

MPR 6410.2
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MARSHALL PROCEDURAL REQUIREMENTS

AS01

IDENTIFYING, PACKAGING, HANDLING, AND MOVING PROGRAM CRITICAL HARDWARE

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 2 of 17

DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Change/ Revalidation/ Canceled)	Document Revision/ Change	Effective Date	Description
Baseline		2/21/2014	MWI 6410.1 has been re-written as an MPR in order to retain the section containing responsibilities which are no longer permitted in MWIs.
Revision	A	7/7/2017	Updated P.2.b. to revise conditions at MAF where this documents would be applicable, changed S&MA to SMA throughout document, 1.4.2 move this responsibility from 1.5.7, revised 1.6, 1.7, 1.8 to better reflect roles and responsibilities for PCH moves, and administrative updates of document and organization names throughout document.

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 3 of 17

TABLE OF CONTENTS

PREFACE

- P.1 Purpose
- P.2 Applicability
- P.3 Authority
- P.4 Applicable Documents and Forms
- P.5 Measurement/Verification
- P.6 Cancellation

CHAPTER 1. Responsibilities

- 1.1 Managers of a Program/Project Office, and/or the Engineering Directorate
- 1.2 Director, SMA Directorate
- 1.3 Move Manager
- 1.4 Office of Center Operations, Logistics Services Office, Transportation and Logistics Engineering Office
- 1.5 PCH Project Engineer Within the Transportation and Logistics Engineering Office
- 1.6 FMO
- 1.7 Organization Performing PCH Move
- 1.8 Protective Services and Export Control Office

CHAPTER 2. Identifying, Packaging, Handling, and Moving Non-Hand Carry PCH.

CHAPTER 3. Identifying, Packaging, Handling, and Moving Hand Carry PCH.

- Appendix A Definitions
- Appendix B Acronyms
- Appendix C (Reserved for Verification Matrix)
- Appendix D Records
- Appendix E PCH Definition

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 4 of 17

PREFACE

P.1 PURPOSE

To establish Center-specific requirements for identifying, packaging, handling, and moving Program Critical Hardware (PCH) and implement related requirements from NPR 6000.1 and NPR 8715.3.

P.2 APPLICABILITY

a. This MPR applies to Center personnel, programs, projects, and activities, including contractors and resident agencies to the extent specified in their respective contracts or agreements. (“Contractors,” for purposes of this paragraph, include contractors, grantees, Cooperative Agreement recipients, Space Act Agreement partners, or other agreement parties.)

b. This MPR is only applicable to the Michoud Assembly Facility (MAF) when performing operations pertaining to Space Launch Systems Core Stage Structural Test Articles, Flight Articles, Dynamic Demonstration Unit, Pathfinder Vehicle and Exploration Upper Stage Structural Test Articles and Flight Articles.

c. This MPR applies the following: all mandatory actions (i.e., requirements) are denoted by statements containing the term “shall.” The following terms also apply: “may” or “can” denote discretionary privilege or permission; “should” denotes a good practice and is recommended, but not required; “will” denotes expected outcome; and “are/is” denotes descriptive material.

d. This MPR applies the following: all document citations are assumed to be the latest version unless otherwise noted.

P.3 AUTHORITY

a. NPR 6000.1, Requirements for Packaging, Handling, and Transportation for Aeronautical and Space Systems, Equipment and Associated Components

b. NPR 8715.3, NASA General Safety Program Requirements

P.4 APPLICABLE DOCUMENTS AND FORMS

a. NRRS 1441.1, NASA Records Retention Schedules

b. MPR 6430.1, Lifting Equipment and Operations

c. MPR 8730.3, Control of Nonconforming Product

d. MWI 3410.1, Personnel Certification Program

e. MWI 8621.1, Mishap and Close Call Reporting and Investigation Program

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 5 of 17

- f. NASA-STD-8719.9, Lifting Standard
- g. NASA Form 1368, Critical Space Item (8x4)
- h. NASA Form 1368A, Critical Space Item (6x3)
- i. NASA Form 1368B, Critical Space Item (4x2)
- j. MSFC Form 199, Facilities Work Request
- k. MSFC Form 248, Test Preparation Sheet
- l. MSFC Form 3959, Test Procedure Deviation
- m. MSFC Form 4561, MSFC Handling Classification Form
- n. AS40-OI-010, Quality Assurance Surveillance Plan Guidance for Marshall Logistics Support Services (MLSS) Contract

P.5 MEASUREMENT/VERIFICATION

- a. Third party annual inspection of mobile cranes.
- b. Surveillance of the Marshall Logistics Support Services (MLSS) Contract per AS40-OI-010.

P.6 CANCELLATION

MPR 6410.2 Baseline, Identifying Packaging, Handling, and Moving Program Critical Hardware, dated February 21, 2014.

Original signed by

Todd A. May
Director

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 6 of 17

CHAPTER 1. RESPONSIBILITIES

1.1 Managers of a Program/Project Office, and/or the Engineering Directorate, or their designee (i.e., Marshall Lead Representative (MLR)) are responsible for:

1.1.1 Identifying and labeling item(s) as PCH based on risk management considerations, program requirements, and the criteria in Appendix E, PCH Definition.

1.1.2 Providing the requirements for packaging/handling/moving PCH by the following methods:

1.1.2.1 Ensuring a handling/moving procedure (formal or Test Preparation Sheet (TPS)), and if required, a handling/moving plan has been written by either the Program/Project Office, the Transportation and Logistics Engineering Office, Engineering Directorate, or support contractors to address the lifting, handling, and movement of PCH as well as the final destination shipment, basic requirements such as equipment and personnel (in accordance with MPR 6430.1), and safety/quality requirements.

1.1.2.2 Completing an MSFC Form 4561 or equivalent for each item/type of PCH to be moved.

1.1.2.3 Providing any necessary unique handling equipment for packaging/handling/moving.

Note: This responsibility encompasses MSFC and offsite contractor efforts to ensure that all elements understand and accomplish assigned function, all equipment and handling/moving plans and procedures are available to support program schedules, and handling/moving problems are promptly identified and resolved.

1.1.3 Assigning a Move Manager or requesting a PCH Project Engineer from the Transportation and Logistics Engineering Office.

1.1.4 Ensuring deviations to these requirements are allowed only with agreement between representatives of the MLR and the designated Move Manager/PCH Project Engineer.

1.1.5 Ensuring responsibility interfaces are established between prime contractors and MSFC for handling PCH when delivered to MSFC.

1.1.6 Ensuring shipments of PCH to/from MSFC are coordinated with the Transportation Officer and Safety and Mission Assurance Directorate (SMA) to ensure proper packaging requirements are met.

1.1.7 Ensuring that MSFC contracts for design and fabrication of PCH hardware contain the requirements for preparation and implementation of handling/moving plans and procedures.

1.1.8 Ensuring that all contracts which involve the procurement of PCH contain appropriate provisions to ensure contractor compliance with the intent of this document and contracts require

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 7 of 17

that all documentation associated with PCH hardware be conspicuously marked “PROGRAM CRITICAL HARDWARE.”

1.1.9 Ensuring mark ups (sometimes referred to as redlines) to the as-run handling/moving procedures are concurred in by a representative from each signing organization and documented on a MSFC Form 3959 or on the procedure itself.

1.1.10 Ensuring that accidents or incidents involving PCH are reported in accordance with MWI 8621.1 and MPR 8730.3.

1.1.11 Ensuring the implementation of the handling/moving plan and procedure as written by either the Program/Project Office, the Transportation and Logistics Engineering Office, the Engineering Directorate, or support contractor.

Note: Hands-on performance of handling/moving PCH can be made by properly certified employees from the Program/Project, ED, support contractors, or Facilities Management Office (FMO).

1.1.12 Forwarding final handling/moving procedures to appropriate data center, to maintain or keep in accordance with NRRS 1441.1, 8/103 or 8/107.

1.1.13 Ensuring that a PCH certified handler packages, handles, or moves hand-carry PCH per MWI 3410.1.

1.2 The Director, SMA Directorate is responsible for:

1.2.1 Providing advice and assistance to Center organizations on the safety and quality aspects of the design and operational activities involved in packaging, handling, and moving PCH.

1.2.2 Ensuring PCH handling/move plans and procedures and related documentation (hazard analysis and equipment variances, when required) are reviewed and approved by the appropriate safety and quality representatives.

1.2.3 Ensuring non-hand carried PCH packaging/handling/moves are monitored by the appropriate safety and quality representatives.

Note: Hand-carried PCH does not require SMA monitoring unless specified in a handling/moving procedure.

1.2.4 Coordinating required training and certification for all personnel who are involved in the packaging, handling, and movement of PCH at MSFC per MWI 3410.1.

1.2.5 Providing copies of personnel PCH certifications to the MLR, PCH Engineer, or Move Manager upon request.

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 8 of 17

1.3 The Move Manager is responsible for:

1.3.1 Coordinating the preparation and approval of PCH handling/move plans and procedures upon request from MLR.

1.3.2 Serving as the MSFC central point of contact for carrying out assigned handling/moving plans and procedures. This includes:

1.3.2.1 Coordinating the pickup and delivery of PCH at local contractor's facilities.

1.3.2.2 Initiating any necessary MSFC Form 199, for manpower, tree limbs removed, etc.

1.3.2.3 Providing certified personnel and equipment for assigned PCH packaging, handling, and moves per MWI 3410.1.

1.3.2.4 Ascertaining the escorts needed for assigned moves by taking into consideration the size of the item, route to be traveled, and the sensitivity of the item.

1.4 Office of Center Operations, Logistics Services Office, Transportation and Logistics Engineering Office, is responsible for:

1.4.1 Appointing a PCH project engineer to act as a Move Manager for non-hand carry PCH as requested by the Program/Project Office, Engineering Directorate, or designee.

1.4.2 Maintaining, testing, and certifying all MSFC-owned mobile handling equipment in accordance with NASA-STD-8719.9 and MPR 6430.1

1.5 PCH Project Engineer within the Transportation and Logistics Engineering Office is responsible for:

1.5.1 Acting as Move Manager for assigned PCH moves. (See Move Manager responsibilities in 1.3.)

1.5.2 Providing and/or assisting in the determination of modes of transportation available to satisfy the PCH transportation requirement specified in the handling/moving plan and procedure.

1.5.3 Reviewing contractors' PCH handling/moving plans and procedures as requested.

1.5.4 Providing requested support to the MLR in reviewing, evaluating, and investigating adequacy and/or mishaps associated with the prime or support contractors in the area of PCH handling and certifications.

1.5.5 In conjunction with SMA, conducting audits of prime and subcontractor contractors upon the request of the MLR.

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 9 of 17

1.5.6 Assisting the MLR upon request in the interpretation and contractual application of MSFC standards, NASA standards and specifications, and other applicable specifications on packaging, marking, handling, and moving PCH.

1.6 FMO is responsible for:

1.6.1 Ensuring that the maintenance, testing, and certification of all fixed lifting equipment and auxiliary handling equipment is in accordance with NASA-STD-8719.9 and MPR 6430.1.

1.6.2 Serving as technical monitor for all PCH operations requiring the services of the FMO support contractor.

1.7 Organization performing PCH move (including but not limited to Engineering Directorate, FMO, MAF, MLSS) is responsible for:

1.7.1 Ensuring that adequate equipment, supplies, and tools are available for the timely performance of assigned operations.

1.7.2 Performing the “hands-on” handling/moving of PCH as defined in assigned handling/moving plans and procedures.

1.7.3 Ensuring that support personnel have received adequate training and certification for the assignment being addressed.

1.7.4 Reviewing draft and final handling/moving plans and procedures to ensure availability of equipment and manpower.

1.8 Protective Services and Export Control Office is responsible for:

1.8.1 Supporting the handling/moving of PCH within MSFC by furnishing security vehicles and personnel as required affording protection to equipment and operations during the packaging/handling/moving of PCH.

1.8.2 Interfacing with law enforcement and other security organizations and agencies as it pertains to the packaging/handling/moving of PCH.

1.8.3 Providing security threat assessments as required by the MLR.

1.8.4 Providing a security representative at locations other than MSFC as requested by the MLR.

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 10 of 17

CHAPTER 2. IDENTIFYING, PACKAGING, HANDLING, AND MOVEMENT OF NON-HAND CARRY PCH

2.1 Item shall be identified as PCH by Managers of a Program/Project Office, and/or the Engineering Directorate, or their designee (i.e., MLR) based on the definition of PCH as defined in this MPR.

2.1.1 Identification shall be designated as PCH on an MSFC Form 4561, or equivalent, and labeled with critical space item label, NASA Form 1368, A or B.

2.2 Requirements for the handling, packaging, and movement of non-hand carry PCH shall be established in a handling/moving plan and/or procedure per NASA-STD-8719.9 and MPR 6430.1 and written by either the Program/Project Office, the Transportation and Logistics Engineering Office, Engineering Directorate, or support contractors.

2.3 The handling/moving procedure shall be approved by SMA, Move Manager, or PCH Engineer and support personnel making the move.

2.4 The implementation of handling, packaging, and movement of the PCH shall be accomplished by properly certified employees from the Program/Project, ED, support contractors, or FMO following the handling/moving procedure.

2.5 Employees who monitor the handling, packaging, and movement of PCH shall be trained in accordance with MWI 3410.1.

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 11 of 17

CHAPTER 3. IDENTIFYING, PACKAGING, HANDLING, AND MOVEMENT OF HAND-CARRY PCH

3.1 Item shall be identified as PCH based on the definition of PCH as defined in this MPR.

3.1.1 Identification shall be designated as PCH on an MSFC Form 4561, or equivalent, and labeled with critical space item label, NASA Form 1368, A or B.

3.2 PCH shall be moved by a PCH certified product handler as required by MWI 3410.1.

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 12 of 17

APPENDIX A

DEFINITIONS

Critical Space Item Label (NASA Form 1368, 1368A, or 1368B). A standardized distinctive label/tag prominently displayed on or near (but not permanently affixed to flight items) PCH and on the interior and exterior packages and shipping containers. The purpose of the label is to alert all personnel handling and shipping such hardware of its criticality to the program effort. The Critical Space Item Label indicates that the item may be PCH. It does not necessarily indicate that an item is PCH unless accompanying documentation also states that it is. The NASA Critical Space Item Label is obtained through supply channels.

Formal Handling/Moving Procedure. A document used to implement the requirements of handling/moving a PCH item that is outsized or has unique parameters to be addressed such as size, weight, limitations of vibration, acceleration, humidity, temperature, and other environmental/handling criteria. The minimum approval signatures are Move Manager or PCH project engineer, MLR, SMA, and support personnel making the move.

Hand-carry. Items which are a maximum of 35 pounds and smaller than 25” by 25” by 25,” and can be moved by one person. An item not meeting these criteria may also be considered a hand-carry if it can be moved by one person and a waiver is signed by the PCH project engineer/Move Manager and MLR.

Handling/Moving. Processing, arranging, installing, aligning, lifting (manually or using hoisting equipment), loading, or similar operations performed with or upon hardware during its lifetime. The act of transporting, towing, shipping, and/or other similar operations involved in transfer of hardware from one location to another.

Handling/Moving Plan. A document that states the overall desired outcome of events related to the handling/moving of PCH hardware.

Handling/Moving Procedure. A document that provides a sequence of steps, preparatory and operational, for conducting the handling/moving operation for PCH. Types of handling/moving procedures include formal handling/moving procedures (A.2) and TPS (A.14).

Marshall Lead Representative (MLR). MSFC Lead Representative is an individual having the authority to make decisions for the government in identifying PCH, ensuring contractor compliance, and managing the moving/lifting of PCH for their respective program/project and/or contracts.

Move Manager. The responsible civil service or contractor person who assures the physical handling/moving of PCH by his/her respective organization. The move manager monitors movements of PCH. The move manager function can be carried out by the Program Project Office, Engineering Directorate, or assigned to a Program Project Engineer from the Transportation and Logistics Engineering Office.

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 13 of 17

MSFC Handling Classification Form (MSFC Form 4561). The form that the owner of an item to be moved uses to document if the item is PCH, critical, or non-critical. Its use is specified in MPR 6430.1.

Outsized. Any product that is greater than 10,000 pounds or products that are of configurations which cannot be readily handled with conventional material handling equipment.

Packaging. Application or use of adequate protective measures to prevent damage from physical hazards or conditions including: wrappings for protection from physical danger, cushioning interior containers, and complete identification marking of unit and intermediate packages or containers.

Program Critical Hardware (PCH). See Appendix E, for further information.

PCH Project Engineer. A Move Manager that is designated from the Transportation and Logistics Engineering Office who also has additional responsibilities. (See 1.5.)

Test Preparation Sheet (TPS) (MSFC Form 248). A work authorizing document that may define test facility buildup, test activation/operations, or hardware modification, movement, assembly, or test not previously authorized by other work authorizing documents. For a move, the minimum approval signatures are the PCH project engineer, move manager, and SMA.

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 14 of 17

APPENDIX B

ACRONYMS

FMO	Facilities Management Office
MAF	Michoud Assembly Facility
MLR	Marshall Lead Representative
MLSS	Marshall Logistics Support Services
MPR	Marshall Procedural Requirements
MWI	Marshall Work Instructions
NASA-STD	NASA Standard
NPR	NASA Procedural Requirements
NRRS	NASA Records Retention Schedules
OI	Organizational Issuances
PCH	Program Critical Hardware
SMA	Safety and Mission Assurance Directorate
TPS	Test Preparation Sheet (MSFC Form 248)

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 15 of 17

APPENDIX C

(Reserved for Verification Matrix)

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 16 of 17

APPENDIX D

RECORDS

Final handling/moving procedures are kept by the appropriate data center, or the responsible organization in accordance with NRRS 1441.1, 8/103 or 8/107. Handling/moving plans are kept by the responsible organization per NRRS 1441.1, 8/103 or 8/107. The responsible organization sets the length of retention based on the retention band (range) associated with NRRS 8/103 or 8/107.

Marshall Procedural Requirements AS01		
Identifying, Packaging, Handling, and Moving Program Critical Hardware	MPR 6410.2	Revision: A
	Date: July 7, 2017	Page 17 of 17

APPENDIX E

PCH DEFINITION

E.1 PCH is considered as items meeting one or more of the criteria listed below:

E.1.1 An item which supports the critical path in the program schedule and the loss, damage, or delay of which would seriously impact program schedules.

E.1.2 Assemblies with close tolerances of delicate construction, which could be damaged by improper handling, and such resulting damage, could compromise a flight vehicle, payload, or the safety of personnel regardless of whether the item is considered “flight hardware.”

E.1.3 Those items designated as Class I or II hardware. Class I: Mission essential items which, in the event of loss, damage, or delay in shipment, would seriously affect the program. Class II: Delicate or sensitive items not covered by Class I or Class III. These items are those that are damaged readily by improper handling. Class III: Items requiring special handling and monitoring.

Note: This definition is meant to generally exclude raw materials and basic hardware such as nuts, bolts, brackets, electronic piece parts, and assemblies which will be consumed or become part of an item which would be covered by E.1.1, E.1.2, and E.1.3 above.)