



Work Instruction

DIRECTIVE NO. 270-WI-6400.1.5I

EFFECTIVE DATE: September 10, 2015

EXPIRATION DATE: September 10, 2020

APPROVED BY Signature: Marilyn C. Tolliver

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TITLE: Division

COMPLIANCE IS MANDATORY

Responsible Office: 270/Information and Logistics Management Division

Title: Storage of Project Parts

PREFACE

P.1 PURPOSE

This procedure describes the process for storage and distribution of electrical, electronic, electromechanical (EEE) parts and mechanical hardware as performed under the Information and Logistics Management Division, Code 270.

P.2 APPLICABILITY

This procedure applies to electrical, electronic, electromechanical (EEE) parts and mechanical hardware acquired by the Code 270 Information and Logistics Management Division for space flight projects and ground support systems that are covered under the scope of the Goddard Space Flight Center (GSFC) Management System (MS) Policy. Storage of these products is managed by the Code 273 Supply and Equipment Management Branch and supported by Project Support team of the Code 279 logistics services contractor.

P.3 REFERENCES

- a. 270-WI-4520.2.1, Receiving Project Parts
- b. 270-WI-6400.1.4, Packaging and Marking of Project Parts
- c. 300-PG-8730.6.1, Workmanship Manual for Electrostatic Discharge Control
- d. ANSI/ESD S20.20, Standard for the Development of an Electrostatic Discharge Program
- e. GPR 4520.2 Receiving Inspection and Test
- f. GPR 8730.1 Calibration and Metrology
- g. GSFC Form 20-2, Receiving Inspection & Test Form (RITF)
- h. GSFC Form 4-33, GSFC Nonconformance Tag
- i. IPC/DEC J-STD-033, Standard for Handling, Packing, Shipping and Use of Moisture/Reflow Sensitive Surface Mount Devices
- j. NPR 4100.1, NASA Materials Inventory Management Manual

P.4 CANCELLATION

- a. 270-WI-6400.1.5H, Storage of Project Parts

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P.5 TOOLS, EQUIPMENT, AND MATERIALS

- a. Storage Cabinets, Work Benches, Packaging and Storage Material
- b. Computer with AMMS access
- c. Temperature and Humidity meter, air ionizer, wrist strap tester, and work surface calibration stickers

P.6 SAFETY PRECAUTIONS AND WARNINGS

- a. This storage function is conducted in a general purpose-working warehouse. Standard safety precautions pertaining to use of forklifts, pallet jacks, carts, utility knives apply.
- b. Material processed may be bulky and heavy. Particular emphasis is placed on proper lifting techniques.
- c. It is mandatory that safety shoes be worn at all times while engaged in warehousing functions.
- d. It is mandatory that when working with Electrostatic Discharge Sensitive (ESDS) parts all safety and grounding rules are followed per 300-PG-8730.6.1.

P.7 TRAINING

Certification is required in order to handle any material classified as Electrostatic Discharge Sensitive (ESDS), as outlined in 300-PG-8730.6.1

P.8 RECORDS

Record Title	Record Custodian	Retention
Material Test Data	Project Parts Warehouse Supervisor	* <u>NRRS 5/31A</u> (Destroy 3 years after completion of final production order for the related component.)
Chemical/Physical Data	Project Parts Warehouse Supervisor	*NRRS 5/31A
Issue documents	Project Parts Warehouse Supervisor	* <u>NRRS 1/94A</u> (Destroy 2 years after fiscal year in which completed/ cancelled, or 3 months after conversion to an Automated Data Processing system.)
Record Title	Record Custodian	Retention

*NRRS – NASA Records Retention Schedules (NPR 1441.1)

P.9 MEASUREMENT/VERIFICATION

There are no metrics defined for this instruction.

INSTRUCTIONS

In this document, a requirement is identified by “shall,” a good practice by “should,” permission by “may” or “can,” expectation by “will,” and descriptive material by “is.”

1. Electrostatic Discharge (ESD) Storage Facility

1.1 Material subject to ESD restrictions will be stored in a protected work environment that limits the entry of contamination and controls temperature and humidity, as defined in GSFC Electrostatic Discharge (ESD) Control Plan 300-PG-8730.6.

1.2 Temperature. GSFC Electrostatic Discharge (ESD) Control Plan 300-PG-8730.6 clearly defines the humidity requirements for an ESD controlled environment but does not define a temperature comfort zone. The temperature will be maintained between 68 and 75 degrees Fahrenheit whenever possible, to maintain a comfortable working environment for the employees.

2. General Procedures and Responsibilities

This section contains procedures and responsibilities applicable to the general direction for the storage and distribution of project parts to ensure that all parts receive the proper care and handling.

2.1 Supply Operations Branch Manager

The Code 279 Supply Operations Branch Manager is responsible for providing overall supervision for the safe and responsible storage and distribution of EEE, mechanical hardware, and project parts. The supervisor ensures that designated ESD sensitive and moisture-controlled storage areas are maintained in accordance with prescribed instructions and plans and directs and coordinates those operational activities in support of the Information and Logistics Management Division mission.

2.2 Project Parts Warehouse Personnel Responsibilities

The Warehouse personnel will perform the following duties:

- a. Receive and store all project parts and documentation in designated locations.
- b. Issue parts and documentation as appropriate to customers.
- c. Maintain proper inventory control of materials.
- d. Follow Electrostatic Discharge Control and Moisture Sensitivity procedures as outlined by GSFC Electrostatic Discharge (ESD) Control Plan 300-PG-8730.6.1
- e. Ensure all ESD room and equipment are maintained and calibrated in accordance with 300-PG-8730.6 and GPR 8730.1.

3. Performance Standards

This section outlines specific standards for storage and issuance of project parts that will be monitored by the Project Parts Warehouse Supervisor.

3.1 Control and Safe Handling of Moisture Sensitive ESD Material

This section outlines the procedures to be followed for ESD material that has also been deemed “Moisture Sensitive.” It is important to remember that the conditions of moisture sensitivity are present *in addition* to the conditions of electrostatic sensitivity. Therefore when following these procedures, ESD procedures must also be adhered to properly. (Reference IPC/DEC J-STD-033, Standard for Handling, Packing, Shipping and Use of Moisture/Reflow Sensitive Surface Mount Devices, for more information.)

3.1.1 Storage of Moisture Sensitive Components

When project parts are received for storage or issuance that are identified as being moisture sensitive, personnel will take the necessary precautions to ensure that they are handled in accordance with 300-PG-8730.6.1. Moisture sensitive project parts will be stored and shipped in ESD bags that are backfilled with Nitrogen to maintain the low levels of moisture necessary to prevent damage.

3.2 Material for Direct Issue

3.2.1 ESD Sensitive Material for Direct Issue to Projects

- a. ESD materials for direct issue to the projects shall be stored in ESD controlled areas which have been designated for that project’s parts. The location of parts is maintained in either the Offline or AMMS Database, as appropriate.
- b. When the project requests that parts be issued, the stored parts will be pulled and packaged in accordance with 270-WI-6400.1.4. The project may request all parts be issued and shipped or may request that only specific parts be kitted for a particular part of the project. Conformance and quality documentation such as Material Test Data, Certificates of Conformance, etc. shall be made available to project customers and forwarded with the parts upon issuance as requested.

3.2.2 Non-ESD Sensitive Material Received for Direct Issue to Projects

- a. Non-ESD sensitive materials for direct issue to the projects are stored in areas that have been designated for that project’s parts.
- b. When the project requests that stored parts be issued, they will be pulled and packaged in accordance with 270-WI-6400.1.4. In accordance with the project’s direction only the specific parts requested will be pulled, issued, shipped and/or kitted. Conformance and quality documentation will be forwarded as requested. Issue documents and transportation tickets for items that are kitted and shipped shall be maintained by the Project Parts Warehouse Supervisor.

3.3 Material for Project and Stores Stock Inventory

3.3.1 ESD and Non-ESD Sensitive Material Received for Inventory

- a. ESD/Moisture Sensitive materials received for Stores Stock inventory are stored in the ESD/Moisture Sensitive controlled areas that have been designated for inventory. Inventory data and location information are maintained in the AMMS or Offline database, as appropriate. Conformance, quality and test documentation is maintained on file.
- b. Parts are pulled/issued to satisfy customer requisitions in accordance with their demand. A pick slip or kit pull list is generated, the part(s) is pulled from location, the parts are packaged and prepared for delivery or shipping to the customer and the appropriate database is updated to reflect these inventory actions. The parts are staged for shipping/ customer pickup, with the appropriate issue documentation. All parts issued from the inventory must be signed for by the customer receiving the material.
- c. Parts should be inspected for deterioration at the time they are being issued in response to customer requisitions.

3.4 Non-ESD Sensitive Mechanical Parts (Fasteners) Received for Stores Stock Inventory

- a. Non-ESD sensitive materials received for Stores Stock inventory are stored in the areas that have been designated for inventory. The location and quantity of parts are maintained AMMS. Appropriate conformance, quality and test documentation for these parts is kept on file.
- b. Parts are pulled/issued to satisfy customer requisitions in accordance with their demand. A pick slip is generated by AMMS, the part(s) is pulled/issued and, the part(s) are packaged and prepared for delivery to the customer. Issuing information is posted to AMMS. When requested, copies of the conformance, quality and test documentation will accompany the parts. The parts are shipped to the customer along with the issue documentation, which contains any additional information or comments about the parts being shipped not included on the pick slip. The Project Parts Warehouse Supervisor retains issue documents and transportation tickets.

3.5 Discrepancies in Inventories

- a. If a discrepancy is found between the on-hand count and the system inventory records, data search, causative research and historical records check will be completed along with a physical inspection of the storage area. Upon completion of all research, all inventory adjustments will be made in the appropriate database by the MC and a summary of all research findings and inventory adjustments will be documented on an IAV report and submitted to management.
- b. A physical inventory of the project parts shall be completed as required by NPR 4100.1. For any item where a discrepancy is found between the on-hand count and System interface, action shall be taken

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to make adjustments upon completion of an investigation or a review of management so that the counts agree and, as necessary, causative research will be completed.

- c. Materials shall be inspected for deterioration any time they are inventoried.

4.0 Quality Control of ESD Workstations and Storage Facilities

To insure the quality of parts is maintained at a static-safe workstation, the station must be maintained in accordance with 300-PG-8730.6.1. This section outlines the regular maintenance and inspection schedule of the ESD facilities. Code 279 Project Parts Warehouse Supervisor is responsible for the following:

- a. Scheduling calibration appointments with the Principal Calibration Laboratory to ensure equipment remains calibrated in accordance with GPR 8730.1 and 300-PG-8730.6.1
- b. Ensuring the ESD lab, its furniture and equipment are inspected for compliance to 300-PG-8730.6.1 and that all documentation related to these inspections is maintained in the lab as required
- c. Ensuring that any equipment or ESD lab spaces which are out of calibration or compliance are tagged Out of Service, until such time as the subject equipment or spaces are suitable for work.

All Project Parts personnel performing work in the ESD lab are responsible for:

- a. Checking the humidity reader each time they enter the room, only exposing ESD sensitive parts if the humidity levels are within the acceptable range in accordance with 300-PG-8730.6.1
- b. Check air ionizer, wrist strap tester, work surface and all equipment calibration stickers for expiration, to ensure compliance, prior to use.

5.0 Nonconformance Reporting

When products or services within the [scope of the MS](#) are found to not meet specifications, nonconformance reporting shall be done in accordance with GPR 5340.2 and GPR 5340.4, as appropriate.

APPENDIX A - DEFINITIONS

A.1 AMMS – The Advanced Materials Management System. A government database used by the Information and Logistics Management Division support contractor to purchase, receive, and inventory ILMD purchased materials. Central Receiving personnel have access to the Receiving module of AMMS in order to document the receipt of incoming materials.

A.2 Electro-Static Discharge (ESD)- A transfer of electrostatic charge between bodies at different electrostatic potentials caused by direct contact.

A.3 ESD Material- Material that is sensitive to electro-static discharge and could be damaged by it. Special Handling is required.

A.4 Moisture Sensitive Parts (MSP)- Parts that are susceptible to damage due to internal moisture during soldering. Ambient humidity permeates the part, and as the part is heated during bulk flow soldering, the water heats and expands, causing fatal damage to the part.

A.5 Project Parts- EEE parts or mechanical hardware that are obtained by the Code 279 Project Parts Section for distribution to projects or stock. These parts may be used by the projects for engineering and/or flight equipment.

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Appendix B - Acronyms

AMMS	Advanced Materials Management System
EEE	Electrical, Electronic and Electromechanical
ESD	Electrostatic Discharge
ESDS	Electrostatic Discharge Sensitive
GDMS	Goddard Directives Management System
GSFC	Goddard Space Flight Center
ILMD	Information and Logistics Management Division
MC	Material Coordinator
MS	Management System
PR/PFR	Problem Reporting/Problem Failure Reporting
WIs	Work Instructions

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CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	1 Oct. 98	
A	1 Feb. 99	<ul style="list-style-type: none"> - Adds information to section P4 on Quality Records. - Adds section 8.2 on Nonconformance Reporting
B	27 Apr. 99	<ul style="list-style-type: none"> - P5 and 9.2 - Added reference for procedures to be followed and limits to be observed when storing ESD material. Includes response to out-of-limits humidity. - Inserted new P8 Cancellation. Changed P8 to P9 and renumbered all subparagraphs under P9. - 9.6 & 9.8 - Added requirement to inspect parts for deterioration when they are issued or inspected. - 9.9.1 - Update NCR organization with correct project name and lead designation. - 9.9e - Add wording that all audit discrepancies will be documented with a NCR
C	1 June 99	<ul style="list-style-type: none"> - Modified P4 to identify proper Record Retention Schedule
D	13 August 99	<ul style="list-style-type: none"> - 9.9 - Modified to add procedures for major and minor non-conformances
E	10 Feb. 00	<ul style="list-style-type: none"> - P6. References (a) and 9.8 Inventory Control of Project Parts (b) changed reference from NHB 4100.1C to NPG 4100.1D - 9.9.1.1 Major Nonconformances - changed web site to read http://ncr.gsfc.nasa.gov
F	23 Dec. 02	<ul style="list-style-type: none"> - Added EIA Stds, GPG 1710.1, and J-STD-033 to P3. Reference list. - Added ESD Certification to P7. - Added P8.e. - Modified P9. to include no required metrics. - Modified 1.1 to include Moisture Sensitive Parts. - Added part e to 1.2 to include Moisture sensitive procedures.

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Revision	Effective Date	Description of Changes
F Cont'd		<ul style="list-style-type: none"> - Added 2.1 and subsections to add Moisture Sensitive parts into the control of Project Parts. - Modified "manual locator system" in 2.2.1a and 2.2.2a to read, "Offline Database." - Modified 2.2.1 and 2.3.1 to include Moisture Sensitive parts. - Modified 2.3.1b and 2.3.2b to include Project Parts Manual Document - Added 3. to clarify quality control of ESD facilities. - Changed Custodian Record on P8 - Added "storage" to section 1.1 - Added "f" to section 1.2 - Miscellaneous format corrections <p>Changes made in this final version (8/9/02)</p> <ul style="list-style-type: none"> - P.3 Added GPG 1710.1 - P.8 Incorporated forms into Record's chart - P.10 - Added definitions for Electro-Static Discharge, ESD Material, and Moisture Sensitive Material - Added Section 1.1 and 1.2 on ESD Storage Facility - 2.2.1 add 230-WI-6400.1.4 Packaging and marking of Material - 4. added "Corrective and Preventive Action" - Change Electrostatic Discharge (ESD) reference from NASA STD-8739.7 to NASA-STD-8739.7 - Section 4.1.1 Major Nonconformances change the Sub Project Administrator (SPA) to Nonconformance Lead (NCL)
G	04 Feb. 05	<ul style="list-style-type: none"> • As directed during the FY04 Center Rules Review, the Responsible Office modified this document to remove requirements that were no longer needed and to clearly distinguish requirements from supporting information. Administrative changes were made throughout to correct responsible organization names and codes, and to re-title Goddard Procedures and Guidelines (GPG) to Goddard Procedural Requirements (GPR) and NASA Procedures and Guidelines (NPG) to NASA Procedural Requirements (NPR). • Updated Section 5 Nonconformance Management
G	14 May 06	<ul style="list-style-type: none"> • Administratively updated to reflect a change in the owning organization code from 230 to 270.
H	12 Sept. 08	<ul style="list-style-type: none"> • Changed all references from Logistics Management Division (LMD) to the Information and Logistics Management Division (ILMD) to coincide with Division name change.

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		<ul style="list-style-type: none">• Changed all references from Quality Management System (QMS) to Management System (MS) to coincide with Center changes.• P3 – deleted reference to Oracle Bin location listing.• Transferred responsibilities from Material Handling and Warehousing Lead to Project Parts Warehouse Supervisor throughout document.• Updated Section 5 to reflect new procedures for processing non-conformances.
	24 Sept. 14	<ul style="list-style-type: none">• Administratively extended for 1 year.
I	10 Sept. 15	<ul style="list-style-type: none">• Section P3 updated controlling documents, GSFC Electrostatic Discharge (ESD) Control Plan 300-PG-8730.6. Deleted GPR 1710.1, Corrective and Preventative Action which was cancelled by GPR 5340.2K, NASA-STD-8739.3, Soldered Electrical Connections. Added GSFC Receive Inspection and Test GPR 4520.2 and GPR 8730.1, Calibration and Metrology• Replaced all references to GSFC-WM-001A with 300-PG-8730.6, which is the current ESD requirements document• Section 1.2 Deleted outdated reference• Deleted redundant Section 5 Non Conformances to reflect the change in GPR 4520.2H and refer to section 2.3 of the same for instructions.• Deleted requirement to manually record temp/humidity readings – recording are now sent to computers• Section 3.2.1 Added AMMS as a possible database and revised the text of the entire section.• Section 3.3 Added Project to the title• Section 3.3.1 Changed the title and refined the responsibilities• Section 3.4 Changed the title to Non-ESD Sensitive Mechanical Parts (Fasteners)• Section 3.5 a- Changed the description of the IAV process to include the MC responsibilities• Section 3.5b- deleted Chapter 5• Section 4 refined responsibilities of the Project Parts Supervisor and added all Project Parts staff members to general operating responsibilities.• Section 3.1.2 Removed Baking sections completed as those tasks are not applicable.• GPR 1710.1, Corrective and Preventative Action; GSFC-WM-001A; NASA-STD-8739.3, Soldered Electrical Connections; NASA-STD-8739.7, Electrostatic Discharge Control

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		<p>Documents were cancelled so all references to these documents were removed.</p> <ul style="list-style-type: none">• GSFC Form 4-31 is obsolete• Deleted references to 270-FORM-57• Changed STD-033C to IPC/JDEC J-STD-033C• Deleted reference to EIA 583/541