCTURE

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TABLE 1: TITLE AND INDEX PAGES ELEMENTS

DATA FORMATS	DATA ELEMENTS
Title - Page The cover page of the ADP identified the hardware or software item being delivered.	The ADP contains the following hardware data elements to describe the deliverable hardware item: a. Deliverable item name (nomenclature) b. Part Number c. Serial Number (If a deliverable has both a serial number and a lot number, then identify both. At a minimum, items requiring ADPs should have serial numbers.) d. Lot Number (If not applicable because the item has a serial number only, identify as "N/A". If a deliverable has both a serial number and a lot number, then identify both.) e. Program Model Number (if applicable) f. Contract Number g. Name of the providing organization h. CAGE Code i. Unique Software Identification Number (to identify the version to be used with the hardware if applicable)
Index - Page This page identifies the type of hardware or software, associated data and applicable sections contained in the ADP. See KDP-F-5042B,ADP Index, for format	a. The ADP inventory checklist, form KDP-F-5042A, is completed with associated related data (item name, document number listing)

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DATA FORMATS	DATA ELEMENTS
Section 1 - Approvals Approved ADPs for deliverable hardware/software items include date and time stamps, as well as electronic signatures belonging to the NASA and ADP provider representatives who are accountable for the accuracy, integrity, and completeness of the data. NASA will accept a scanned signature page, along with the ADP, to satisfy the preceding electronic signature requirement. The hardware acceptance data shall be verified by representatives from both NASA and the ADP provider. For the case where NASA is the ADP provider, a project-approved, NASA designated authority shall sign the ADP in lieu of a contractor representative. See KDP-F-5042C ADP Approvals for format	a. Approval Signature page. b. Contractor Signature with title c. Government Signature with title.
Section 2 - DD Form 250 / DD Form 1149 or Equivalent Provide appropriate shipping documents including any special packaging, handling, storage and/or transportation (PHS&T) requirements necessary for transportation of hardware/software.	a. Copy of signed form DD Form 250/DD Form 1149 or equivalent

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DATA FORMATS	DATA ELEMENTS
Section 3 - Historical Log / Notes / Comments Used for documenting events in chronological order to include acceptance, tests performed, rework, modification, etc; documenting details of any unusual phenomenon, occurrence, difficulty, or questionable condition during development, fabrication and testing; referencing any potential hazards to personnel or equipment; also, any other data which may be beneficial at the using organization (e.g., maintenance manual/firmware support manual, special handling/storage requirements, alignment data, weight and center of gravity data, proof load data, drawing charts, etc.).	a. Deliverable item name, part number, Commercial and Government Entity (CAGE) code Program Model Number (PMN) and serial number, as applicable. b. Deliverable software item name, identified by software identifier and version, if applicable c. Specify location if special instructions are included. d. Date, Location, and Historical Event. e. Notes/comments as applicable
Section 4 - Certificate of Conformance Created documentation certifying that all parts, assemblies, subassemblies or detail parts conform to the applicable material and process requirements of the purchase order, drawings and specifications.	a. Deliverable item P/N and S/N. b. Contract Number c. Quantity d. Invoice / Shipping Document Type and Number e. Supplier's name and CAGE Code f. Identification of certifying official g. Identification of acceptance requirement being satisfied (ref doc #) h. Acceptance test procedure i. ATP report
Section 5 - Request for Information (RFI) All RFI's created in support of the item being delivered. Use KSC Form 8-268 (Contractor Request For Information/Clarification)	a. Drawing b. Specification c. Contractor Name d. Contract Number e. Drawing____Sheet____Detail____ or Spec. No.____ Sec. No.____Para. No.____ Detail Statement of Problem

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DATA FORMATS	DATA ELEMENTS
Section 6 - Waiver / Deviation Approved waivers and deviations and Material Review (MR) or equivalent documents to the contract and/or other requirements authorizing hardware/software use or variations as applicable to the physical/functional parameters of the item being delivered (i.e., form, fit, function). See form KDP-F-5042D ADP Dev/Waiver Listing for format or use KSC Form 8-69 (Contractor Request To Use Non-Conforming Parts Or Material)	a. Deliverable item name, part number, CAGE code, PMN and serial number, as applicable. b. Deliverable software item name, identified by software identifier and version, if applicable c. Waiver/Deviation number and affected item name, part number, CAGE code, and serial number. d. A copy of the actual waiver/deviation document with a detailed description and contract authority. e. A copy of associated MR forms f. Copies of any special exemptions for government regulations
Section 7 - Nonconformance and Unexplained Anomalies Provide a record of any Unexplained Anomalies (UAs) noted during fabrication, development and/or testing and use of the deliverable hardware/software item.	a. Deliverable item name, part number, CAGE code, PMN and serial number, as applicable. b. Deliverable software item name, identified by software identifier and version, if applicable c. Nonconformance Report number index with a copy of the actual Nonconformance Report with detailed description, troubleshooting, acceptance rationale, and authority. d. Nonconformance item name, part number, and serial number.
Section 8 - Shortages Identification of physical hardware/software shortages existing at the time of delivery and copy of inspection and test/retest requirements documentation received upon shortage installation. See for KDP-F-5042E ADP Shortages for format	a. Deliverable item name, part number, PMN and serial number, as applicable. b. Deliverable software item name, identified by software identifier and version, if applicable c. Part name, part number, and CAGE code of shortage item. d. Quantity short. e. Test procedure(s) and requirement paragraph number. f. Affected next-higher assembly part number and serial number.

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DATA FORMATS	DATA ELEMENTS
Section 9 - Unplanned / Deferred Work Unaccomplished fabrication, test, inspection, or installation activities remaining to be completed at time of acceptance and delivery because of parts shortages, lack of schedule time, etc., including open Material Review actions, open nonconformance reports, open recurrence control actions, unincorporated engineering changes, mod kits, or other open work applicable to the hardware being delivered and copy of inspection and test/retest requirements per appropriate documentation to complete Unplanned/Deferred Work. See form KDP-F-5042F ADP Unplanned Deferred Work for format	a. Deliverable item name, part number, CAGE code, PMN and serial number, as applicable. b. Deliverable software item name, identified by software identifier and version, if applicable. c. Affected part number or specification, CAGE code, PMN and serial number, as applicable. d. A listing and a copy of the unplanned/deferred work. e. Test procedure(s) and requirement paragraph number.
Section 10 - Preplanned / Assigned Work Description of work from manufacturing and/or test authorized for accomplishment after item delivery because of a Program decision to ship prior to completion, or deferral of work completion because of authorized shortages. Provide a copy of inspection and test/retest requirements documentation required to complete Preplanned/Assigned Work.	a. Deliverable item name, part number, CAGE code, PMN and serial number, as applicable. b. Deliverable software identifier and version c. Authorizing work document identification. d. Description and listing of Preplanned/Assigned Work. e. Test procedure(s) and requirement paragraph number.

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DATA FORMATS	DATA ELEMENTS
Section 11 - As-Designed / As-Built Indentured Listing An indentured parts list which provides a comparison of the as-designed/as-built configuration of the hardware/software being delivered. The configuration listing consists specifically of the following: a. Subsystem, assembly, and subassembly hardware (traceable and non-traceable); b. Parts procured to a Source Control Drawing/Vendor Item Control Drawing (traceable and non-traceable); and c. Parts procured to a Specification Control Drawing/Vendor Item Control Drawing (traceable only). d. GFE Status/Summary e. Modification Kits Note: Standard hardware such as bolts, shims, etc. not controlled by a NASA drawing are excluded from ID requirement See forms KDP-F-5042G ADP As-Designed Indentured Listing and KDP-F-5042H ADP As-Built indentured Listing for format	a. Deliverable item name, part number, CAGE code PMN and serial number, as applicable. b. Deliverable software item name, identified by software identifier and version, if applicable c. Part indenture level. d. Part number, CAGE code, part serial or lot number, including Government Furnished Equipment when applicable. e. Part Quantity. f. Reference Designator of part as indicated on drawing. g. Drawing number and revision. h. Circuit reference designators (Electrical, Electronic, and Electromechanical parts).

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DATA FORMATS	DATA ELEMENTS
Section 12 - Engineering Drawing Tree A detailed drawing tree or data list to identify all drawings which define the configuration of the deliverable hardware/software item. Electronic copies of hardware drawings for the deliverable hardware item are delivered in accordance with the format specified in this document. Engineering drawings include those listed on the Acceptance Data Package Inventory Checklist, Form KDP-F-5042A, ie; Ground Integrated Schematics (GIS), System/Mechanical Schematics (SMS), Installation Drawings, etc.	a. Deliverable item name, part number, CAGE code, PMN and serial number, as applicable. b. Listing of applicable drawings as applicable, including drawing number and revision. c. The drawing tree shall be in block diagram format that identifies all systems, subsystems, equipment drawings to be delivered as part of the drawing package. The tree shall be structured in top down breakdown order, beginning with the Top Assy drawing for the equipment/system and ending with the lowest level assy.
Section 13 - Operating Time / Cycle Status at time of delivery of accumulated operating time and/or cycles of parts designated as time/cycle critical. This includes maintenance activities which are required based on operating time/cycle. See form KDP-F-5042J ADP Operating Time Cycle for format	a. Deliverable item name, part number, CAGE code, PMN and serial number, as applicable. b. Time/cycle part name, part number, CAGE code, and serial number. c. Allowable (specification requirement) and remaining operating time and/or cycles from point of delivery.
Section 14 - Age-Sensitive / Time-Action Items Limited-life items that have a maximum life limit and are subject to replacement when specified limit is reached or exceeded. Included are time-action control items having a minimum periodic functional operating limit and are subject to replacement when one or more of specified limits are exceeded. This includes maintenance activities which are required based on Age-Sensitive/Time Actions. See form KDP-F-5042K Age Sensitive Time Action Item for format	a. Deliverable item name, part number, CAGE code, PMN and serial number, as applicable. b. Age-sensitive/time-action part name, part number, CAGE code, serial number, birth date, expiration date (action due date), and type of action required (i.e., replace, service, inspect, etc.). c. Last operation and/or servicing date and next operation and/or servicing due date (time action items only).

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DATA FORMATS	DATA ELEMENTS
Section 15 - Nonstandard Calibration Data Records of measurement equipment, instrumentation, components, or systems having nonstandard calibration curves shall be provided at time of delivery.	a. Deliverable item name, part number, CAGE code, PMN and serial number, as applicable. b. Component/transducer/signal conditioner/gauge or meter, part name, part number, and serial number. c. Measurement Number. d. Range (engineering units), excitation volts (+/-), units stimulus (engineering units), and output volts or resistance. e. Temperature environment, calibration date, and stimuli values versus output expressed in engineering units or percent of full range. f. Actual calibration tabulated data points and/or calibration curves, as specified in the sensor/signal conditioner component procurement documents, will be required at time of delivery.
Section 16 - Repair Limitation Data When repair limitations are imposed by the design agency (i.e., limits the number of times a specific hardware type can be repaired), then a status of these limited repair items, which have had prior repair activity but have or have not reached the specific repair limit, shall be identified at time of delivery	a. Deliverable item name, part number, CAGE code, PMN and serial number, as applicable. b. Type of repair (i.e., bent pins, brazed joints, etc.). c. The source of the requirement (i.e., specification, etc.). d. ID method (i.e., painted, tagged, charted, etc.). e. P/N, serial or lot number of the affected item. f. Physical location of affected item. g. Number of prior repairs

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DATA FORMATS	DATA FORMATS	DATA ELEM
Section 17 - Pressure Vessel Data / Certification Plan A log of each pressure vessel's exposure to materials and pressures shall be provided at time of delivery (GSE exclusion - American Society of Mechanical Engineers (ASME) Code for Unfired Pressure Vessels. All GSE pressure Vessels which have been designed, fabricated, and tested to the requirements of the ASME Code for Unfired Pressure Vessels, Section VIII, are excluded from the log requirements. However, an ASME Form U-1, prepared in accordance with the ASME code, shall be provided at time of delivery. Requirements are specified on ASME Form U-1.	a. Deliverable item name, part number, CAGE code, and serial number. b. Pressure vessel's part name, part number, CAGE code, and serial number. c. Limited-life requirements. d. Threshold Pressure Pounds Per Square Inch Pressure Differential at Mean Sea Level (PSID at MSL). e. Pressure Limitations including threshold pressure, maximum operating pressure and proof pressure. f. Cycle Limitation for threshold pressure, maximum operating pressure and proof pressure. g. Chronological test and checkout history as listed below: 1. Proof pressure data/certification 2. Leak test data 3. Cycling data 4. Peak pressure 5. Minimum pressure 6. Total number of pressure cycles 7. Type of pressure test media 8. QC or operator stamp as required	
Section 18 - Pyrotechnic Data Provide documented evidence that both NASA and the procuring agency have accepted the pyrotechnic devices based on contractual specifications and requirements. Lot Certification – this certification reflects the current status of the device lot at time of acceptance and shall be provided with each device lot.	a. Minimum data to be included in the lot certification and marriage record is detailed in the pyrotechnic specification.	

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DATA FORMATS	DATA ELEMENTS
Section 19 - Battery Data Provide battery identification and a Toxicological Hazard Assessment to indicate the toxicity of the cell and/or battery being delivered. Provide a Materials Compatibility Assessment to indicate that the electrolyte vapors or battery off gassing will not cause a materials compatibility hazard. Identify storage requirements for cells and/or batteries, which include temperature and state-of-charge. Provide evidence that the delivered cells and/or batteries meet all Department of Transportation (DOT) requirements for the appropriate chemistry. (For example, lithium primary and lithium-ion rechargeable cells or batteries have to meet 49 CFR, Transportation, Parts 171, 172, 173, and 175). Include a Material Safety Data Sheet (MSDS) for the cells and/or batteries for transportation and handling purposes. Includes corresponding acceptance data as defined in the approved battery acceptance test plan for each type of battery.	a. Cell battery name, part number, serial number (if applicable), lot number (if applicable), cell/battery voltage, capacity, shelf/calendar life, and service/cycle life. b. Toxicological Hazard Assessment c. Materials Compatibility Assessment d. Storage requirements e. Evidence of meeting DOT transportation requirements f. MSDS for transportation purposes (see section 28 for details) g. Evidence of successful lot sample testing, acceptance testing for loose cells and batteries
Section 20 - Temporary Installations A listing of installed hardware, which is not part of the deliverable item configuration and must be removed prior to subsequent operations.	a. Deliverable item name, part number, CAGE code, and serial number. b. Identification method (painted, tagged, streamer attached, chartered, etc.). If tagged or streamer attached, indicate tag or streamer number. c. Listing of the temporarily installed part name, part number, CAGE code, and serial number. d. Physical location of the temporarily installed part and identification of when item is to be removed (i.e., prior to test, prior to continued integration, prior to flight, etc.)

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DATA FORMATS	DATA ELEMENTS
Section 21 - Acceptance Verification Matrix / Evidence of Acceptance Completion & Hardware Analysis / Certification Provide evidence of Government certification for the deliverable items (hardware and/or software). Documents to be included as applicable: a. Acceptance Verification Matrix (AVM) – lists all acceptance requirements and the verification record for each acceptance requirements b. Work Authorizing Documents (WADs) c. Acceptance Test procedures d. Test Results e. Inspection Results f. Analysis Results g. Demonstration Results h. Certificates of Compliance (from provider and/or manufacturers/vendors) i. Cleanliness Certification j. Interface Control Documents (ICD) k. Supporting Documentation as listed on the ADP Inventory Checklist, form KDP-F-5042A, for Hardware/Software	a. Deliverable hardware item name, part number, serial number, lot number or both, hardware type, CAGE code, if applicable b. Deliverable software item name, identified by software identifier and version, if applicable c. Name and organization of certifying official, certification date d. Hardware's design Certification life and expiration date e. Design and safety approvals
Section 22 - Hardware Analysis / Certifications Documented evidence attesting to the fact the delivered hardware meets specified requirements (i.e., proof load, proof pressure, cleanliness, flight, etc.).	a. Deliverable item name, part number, CAGE code, and Serial Number. b. Identification of certifying official. c. Evidence the qualification and acceptance requirements have been satisfied (reference document number). d. Acceptance test procedure number. e. ATP report number. f. Support documentation report numbers, as applicable.

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DATA FORMATS	DATA ELEMENTS
Section 23 - Packaging, Handling, Storage, Transportation Detailed description of any special Packaging, Handling, Storage, and Transportation (PHS&T) requirements necessary to transport and maintain the configuration of the hardware, including rotational hardware. Provide hardcopy of any PHS&T documentation.	The Packaging, Handling, Storage, and Transportation records consists of the following: a. Any environments that were recorded during transportation such as shock, temp., humidity, etc.
Section 24 - Notes / Comments – Used for documenting details of any unusual phenomenon, occurrence, difficulty, or questionable condition during fabrication and testing. May also be used for referencing any potential hazards to personnel or equipment. In addition, this section may be used for other data which may be beneficial at this using site (e.g., cleanliness requirements and verification data, alignment data, proof pressure certification of flex hoses, etc.).	a. Deliverable item P/N and S/N. b. Notes and comments as applicable.
Section 25 - Drawings & Specifications (CAD files on CD) Indicate if included on CD	a. Deliverable item drawing number
Section 26 - Vendor / Sub-tier Vendor Documentation Material Inspection and Receiving Report, Requisition and Invoice/Shipping Document, as applicable on the purchase order	a. Deliverable item name, part number, CAGE code, and Serial Number.

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DATA FORMATS	DATA ELEMENTS
Section 27 Warranty(ies) Warranty Letter guaranteeing and warrantying that product is free from defects in workmanship and materials for a minimum of one year.	a. Deliverable item name, part number, Commercial and Government Entity (CAGE) code Program Model Number (PMN) and serial number, as applicable b. Contract Number c. Delivery Order Number d. Certifying warranty statement e. On Contractor Company Letterhead. f. Contractor's officer signature
Section 28 MSDS Data MSDS Data. Material Safety Data Sheet (MSDS) used to convey information about the potential health and physical hazards of materials/substances used in the work environment. [Reference OSHA 29 CFR 1910.1200(G), Occupational Safety and Health Standards, Hazard Communication, Material Safety Data Sheets]	a. The chemical and common name of the material/substance. b. The physical properties of the material/substance. c. The hazards or other risks involved in the use of the material/substance, including fire and explosive potential, corrosivity, reactivity, and any known acute and chronic health effects related to exposure. d. Safe handling practices, necessary personal protective equipment, and other safety precautions. e. Emergency procedures for spill, fire, disposal, and first aid. Note: One MSDS per type of material/substance.
Section 29 - Program Listing Includes source code for all programs, subprograms/subroutines, procedures, tasks, and program modules in an electronically stored format (tape, disk, etc.) Includes source/executable code, software code and current user's guide or operating manual.	a. Identified by software identifier and version. b. Document numbers and revision

RELEASED - Printed documents may be obsolete; validate prior to use.

DATA FORMATS	DATA ELEMENTS
Section 30 - Logic Flows, Architecture Diagrams & Drawing Tree Includes architecture diagrams, logic flows, software class, software release notes, software Media listing, software patch listing and computer system configuration	a. Identified by software identifier and version. b. Document numbers and revision
Section 31 - Software Version/Description Documents A Software Version/Description Document (VDD) establishes the as-built configuration items released and provides installation and adaptation information. The VDD typically includes an inventory of system or component parts, identification of changes incorporated and installation and operating information.	a. Identified by software identifier and version b. Software VDD c. Specification Documents, amendments and/or revision d. Information Technology Security Assessment e. Mathematical Algorithms and Equations f. Software Architecture Document g. Data Description Documents
Section 32 - Firmware Version Description Document A Version/Description Document (VDD) establishes the as-built configuration items released and provides installation and adaptation information. The VDD typically includes an inventory of system or component parts, identification of changes incorporated and installation and operating information.	a. Identified by firmware identifier and version b. Firmware VDD c. Specification Documents, amendments and/or revision d. Information Technology Security Assessment e. Mathematical Algorithms and Equations f. Firmware Architecture Document g. Data Description Documents

RELEASED - Printed documents may be obsolete; validate prior to use.

DATA FORMATS	DATA ELEMENTS
Section 33 - Software Analysis/ Certification Documented evidence attesting to the fact the delivered software meets specified requirements (i.e., Software Requirements Document (SRD), Software Safety Fault Analysis).	a. Identified by software identifier and version b. Identification of certifying official. c. Evidence the qualification and acceptance requirements have been satisfied (reference document number). d. Acceptance test procedure (ATP) number. e. ATP report number. f. Support documentation report numbers, as applicable.

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APPENDIX A
ACRONYMS AND ABBREVIATIONS

ADP	Acceptance Data Package
ASME	American Society of Mechanical Engineers
ATP	Acceptance Test Procedure
AVM	Acceptance Verification Matrix
CAD	Computer Aided Design
CAGE	Commercial and Government Entity
CD	Compact Disk
CEI	Contract End Item
CFR	Code of Federal Regulations
CSCI	Computer Software Configuration Item
DOT	Department of Transportation
GFE	Government Furnished Equipment
GIS	Ground Integrated Schematics
GSE	Ground Support Equipment
ICD	Interface Control Document
MR	Material Review
MSDS	Material Safety Data Sheet
MSL	Mean Sea Level
N/A	Not Applicable
OSHA	Occupational Safety & Health Standard
PDF	Portable Document Format
PHS&T	Packaging, Handling, Storage & Transportation
PMN	Program Model Number
PSID	Pounds Per Square Inch Pressure Differential
QC	Quality Control
SMS	System/Mechanical Schematics
SRD	Software Requirements Document

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TBD	To Be Determined
UA	Unexplained Anomaly
VDD	Version Description Document
WAD	Work Authorization Document

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APPENDIX B
GLOSSARY OF TERMS

ACCEPTANCE DATA PACKAGE

Specific set of data that accompanies hardware and/or software deliveries to the using organizations, providing a complete and verified status, including the as-built configuration containing information pertinent to the acceptance of the hardware and/or software.

ACCEPTANCE REVIEW

An End Item Acceptance Review formally establishes the exact configuration for each hardware or software item at the time of acceptance/delivery by NASA or NASA designee.

AS-BUILT CONFIGURATION

An actual, physical configuration of a unit of hardware or software.

AS-DESIGNED CONFIGURATION

A configuration formally approved and released by NASA or contractor engineering release authority.

COMPUTER FIRMWARE

An assembly composed of a hardware unit and a computer program integrated to form a functional entity whose configuration cannot be altered during normal operation. The computer program is stored in the hardware unit as an integrated circuit with a fixed logic configuration that will satisfy a specific application or operational requirement.

COMPUTER SOFTWARE CONFIGURATION ITEM

The CSCI is a designation applied to software, or any of its discrete portions, which satisfies an end user function and is designated by NASA as a deliverable item. CSCIs shall be formally accepted on a DD Form 250 or its equivalent.

CONTRACT END ITEM

The Contract End Item (CEI) is a designation applied to an aggregation of hardware or software, or any of its discrete portions, which satisfies an end user function and is designated by the contract as a deliverable item. CEIs shall be formally accepted on a DD Form 250 or its equivalent. CEIs are line items in the contract or furnished by NASA in-house design activities.

CRITICAL HARDWARE

Hardware whose loss of function or improper performance could result in serious personnel injury, damage to flight hardware, loss of mission, or major damage to a significant ground asset.

DEVIATION

A Deviation is a specific written authorization, granted before the fact, to depart from a particular performance or design requirement, specification, or related document for a specific number of units or for a specified period of time.

HARDWARE

Items of identifiable equipment, including piece parts, components, assemblies, subsystems, and systems.

MODIFICATION

A physical change to delivered hardware and/or software, including spares.

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NONCOMPLIANCE

A condition that exists or will exist when a deliverable item or its related documentation is not in accordance with the baseline at the time of established contractual events.

NONCONFORMANCE

A condition of any article or material or service in which one or more characteristics do not conform to requirements. This includes failures, discrepancies, defects, and malfunctions.

OPERATIONAL SOFTWARE

Ground software that either (1) interfaces with on-orbit elements in real-time or (2) is critical to the mission (such as all control center test and certification software) including associated models and simulations and SSE software which interfaces with on-orbit elements in real time or is critical to the mission.

PRESSURE VESSEL CYCLE

A pressure vessel cycle is recorded when pressure increases by an amount exceeding the absolute value of Threshold Pressure (TP) and then decreases by an amount exceeding the absolute value of TP. NOTE: Pressure increases and decreases need not be continuous and small increases/decreases can exist within a recordable pressure cycle.

REQUEST FOR INFORMATION

Form used by contractors to request information, clarification, additional data, or resolution of an issue.

ROTATIONAL HARDWARE

Ground hardware being sent to the launch site to support operations that will be returned to the original owner upon completion of objective. This hardware may reside at the launch site for extended periods and therefore may need maintenance during that time.

SOFTWARE

Computer programs required to design, test, check out, maintain, or operate program hardware.

THRESHOLD PRESSURE

Minimum pressure at which theoretical cyclic flow growth can occur. Pressurization below TP does not result in reduction of vessel pressure cycle life.

UNEXPLAINED ANOMALY

An anomaly (ghost or phantom) which cannot be repeated or for which a cause cannot be determined.

WAIVER

A Waiver is a specific written authorization granted after the fact, for use or acceptance of a product which does not meet specified requirements, but is considered suitable for use “as is” or after repair by an approved method.

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