

**MPR 5340.1  
REVISION E**

**EFFECTIVE DATE: January 27, 2017  
EXPIRATION DATE: January 27, 2022**

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# **MARSHALL PROCEDURAL REQUIREMENTS**

**ED01**

## **CONTROLLED WORK AREA, CLEANROOM, AND FLOW BENCH OPERATIONS**

**COMPLIANCE IS MANDATORY**  
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## DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Revalidation/ Canceled)	Document Revision	Effective Date	Description
Baseline		1/14/00	Document converted from MMI 5340.1.
Revision	A	8/1/01	<p>Revised to make more consistent with MSFC-STD-246. Changed title to include "Controlled Work Areas;" added definitions for "controlled work area" and "facility." Throughout the document the terms "clean rooms and/or flow benches" were replaced with (1) "controlled work area, clean room, or flow bench" or (2) facilities.</p> <p>2.1.3 – Removed the word "weekly." 2.1.4 – Removed the word "weekly." 2.1.6 – Specified "facility analysis" quality records. 2.2.1 – Added "and a list of facility custodians is maintained as a quality record." Second 2.2.2 was renumbered 2.2.3. Added "2.2.4 The custodian maintains quality records related to training and procedural comments and changes." 2.3.5 – Removed the word "weekly." 2.3.6 – Replaced the words "red tag (MSFC TAG 7)" with "use prohibited sign." 2.3.10 – Reworded to address training for visitors. Added "2.3.11 Maintain quality records related to training and procedure revisions." 3.1 – Deleted providing facility list to SR&amp;QA. 3.2 – Under "Custodian" added – "Incorporates changes to procedure and maintains training and procedural related quality records." 3.3 – Rewording of second statement to read – "Ensures a tag reporting analysis results is placed at entrance to facility..." Reworded third statement to read "Maintains analysis records." 4.0 – Reworded list of quality records as follows: Facility analysis records – MP&amp;M's Chemistry Group shall maintain facility analysis records. List of facility custodians – Management of each organization that operates an active facility shall maintain a list of facility custodians. Training records – Facility custodian shall maintain training records for personnel using their facility. Operating Procedures – Facility custodian shall maintain procedures. All records shall be maintained for 5 years then destroyed. (Footer URL updated 11-17-2003 by Directives Manager.)</p>
Revision	B	9/26/2004	<p>Revised to comply with action from NASA HQ which includes: Changing document font to Times New Roman, changing from MPG to MPR, updating applicable documents, and general formatting. Changed "will" to "shall" in paragraphs 2.1, 2.2, 2.3, 2.3.3, 2.3.6, 2.3.10, and 3.0. 3.1, 3.2, 3.3, 3.4 – defined responsibilities in a table format. 4.0 – numbered the sections. 4.1 – deleted "quality"</p>
Revision	C	7/25/2005	<p>Updated MSFC organizational references throughout document as a result of center wide reorganization. Updated Records section to incorporate records retention schedules.</p>
Revision	D	11/5/2008	<p>Revised 2. Applicability statement to address the applicability of this directive to the Michoud Assembly Facility. [On 12-17-09, at the request of the OPRD, an administrative change was made at P.3 to update title to MPD 1280.1.]</p>
Revision	E	7/14/2011	<p>Revised to clarify the process for tailoring of the requirements of MSFC-STD-246 and for response to out-of-limit conditions. Revised definitions and nomenclature for consistency with MSFC-STD-246D.</p>

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Revalidation	E	1/27/17	Re-formatted to comply with new required template per MPR 1410.2 & as instructed in MWI 1410.1. Updated EM organizations based upon reorganization effective Nov. 27, 2016. No changes were made to technical content.
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## PREFACE

### **P.1 PURPOSE**

The purpose of this MPR is to establish requirements for operating controlled work areas, cleanrooms, or flow benches owned by or operated at MSFC as allowed by NPR 1400.1 and to implement as required by MPD 1280.1.

### **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 applies to the Michoud Assembly Facility.
- c. This MPR applies the following: all mandatory actions (i.e., requirements) are denoted by statements containing the term “shall.” The terms: “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.
- e. This MPR is applicable to organizations performing work requiring controlled work areas, cleanrooms, or flow benches.

### **P.3 AUTHORITY**

- a. NPR 1400.1, NASA Directives Procedural Requirements
- b. MPD 1280.1, MSFC Quality Management System Policy

### **P.4 APPLICABLE DOCUMENTS AND FORMS**

- a. NRRS 1441.1, NASA Records Retention Schedules
- b. MPR 1410.1, Organizational Issuances
- c. MPR 1440.2, MSFC Records Management Program
- d. MSFC-STD-246, Standard Design and Operational Criteria for Controlled Environmental Areas

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e. MSFC Form 3163, Materials and Processes Laboratory Chemistry Services Tag

## **P.5 MEASUREMENT/VERIFICATION**

The measurement and verification of all areas and operations controlled by this MPR are performed by the responsible person(s) as shown in Chapter 1.

## **P.6 CANCELLATION**

MPR 5340.1E, Controlled Work Area, Cleanroom, and Flow Bench Operations, dated July 14, 2011.

*Original signed by*

Todd A. May  
Director

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## **CHAPTER 1. RESPONSIBILITIES**

1.1 Manager, Materials & Processes (M&P) Laboratory (EM01) shall ensure that:

1.1.1 Each facility is certified with a class designation as specified by MSFC-STD-246.

1.1.2 Written operating procedures have been reviewed for each facility.

1.1.3 Facility operating procedures that specify exceptions to the requirements of MSFC-STD-246 are approved by the M&P Material Test, Chemistry and Contamination Control Branch (EM22).

1.1.4 Analyses of all operating facilities are performed.

1.1.5 A Materials and Processes Laboratory Chemistry Services tag (MSFC Form 3163) is placed at the primary entrance of each facility reporting the analysis results.

1.1.6 The facility custodian is notified if sampling results show the facility environmental limits violated.

1.1.7 EM22/Material Test, Chemistry and Contamination Control Branch maintains facility analysis records.

1.2 Manager of each organization that operates an active facility shall ensure that:

1.2.1 A custodian is designated as point of contact for each facility and a list of facility custodians is maintained as a record.

1.2.2 Training, as defined in written operating procedures, is completed by all personnel assigned to each facility.

1.2.3 Written operating procedures for each facility are coordinated and approved by affected organizations.

1.2.4 The custodian maintains records related to training and procedural comments and changes.

1.3 Facility custodians shall:

1.3.1 Designate the class of each facility based on requirements contained in MSFC-STD-246.

1.3.2 Affix a sign indicating the (1) facility classification; and (2) custodian and alternate names and contact information to the primary entrance of each facility.

1.3.3 Prepare a written set of operating procedures for each facility in compliance with MSFC-STD-246 (i.e., proper entry, proper garments, cleaning, and procedures to be followed when

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environmental limits are violated). Exceptions to MSFC-STD-246, including detailed explanations, are to be documented in written operating procedures.

1.3.4 Monitor personnel using the facilities to ensure compliance with operating procedures.

1.3.5 Compare analysis data listed on MSFC Form 3163 to the applicable environmental limits in MSFC-STD-246 or from written operating procedures approved for each facility.

1.3.6 Respond to out-of-limit environmental violations in accordance with written operating procedures to prevent damage to sensitive hardware or facilities.

1.3.7 Instruct users regarding the precautions and limitations required to operate within facilities in violation until the problem is corrected and the M&P Laboratory or their representative performs analyses to show that the area is back within specification as indicated in MSFC-STD-246 or the approved written operating procedures.

1.3.8 Provide the manager of the EM22/Material Test, Chemistry and Contamination Control Branch (or designee) with a copy of each facility's written operational procedure for review and for approval of any exceptions to the requirements of MSFC-STD-246.

1.3.9 Conspicuously identify inactive facilities to preclude their use for clean facility operations and to eliminate unnecessary inspection, test, and certification activities.

1.3.10 Arrange for training of all personnel who work in the facility.

1.3.11 Ensure that visitors who have not had required training are escorted by a trained individual and gowned appropriately.

1.3.12 Maintain records related to training and operating procedure revisions.

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## CHAPTER 2. PROCEDURES

MSFC organizations and contractors shall operate all MSFC facilities in compliance with MSFC-STD-246, including exceptions documented in the facility operating procedures and approved by the EM22/Material Test, Chemistry and Contamination Control Branch.

<b>Actionee</b>		<b>Shall Perform All Actions</b>
Organization Managers	2.1	Identify controlled clean facilities within their organization.
	2.1.1	Identify custodian of each facility.
	2.1.2	Provide list of all facilities and corresponding custodians to M&P.
	2.1.3	Ensure training for personnel working in facilities.
Custodian	2.2	Use MSFC-STD-246 to identify classification and post information at facility entrance.
	2.2.1	Generate operating procedure per MSFC-STD-246 and forward to M&P for review and for approval of exceptions.
	2.2.2	Incorporate changes to procedure and maintain training and procedural-related records.
M&P	2.3	Review and approve operating procedures that contain exceptions to MSFC-STD-246.
	2.3.1	Perform compliance test on facilities per MSFC-STD-246.
	2.3.2	Notify custodian if out-of-specification limit condition is found.
	2.3.3	Ensure tag reporting analysis results are placed at entrance to facility and results provided to the custodian.
Custodian	2.4	If the facility is out of specification, respond in accordance with the written operating procedures until the out-of-limit condition is corrected.
	2.4.1	Contact M&P for compliance test to verify that the out-of-limit condition has been corrected.

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## **APPENDIX A. DEFINITIONS**

Cleanroom. An enclosed area employing control over the particulate matter in air, with temperature, humidity, pressure, and condensables controlled as required.

Controlled Work Area. An area where the environmental conditions are controlled as required to meet program requirements.

Custodian. Individual tasked with (1) maintaining controlled work area, cleanroom, or flow bench in operational order; and (2) facility operating procedures.

Flow Bench. A clean workstation or similar working enclosure with its own high efficiency particulate air (HEPA) filtered air supply exhausting over the work area in a unidirectional airflow pattern.

Facility. A controlled work area, cleanroom, or flow bench.

## **APPENDIX B. ACRONYMS**

AFS	Agency Filing Scheme
HEPA	High Efficiency Particulate Air
M&P	Materials and Processes
MPD	Marshall Policy Directive
MPR	Marshall Procedural Requirements
MSFC	Marshall Space Flight Center
NPR	NASA Procedural Requirements
NRRS	NASA Records Retention Schedules

## **APPENDIX C. VERIFICATION MATRIX (Reserved)**

None.

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## **APPENDIX D. RECORDS**

D.1 Records will be maintained per MPR 1440.2 and NRRS 1441.1. Records include the following:

D.1.1 Facility analysis records— EM22/Material Test, Chemistry and Contamination Control Branch will maintain facility analysis records per NRRS 5/35/A/1 [AFS 5330]. Temporary— Destroy 3 years after completion of final production order for the related component.

D.1.2 List of facility custodians—Management of each organization that operates an active facility will maintain a historical list of facility custodians per NRRS 8/103 or 8/107 [AFS 8000]. Temporary—Destroy/delete 5 years after termination of the last program/project for which hardware was processed within the facility.

D.1.3 Training records—Facility custodian will maintain training records for personnel using their facility per NRRS 3/33/C [AFS 3400]. Temporary—Destroy 5 years after separation of employee or when no longer needed.

D.1.4 Operating Procedures—Facility custodian will maintain procedures as an organizational issuance, in accordance with MPR 1410.1, maintain the case file per NRRS 1/72/B/2(b); Temporary-Destroy when the facility and the operating procedure is no longer in use.