



Work Instruction (WI)

DIRECTIVE NO. 270-WI-6400.1.1N
EFFECTIVE DATE: 02/01/2016
EXPIRATION DATE: 02/01/2021

APPROVED BY Signature: Original Signed By
NAME: Naomi Manadier
TITLE: Acting Chief, Information and Logistics
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COMPLIANCE IS MANDATORY

Responsible Office: 270/Information and Logistics Management Division

Title: Packaging and Preserving NASA Material and Equipment

PREFACE

P.1 PURPOSE

This procedure describes the processes for the handling, packaging, marking, and preservation of GSFC material and equipment for shipment and storage as performed by the Code 270 Information and Logistics Management Division (ILMD) and supplements the guidance contained in NPR 6000.1 , GPR 6400.1 and GPR 8700.2.

P.2 APPLICABILITY

This procedure applies to all NASA owned assets, with specific emphasis on scientific and ground support material and equipment for space flight projects and ground support systems. Packaging of these products is managed by the Code 274 Logistics and Transportation Management Branch and supported by the Packaging Section of the Code 279 logistics services contractor

P.3 REFERENCES

- a. Air Force Container Design Retrieval System (CDRS)
- b. Air Force Joint Manual 24-204, (HAZMAT)
- c. Code 270 Hardware Instrumentation Procedures
- d. Code of Federal Regulations (CFR) Title 49 – Transportation of Hazardous Materials
- e. Container Drawings
- f. Federal Standard 101 for Packaging Testing
- g. GPR 5340.2, Documentation and Control of Process Nonconformances and Customer Complaints
- h. GPR 6400.1, Logistic Support
- i. GPR 8700.2, Design Development
- j. GSFC Form 11-54, Request for Shipping
- k. GSFC Form 20-4, Transfer/Shipping Request
- l. Hazardous Material Worksheet – Surface
- m. Hazardous Material Worksheet-Air
- n. ICAO, Technical Instructions for the Safe Transport of Dangerous Goods by Air
- o. Instrumentation Report Template

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- p. International Air Transport Association (IATA) Regulation (HAZMAT)
- q. International Maritime Dangerous Goods (IMO/IMDG) Code
- r. Safety Data Sheets (SDS)
- s. MIL-B-8170, Anti-Static Polyethylene Sheeting
- t. MIL-B-81705, Anti-Static Materials Booklet
- u. MIL-E-17555, Packaging of Electronic Equipment
- v. MIL-HDBK-304, Package Cushioning Design
- w. MIL-STD-129, Standard Practice for Military Marking
- x. MIL-STD-2073-1D, Standard Practice for Military Packaging
- y. NASA Form 1368, Critical Space Item (label)
- z. NASA/GSFC Container Design Retrieval System
- aa. NPR 6000.1, Requirements for Packaging, Handling, and Transportation
- bb. Packaging and Crating Material Usage and Productivity Report
- cc. Pick Slip (Computer Generated Store Stocks for Wallops Shipments)
- dd. Shipper's Declaration of Dangerous Goods
- ee. Standard Packaging Methods

P.4 CANCELLATION

270-WI-6400.1.1 M, Packaging and Preserving NASA Material and Equipment

P.5 TOOLS, EQUIPMENT, AND MATERIALS

- a. Powered saws including table, band, radial arm, panel, and circular
- b. Pneumatic tools for nail guns, staplers, and ratchet devices
- c. Various hand tools and crate assembly hardware
- d. Material handling carts
- e. Electric 3K forklift and pallet jack
- f. Various wood products and fiberboard containers
- g. Cushioning material
- h. Marking and labeling materials
- i. Scales
- j. Shock and vibration instrumentation equipment
- k. Shock and vibration instrumentation software

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P.6 SAFETY PRECAUTIONS AND WARNINGS

- a. The Packaging function is conducted in a working shop/warehouse. Standard safety precautions pertaining to use of pneumatic, powered and non-powered tools, saws, forklifts, pallet jacks, and carts apply.
- b. Material processed is often bulky and heavy. Particular emphasis is placed on proper lifting techniques and use of material handling equipment.
- c. PPE – Safety shoes at all times, eye and ear protection worn as required while engaged in Packaging functions.
- d. Awareness of basic practices for loading, unloading, handling, and storage of hazardous materials is mandatory.
- e. Packing and Crating personnel and any visitors present must wear hearing protection and safety glasses when powered machinery is in use. Packing and crating personnel will be enrolled in the Hearing Conservation Program per GPR 1820.1.

P.7 TRAINING

Training	Required for	Provided by	Periodicity
CFR 49 (Instructor led)	Mechanical Engineers, Packer/Craters	TRAX HazMat Engineer	Bi-annual
Instrumentation/Shock and Vibration Systems	Mechanical Engineers, Packer/Craters	Instrument manufacturer	One-time, when new instrumentation received
Basic Packing and Crating Training Course	Packer/Craters	TRAX Branch Mgr.	One-time
GSFC-Hearing Conservation (Instructor led)	Packer/Craters	SATERN GSFC-SH-HC	Upon enrollment in Hearing Conservation program
Hearing Conservation (On-line)	Packer/Craters	SATERN OCC-002-07	Annual refresher

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P.8 RECORDS

Record Title	Records Custodian	Retention
a. GSFC 11-54, Request for Shipping	Traffic Management Office/SPO	*NRRS 6/2C (Destroy 6 years after the period of the account.)
b. GSFC Form 20-4, Transfer/Shipping Request	Traffic Management Office/SPO	*NRRS 6/2C (Destroy 6 years after the period of the account.)
c. Shippers Declaration of Dangerous Goods	Traffic Management Office	*NRRS 6/2C
d. Hazardous Material Worksheet Air	Packaging Engineer	*NRRS 6/2C
e. Hazardous Material Worksheet Surface	Packaging Engineer	*NRRS 6/2C
f. Container Drawings	Packaging Engineer	*NRRS 6/2C
g. Pick Slip (Computer Generated Store Stocks for Wallops Shipments)	Traffic Management Office	*NRRS 6/2C
h. Safety Data Sheets (SDS)	Traffic Management Office	*NRRS 6/2C
i. Instrumentation Data	Packaging Engineer	NRRS 8/5A2

P.9 MEASUREMENT/VERIFICATION

GLTIC Performance Requirement 3: Packing and Crating.

Material and equipment shall be packaged properly to withstand all foreseen climatic and environmental conditions, stacking weights, modes of shipment, and long-term storage by various carriers.

Instructions

1.0 General Procedures and Responsibilities

This section contains procedures and responsibilities applicable to the general direction for all packaging activities performed to ensure that all equipment and material shipped by GSFC or WFF are packaged in a manner that ensures protection for various modes of transportation.

1.1 Code 279 Transportation Branch Manager

The Code 279 Transportation Branch Manager interfaces with the Code 279 Traffic Management Office, and ensures that contract requirements are met for traffic management and packing and crating support of the Logistics and Transportation Management Branch, Code 274.

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1.2 Transportation and Logistics Management Specialists

The Code 270 Transportation and Logistics Management Specialists are responsible for identifying and analyzing space flight project requirements, and identifying any special packaging activities to the Code 279 Mechanical/Packaging Engineer. The individual responsibilities of the Mechanical/Packaging Engineer are listed below in Section 1.3 and 1.4.

1.3 Mechanical Engineer

The Mechanical Engineer shall provide mechanical and general engineering support to the Project Support Team as listed below. In addition, the Engineer consults directly with projects to identify areas where Code 270's project support capabilities would add value or reduce risk to the project.

- a. Provides overall management of the instrumentation support process.
- b. Collaborates with the Mechanical/Packaging Engineer to coordinate Instrumentation Technician resource assignments and monitors technicians during instrumentation activities.
- c. Develops instrumentation specifications and criteria for monitoring the performance of the Transporter System. Researches and recommends equipment purchases to support unusual project requirements.

1.4 Packaging Engineer

The Mechanical/Packaging Engineer shall design and construct specialized containers to meet the specifications of project customers and shall manage the overall packing and crating support process. Additionally the Mechanical/Packaging Engineer shall supervise and provide technical guidance of packaging functions at both Greenbelt and WFF. These responsibilities include:

- a. packing and crating of flight hardware to accommodate the mode of transportation in order to prevent damage during transit;
- b. developing detailed packaging drawings for specific types of equipment;
- c. advise customers of packaging and crating alternatives;
- d. ensure all special customer requirements are captured in writing;
- e. ensure monthly folder is maintained of packing and crating requests (GSFC Form 20-4);
- f. ensure all equipment requested for packing and crating on a GSFC Form 20-4, has been screened and released by the Code 273 Supply and Equipment Management Branch, prior to fulfilling the request;
- g. providing ongoing technical guidance and supervision to the Packer/Craters at Greenbelt (this function is carried out at WFF through technical liaison visits or by telephone instructions) following the guidelines contained in GPR 8700.2, Design Development;
- h. ensuring that all warehousing, shipping, and packaging procedures meet NASA and federal regulations and accepted packaging standards;
- i. scheduling activities based on shipment planning priorities, work force availability, and material resources;
- j. providing administrative and technical management of all packaging activities to ensure the services are provided efficiently and properly;

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- k. providing a monthly Packaging and Crating Material Usage and Productivity Report to Code 274;
- l. monitoring calibration schedule for scales and shock and vibration equipment;
- m. verifying lift certification for assigned forklift;
- n. forward current copy of all Safety Data Sheets (SDS) to Traffic Management Office for Hazmat items that have been shipped;
- o. in conjunction with the Mechanical Engineer, analyzes the suitability of utilizing or refurbishing existing containers to meet project requirements at substantially reduced costs. Considers suitability of potential Transporter Systems for future GSFC missions and utilization;
- p. maintains an inventory of shock and vibration instrumentation hardware in conjunction with Code 540 certification program;
- q. coordinates Instrumentation Technician resource assignments and monitors technicians during instrumentation activities; and
- r. Monitor and concur that the packaging standard used by Code 279 Packing and Crating personnel, and that the proper reference was cited from the Standard Packaging Methods (Attachment 1) subsection regarding Mil-Standard 2073-1D.

The Lead Traffic Specialist at WFF will provide direct daily supervision of Packer/Craters at WFF.

1.5 Instrumentation Technician

The Instrumentation Technician will receive supervisory direction technical direction from the Mechanical/Packaging Engineer in supporting instrumentation activities. The Instrument Technician shall perform the following:

- a. Performs instrumentation installation and removal, including recording system hardware and software setups and downloads.
- b. Develops instrumentation documentation, as required.

1.6 Packers/Craters

The Packer/Craters will perform the following duties:

- a. advise customers of packaging and crating alternatives;
- b. ensure all special customer requirements are captured in writing;
- c. keep monthly folder of completed packing and crating requests (GSFC Form 20-4);
- d. ensure all equipment requested for packing and crating on a GSFC Form 20-4, has been screened and released by the Code 273 Supply and Equipment Management Branch, prior to fulfilling the request;
- e. pack and crate shipments based on the Required Delivery Date (RDD) and instructions provided by the Traffic Management personnel or the Mechanical/Packaging Engineer;
- f. respond to all unusual requirements, including packaging of hazardous materials, sensitive materials, and space flight hardware; and
- g. adhere to all safety standards and use protective equipment during packaging operations.
- h. Use packaging certification rubber stamp on 20-4 and notate packaging class and instruction used.

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- i. keep work areas clean to include emptying dust collection bins.

2.0 Performance Standards

This section outlines specific standards that will be monitored by the Mechanical/Packaging Engineer during the performance of preservation, packing, and packaging services.

2.1 Receipt of Material

All material received for shipment requiring packing material and fabrication of containers will be prepared and ready for shipment no later than 5 business days from receipt in the shop, or to meet customer required delivery date. In the event of any performance failures, the Transportation Branch Manager will take action to preclude further degradation in service and advise the Head of the Logistics and Transportation Management Branch of the situation and corrective actions taken.

2.2 Preparation of Hazardous Materials

All hazardous materials will be accurately identified and properly packaged and prepared for shipment in conformance with requirements for the mode of shipment being used. Before any shipment is released to the commercial carrier the Mechanical/Packaging Engineer or Traffic Management Office must review the documentation for accuracy. Any instance of improper packing, labeling, marking, or erroneous shipment documentation of hazardous materials will immediately be brought to the attention of the Transportation Branch Manager, who will advise the Head of the Logistics and Transportation Management Branch of corrective action to prevent further occurrences

2.3 Improper Packaging

In the event that an item is damaged in transit due to improper packaging, an immediate and thorough investigation will be conducted by the Mechanical/Packaging Engineer. Based on the results of the investigation, corrective actions will be initiated to prevent any future occurrences. Packaging discrepancies of this nature will be documented on a non-conformance report

3.0 Scheduling

3.1 Greenbelt

All packaging/crating activities will be scheduled in a manner that allows for the most economical mode of transportation, while meeting the customer's required delivery date. The Mechanical/Packaging Engineer will conduct periodic meetings with packing and crating personnel to discuss the following objectives:

- a. on-time performance of all required packing/crating services;
- b. most efficient use of packaging personnel; and
- c. respond to any special priorities or requirements as directed by Code 270.

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1. The Mechanical/Packaging Engineer at Greenbelt will review the schedule to ensure that sufficient time has been allowed to package the equipment and materials properly. The Traffic Management Specialist (TMS) will be responsible for the proper carrier documentation and the shipping of items on schedule.
2. The Packer/Craters will follow the assigned schedule and, under the direction of the Packaging Engineer properly pack and crate all assigned materials and equipment.

3.2 Scheduling Adherence Procedures

Scheduling will adhere to the following general procedures:

- a. All items received for packing/crating must be documented by a GSFC 20-4, GSFC 11-54, request for packing services, or a work order approved by the Mechanical/Packaging Engineer.
- b. The TMS will review shipment documentation to determine the required delivery date, coordinate required packing time with the mechanical/packaging engineer, and determine when the item should be shipped, allowing time for packing and the most economical means of transportation.
- c. The Mechanical/Packaging Engineer, or in his absence, the Lead Traffic Management Specialist, will communicate any shipment priorities. The communication will include "Mission Critical" and "Priority 01" materials; such materials will be processed and shipped immediately upon receipt, all other activities being deferred. When packaging requirements exceed capabilities, the Packaging Engineer or his designee will adjust that day's schedule to ensure the materials are handled in order of priority.
- d. Each day, the Lead Traffic Management Specialist, and/or the Mechanical/Packaging Engineer or his designated representative will check the packaging area to ensure scheduled shipments have been made. Any missed shipments will be reported to the Transportation Branch Manager.

3.3 Wallops

- a. The Lead Traffic Management Specialist and Packer/Crater determine the workflow based upon the most cost-efficient manner of transportation while adhering to the customer's "Required Delivery Date" indicated on GSFC Form 20-4.
- b. Prioritizing, coupled with common sense, allows all domestic and international shipments to be scheduled in a timely manner in order to meet the customer's needs.
- c. The Mechanical/Packaging Engineer or the Transportation Branch Manager will be consulted when workload may necessitate additional manpower to meet shipping requirements.

4.0 Missed Shipments

Shipping dates may occasionally be missed because of a change in priorities or the receipt of "Mission Critical" or "Priority 01" items that "bump" routine shipments. When it appears likely that a shipping date will be missed, the following actions will occur:

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- a. The TMS, along with the Lead Packer/Crater, will determine if the shipment can be completed on schedule.
- b. If not, the TMS will notify the Customer, the Packaging Engineer and advise them of changes to the required delivery date.
- c. Overtime will be considered to satisfy customer requirements.
- d. The TMS will note the new required delivery date on all copies of the shipment documentation.

5.0 Receipt and Inspection

The Packer/Crater may on occasion receive shipments from customers at the packing shop. The Packer/Crater will ensure that a GSFC Form 20-4 or GSFC Form 11-54 accompanies the shipment and is completed with a Required Delivery Date (RDD). He will also ensure that all items listed on the shipping request are present. If the shipment is a "Priority 01" shipment, the Packer/Crater will immediately prepare it for shipment. If the item is a large shipment that requires extensive packing, the Lead Packer/Crater will contact the TMS to notify them of the priority shipment and the approximate time it will take to complete the packaging. When any shipment is received into the packaging shop the Packer/Crater will inspect the items for damage. If any damage is evident, the GSFC Form 20-4 / GSFC Form 11-54 will be annotated with the pre-existent damage. The following is a list of sources for receiving shipments into the packaging area:

- a. GSFC customers, GSFC contractor support personnel, Upper Warehouse, Receiving, Excess Warehouse, and Transportation vehicle operators.
- b. Small items requiring packaging will be directed to the shop by the Mail Services Center personnel.
- c. Items requiring storage will be received by designated mode, per the TMS.
- d. The receiving counter in the Packing and Crating department will be attended at all times during the normal work day.

6.0 Documentation

6.1 The Packer/Crater will attach the following documentation to each shipment, using the GSFC Form 20-4; Transfer/Shipping Request.

- a. The Packer/Crater will put a copy inside the first box of the shipment and another copy into a packing list envelope affixed to the outside of the container.
- b. The remaining copies of the GSFC Form 20-4 will be turned into the Traffic Management Office for completion.

6.2 The following documentation requirements will apply to all shipments to off-Center locations, hazardous materials, and shipments requiring additional packing and crating:

- a. The responsible Packer/Crater will receive the shipment, along with a completed GSFC Form 20-4. This individual will inspect the document to ensure the correct number and type of items that have been received.

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- b. The receiving Packer/Crater will sign a copy of the document and return it to the deliverer; all other copies will remain with the shipment.
- c. The Packer/Crater will annotate the date and time material was received on the document.
- d. The customer's special instructions (either written or verbal) for packing and crating will be attached to and/or noted on the GSFC Form 20-4 and will be initialed by the customer.
- e. The original copy of the GSFC Form 20-4 will be forwarded to the Code 273 Supply and Equipment Management Branch for screening prior to completion of packaging or shipment.
- f. The packing method used from the "Standard Packaging Methods" (Attachment 1) will be noted (using the rubber stamp) on the GSFC Form 20-4 by the packer.
- g. As the item is being packed, the Packer/Crater will use a copy of the GSFC Form 20-4 as a checklist, matching the item(s) with the data on the form. If there are any errors or discrepancies, the Packer/Crater will notify the Mechanical/Packaging Engineer or the Lead Traffic Management Specialist for resolution. Upon completion of the packing, the Packer/Crater will complete the, GSFC Form 20-4 including:
 - 1. Number of pieces
 - 2. Type of package
 - 3. Packaging standard utilized (using rubber stamp)
 - 3. Weight
 - 4. Container number
- i. Two copies of the GSFC Form 20-4 will be retained with the shipment as inside and outside packing lists, and the remaining copies will be delivered to the Traffic Management Office.
- j. A quarterly quality control check (consisting of a visual check and a comparison against the Standard Packing Method) will be performed by either the Mechanical/Packaging Engineer, the Lead Packer/Crater.
- k. In the case that an original GSFC Form 20-4 is not received at the time of request, the Packer/Crater will make additional copies to adhere to the documentation procedures.
- l. In the case that the voucher number is missing on the GSFC Form 20-4, it will be immediately requested of the customer by the Packer/Crater at the time of receipt. If the customer cannot provide a voucher number, the Packer/Crater will arrange for the Transportation Specialist to assign one.

6.3 The Mechanical/Packaging Engineer will be responsible for the following:

- a. Instrumentation Plans
- b. Instrumentation Reports

The Mechanical Engineer approves these documents.

7.0 Traffic Management Interface

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Upon initial receipt of the GSFC Form 20-4 from the Packer/Crater (and before any packing operations are initiated), the TMS will review the documentation and determine the appropriate shipping mode based on the following considerations:

- a. the required delivery date;
- b. if destination is domestic or international;
- c. is consolidation possible for separately packaged shipments to the same location;
- d. consolidation of separately packaged shipments to achieve any available rate reductions provided for volume shipments; and
- e. consolidation of separately packaged shipments of lower priority requirements to take advantage of minimum charges.

Once these decisions have been made, the TMS will prepare the documentation required to make the shipment (GBL, CBL, etc.) These documents will be delivered to the Packaging Section. The Packer/Crater will then mark, label, and address the package in accordance with NPR 6000.1, MIL-STD-2073-1D, and MIL-STD-129.

After carrier pickup, all documentation will be turned into the Traffic Management Office for distribution, filing, and updating of records.

8.0 Container Design and Fabrication

8.1 Container design and fabrication will utilize techniques contained in MIL-HDBK-304, NPR 6000.1, GPR 8700.2 (Design Development), the Standard Packaging Methods under subsection on MIL-STD-2073-1D. This is to insure damage-free world-wide shipment by various carriers and modes; protection in all types of storage environments (including stacking load); and packaging at minimum cost in time, material and shipping (minimizing weight and cube). The Mechanical/Packaging Engineer will design specialized containers when necessary to ensure the protection of a specific shipment requiring special packaging. Engineering data will be maintained for review and implementation of the packaging specified. Such items are subject to damage for any of the following reasons:

- a. restrictive shock or vibration characteristics (e.g., sensitive electronic equipment);
- b. requirement for special environmental control (e.g., temperature-sensitive equipment);
- c. requirement for maintenance within special or critical pressure or temperature limits (e.g., explosive materials);
- d. requirement for specialized container design, special handling devices, fixtures, or monitoring devices (e.g., a particularly large or unusually shaped piece of equipment);
- e. special storage requirements;
- f. storage of hazardous materials or other material that requires special design packaging; and
- g. any other equipment/materials identified by GSFC transportation officials or Mechanical/Packaging Engineer packing personnel as requiring special crating;
- h. all other packing will be in accordance with the Standard Packaging Methods (Attachment 1);
- i. all containers must be labeled and marked in accordance with the latest version of the NPR 6000.1; and MIL-STD-129.

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8.2 The Mechanical/Packaging Engineer will directly supervise all special packaging activities, including:

- a. developing exact packaging specifications for the equipment or material to be shipped;
- b. identifying whether a container that meets these packaging specifications is on hand;
- c. searching the NASA/GSFC Container Design Retrieval System, and then the Air Force Container Design Retrieval System (CDRS) to determine whether any commercially available or government inventory containers can be obtained;
- d. determine whether it would be more cost-effective to obtain a suitable existing container, modify an existing container or build a new one; and
- e. ensuring that an existing container can be obtained in time to meet the required delivery date.

If the Mechanical/Packaging Engineer determines that a new container must be built (whether to meet specifications or deadlines or because of lower cost), the engineer will initiate and supervise packaging through the procedures detailed in Section 9 below. The Packer/Crater at WFF normally performs container design and fabrication, but the Mechanical/Packaging Engineer will be consulted for unusual or special circumstances.

9.0 Special Technical Services

The Mechanical/Packaging Engineer will provide the following special technical services:

- a. search for existing containers to meet special requirements;
- b. develop specialized containerization, packaging, and crating;
- c. develop specifications, designs, and supervising the construction of specialized containerization, packaging, and crating to be performed by personnel;
- d. establish cushioning and other requirements;
- e. perform any other technical services as requested by GSFC/ILMD officials; and
- f. monitor the packaging procedures for protecting ESD sensitive items.

10.0 Packaging Testing

The Mechanical/Packaging Engineer will directly perform or supervise all testing of packages, packaging methods, and materials under this contract. The Mechanical/Packaging Engineer will also be responsible for monitoring all off-site testing including Performance Oriented Packaging (POP). All testing will meet the standards delineated in the following manuals:

- a. Standard Packaging Methods on MIL-STD-2073-1D (Attachment 1)
- b. Federal Standard No. 101 for Packaging Testing
- c. NPR 6000.1, Requirements for Packaging, Handling, and Transportation
- d. CFR Title 49, Code of Federal Regulations – Transportation of Hazardous Materials

11.0 Packaging Procedures

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The following standard packaging procedures are those used for a "typical" item. Because there are many variations in the items packed under this program, these procedures are always subject to revision by the Mechanical/Packaging Engineer for any of the following reasons:

- a. item characteristics that require unusual packaging;
- b. requirements that can be met more effectively through a change in usual procedures;
- c. accelerated procedures to meet items with special priorities or tight deadlines; or
- d. special requirements imposed by NASA customers.

11.1 Except when the Mechanical/Packaging Engineer directs otherwise, the following procedures will apply to all packaging activities at GSFC:

- a. The Packer/Craters sort items on the customer reception desk and adjacent material handling carts immediately upon beginning work or returning from lunch, and place them in the designated task locations.
- b. Frequently, specific instructions or specifications will accompany an order; in such cases, the Mechanical/Packaging Engineer will ensure these requirements are met unless they conflict with regulations or standard practices. If there is a conflict, the Mechanical/Packaging Engineer will contact the GSFC customer who initiated the order to resolve the discrepancy, and inform the Transportation Branch Manager. If customer gives verbal instructions, Code 279 Packaging representative will document the customer's instructions on the shipping GSFC Form 20-4, and read back the instructions to the customer.
- c. Packers/Craters will open all items in unsealed containers and any items that rattle in sealed containers. The Packers/Craters (with the help of the Mechanical/Packaging Engineer, if necessary) will determine whether the item should be packed in a multi-pack box or repackaged in a more suitable container to provide adequate protection. All items will be packed in accordance with the Standard Packaging Methods subsection on MIL-STD-2073-1D packaging data codes. The Mechanical/Packaging Engineer will assist in the interpretation of codes.
- d. When all multi-pack cartons and individual item cartons have been assembled, the Packer/Crater will select the smallest available carton that will contain the items without requiring excessive cushioning material.
- e. When packing air shipments, the Packer/Crater will not pack heavy items in the same shipping container with multi-pack cartons or other containers of fragile items.
- f. When items designated for truck shipment are large enough to justify a 17.8 cu. ft. carton, the carton must be banded on a skid. In such cases, heavy items may be packed on the bottom and multi-pack or other light containers on the top of the carton.
- g. Packer/Craters will not pack any item that does not have a GSFC Form 20-4 or GSFC Form 11-54, or if the complete shipment called for cannot be located. Instead, the Packer/Crater will immediately notify either the Mechanical/Packaging Engineer, or the Transportation Branch Manager for resolution.

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- h. Each carton, package, or skid of material will be marked with the GSFC Form 20-4 number, weight, and required delivery date (RDD), and then placed into the designated staging area to await completion of the GSFC Form 20-4, Invoice/shipping Document and manifesting. Each completed GSFC Form 20-4 will contain the packaging code used for that item IAW MIL-STD 2073-1D as extracted from the Standard Packaging Methods.
- i. The TMS will pick up the Invoice/Shipping Documents (GSFC Form 20-4) each morning. The TMS will schedule shipping to ensure on-time delivery by the most economical mode possible.
- j. All packages, cartons, etc. will be marked with the Invoice/shipping Document (GSFC Form 20-4) voucher number. If more than one piece, box, etc. is listed on the Invoice/Shipping Document (GSFC Form 20-4), each piece will be identified.

12.0 Shipment Consolidations

Whenever possible, shipments will be consolidated to enhance the cost-effectiveness of operations, primarily by combining shipments to the same location. Additional considerations will include obtaining volume discounts and consolidating several small shipments to avoid repeated minimum charges.

The Traffic Manager/TMS will be primarily responsible for consolidation; decision-making for routine situations may be delegated to specific Packer/Craters. Shipments will never be consolidated if doing so would jeopardize meeting the required delivery date or affect adequate protection of the items being shipped.

13.0 Hazardous Materials

The Packaging Section is periodically required to receive, pack, store, and ship hazardous materials under this contract. The packaging and handling of hazardous materials will be in accordance with established safety practices and procedures as contained in CFR 49, ICAO, IATA, Air Force Joint Manual 24-204, IMO/IMDG Code. The Mechanical/Packaging Engineer and all Packers/Craters who will ever handle hazardous materials will be certified in accordance with CFR Title 49, "Transportation of Hazardous Materials." Re-certification is required at least every 24 months (per IATA requirements).

The Mechanical/Packaging Engineer or designated certified Packer/Craters will certify "Shippers Declaration for Dangerous Goods" to identify and accompany all shipments of hazardous cargo utilizing the Defense Transportation System (DTS), or shipment via the commercial sector. Items to be transported via military airlift must be packaged and marked in accordance with AFJM 24-204, while items shipped via commercial carrier will be prepared in accordance with 49 CFR. Hazardous material being shipped internationally will be in compliance with ICAO/IATA for air shipments and IMO/IMDG for shipments by vessel.

14.0 Hazard Materials Training

The Mechanical/Packaging Engineer will provide required 49 CFR Hazard Materials Training. Records will be maintained in the Code 279 Program Management Office. The Packaging Section will adhere to all the requirements of NPR 6000.1, including:

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- a. Critical items, Class I, II, and III as defined in NPR 6001, will be marked with NASA Form 1368 (Critical Space Item label) on each face of the container. All items will be annotated the GSFC Form 20-4 with the appropriate packaging code extracted from the Standard Packaging Methods under the subsection on MIL-STD 2073-1D. Consult the Mechanical/Packaging Engineer for the appropriate classification. In addition to these requirements, the package will be marked with any other warning labels as required by applicable tariffs.
- b. Where considerations of precision, cleanliness, flammability, or compatibility with propellants preclude the use of anti-static materials meeting the standards of MIL-B-81705 Type II, the Mechanical/Packaging Engineer may designate a commercially available anti-static material, subject to approval by the procurement activity.

15.0 Radioactive Materials

Shipments of radioactive materials shall be accomplished in accordance with 350-WI-6400.1.1C, Shipping of Radioactive Materials. The 350/Occupational Safety and Health (OS&H) Division certifies radioactive materials. All packaging will meet the regulations of 49 CFR Parts 170-189.

16.0 Explosive Materials

16.1 The Packaging Section at Greenbelt will prepare and package all explosive material shipments in accordance with the Department of Transportation (DOT) hazardous materials regulations and applicable carrier regulations. All explosive materials will be received and packaged in the same working day. Any explosive material that cannot be packaged by the end of the working day will be returned to the customer for storage until packing can be completed.

16.2 Explosive materials at the WFF are prepared and packaged by the NASA Sounding Rocket Operations Contract (NSROC) contractor personnel.

17.0 Dismantling of Components

The Packaging Section will dismantle major components when the disassembly will facilitate more efficient or more protective packaging. In order to maintain the integrity of all components, the originator listed on the GSFC Form 20-4 must be contacted for approval prior to disassembly. Unless directed otherwise by the customer, the Packaging Section will not dismantle a component if a previous inspection or test acceptance could be invalidated.

When dismantling a component, the Packaging Section will secure all parts of disassembled hardware to one of the parts to prevent loss and facilitate reassembly. Personnel dismantling a component will list all items disassembled on the GSFC Form 20-4.

18.0 Electrostatic Sensitive Material

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Some electronic devices, such as thin or thick film resistors, metal oxide semi-conductors (MOS devices), field effect transistors, or circuitry containing these items, must be protected from static electricity. The Mechanical/Packaging Engineer will ensure that all such items are packaged in accordance with MIL-E-17555 and will ensure that the package is appropriately labeled with the following warning:

Note: Contents can be destroyed by static electricity! Only personnel trained in the care of static-sensitive materials may unpack or handle this shipment.

In the event that electrostatic sensitive material is received to be packaged which is not already wrapped in a static-resistant material, or if that material is torn or opened, or if there is any question regarding proper handling, the material will be re-packaged by Packing and Crating personnel at the ESD Processing Facility, Building 35. Should the item be improperly ESD packaged the customer will be informed that it is not properly packaged and that the item will be moved to the ESD Processing Facility for the packing process.

19.0 Updates

Packaging/crating is a dynamic field with frequent changes resulting from technical developments, regulatory modifications, and new or modified items requiring packaging. The Mechanical/Packaging Engineer will be responsible for ensuring that all practices are modified or enhanced when necessary to keep current with such changes and to maintain quality of services. Such modifications will be incorporated into these procedures in two ways:

- a. the ongoing development of specific packing/crating procedures to be incorporated into this document; and
- b. revisions of procedures in response to new techniques additional requirements, or changes in NASA regulations.

In this way, the Mechanical/Packaging Engineer will be responsible for ensuring the quality of packaging service to GSFC throughout the life of this program.

20.0 NON-CONFORMANCE MANAGEMENT

20.1 Non-conformances

The overall Corrective Action/Preventive Action (CAPA) Lead for the activities in this work instruction is the Code 274 Logistics and Transportation Management Branch Head. The CAPA Lead serves as the principal point of contact within ILMD responsible for the management and proper functioning of the nonconformance process in that functional area provides technical oversight and identifies nonconformance trends that may require changes to existing policies or procedures, and reports significant issues to higher management. The CAPA Lead is also responsible for reviewing and processing Problem Reports (PR's) and Nonconformance Reports (NCR's) received from any source as well as directing and documenting corrective actions taken in response to PR's and NCR's. The primary documentation for

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these activities shall be created in the automated Problem Reporting/Problem Failure Reporting (PR/PFR) system or the META System, which are accessed via the GSFC MS website.

20.2 Minor Non-conformances

As determined by the appropriate Code 270/279 Functional Branch Head, some non-conformances will be managed outside of the PR/PFR and META systems. There is no single method for documenting and dispositioning these minor non-conformances. All minor non-conformances shall be recorded in an approved record, and, the cognizant supervisor shall review the documentation and determine the most appropriate disposition. In those instances when a close out action is necessary, it will also be annotated in an approved record.

20.3 Non-conformances Initiation and Disposition

After the CAPA Lead reviews a PR or NCR, the CAPA Lead shall request and/or develop disposition recommendations. For most non-conformances, this will be an internal process. In the case of services provided directly under the direction of operational Projects, the appropriate Project personnel shall be consulted. In some cases, the Project may assume control of the PR or NCR process. In those cases, the CAPA Lead will update the PR or NCR to show this transition. In all other cases, the CAPA Lead shall lead the PR or NCR disposition process.

Once the review is complete, the CAPA Lead shall input the disposition into the PR/PFR or META system. In cases where policy may be affected, the ILMD management shall be consulted prior to completing the disposition process. If no corrective actions are required, the CAPA Lead shall close out the PR or NCR.

20.4 Corrective Actions

If resolution of the PR or NCR involves initiation of corrective action, the CAPA Lead shall continue to update the PR or NCR with root causes, actions taken and remedial actions if and when they are part of the corrective action process. Upon completion of all corrective actions, the CAPA Lead shall close out the PR or NCR. In some cases corrective actions will point NON-CONFORMANCE issues that need to be resolved. If this happens, the CAPA Lead shall create a follow-on PR or NCR, and the process will begin again.

Appendix A – Definitions

- A.1 ESD Material - Material that is sensitive to Electro-Static Discharge.
- A.2 Hazardous Materials - Materials that have been determined by the Secretary of the US Department of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce.
- A.3 Classes of Shipping and Handling - Class I, II, III, and IV (as defined in NPR 6000.1).
- 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 III or Class IV. These items are those that are damaged readily by improper handling.
- Class III - Items requiring special handling and monitoring.
- Class IV - Those items that can be transported or handled through the use of normal commercial transportation.
- A.4 Packaging, Handling, and Transportation Information Sheet (PHTIS) - Defines the specific levels and means of preservation, packaging, packing, marking, handling, and shipping instructions for mission essential items.
- A.5 Packaging - Application of use of adequate protective measures to prevent damage during transportation and storage, including application of packages and wraps, cushioning, and complete identification marking of unit, intermediate and exterior containers.
- A.6 Packing - The final placement of items or packages in exterior shipping containers or other media, including necessary blocking, bracing, cushioning, weatherproofing, exterior strapping, and marking.
- A.7 Preservation - Application or use of adequate protective measures to prevent deterioration from environmental hazards, including, as applicable, the use of appropriate cleaning and drying methods, preservatives, and wrapping for protection from chemical danger.
- A.8 Blocking and Bracing-Application of special shoring and lumber to prevent movement of material inside the transport vehicle or container.
- A.9 Special Design Packaging - That packaging which is to be used for those items possessing characteristics that require specially designed packaging, cushioning, blocking and bracing, and or specially designed containers to provide the necessary protection.
- A.10 Instrumentation Report – Comprehensive report documenting the results of an instrumentation activity. Report contains all instrumentation data and recommendations, describes Code 270's involvement, and includes any reports and lessons learned.

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- A.11 Instrumentation Checklist – Specific procedures for installing and activating instrumentation equipment for a specific instrumentation operation.
- A.12 Instrumentation Plan – Overall plan for conducting instrumentation activities for a project. Describes organization, roles and responsibilities, activities to be completed, and processes to be followed for providing support.

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Appendix B – Acronyms

EEE	Electrical, Electronic and Electromechanical
ESD	Electrostatic Sensitive Discharge
GDMS	Goddard Directives Management System
GSFC	Goddard Space Flight Center
HAZMAT	Hazardous materials
ILMD	Information and Logistics Management Division
MIL-STD	Military Standard
NCL	Nonconformance Lead
NCR	Nonconformance Reports
NCR/CA	Nonconformance Reporting/Corrective Action
NPD	NASA Policy Directive
PR/PFR	Problem Reporting/Problem Failure Reporting
SDS	Safety Data Sheets

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Attachment 1 Standard Packaging Methods

INSTRUCTIONS FOR STANDARD PACKAGING METHODS

The Code 279 Mechanical/Packaging Engineer is responsible for all updates. Changes, additions, or deletions to these Standard Packaging Methods may be received from: US Government agencies, branches of the US military, authoritative packaging industry representatives and international packaging regulatory bodies. As a matter of record, materials packaged for international shipment from NASA’s Goddard Space Flight Center or Wallops Flight Facility, do not require compliance with the Non-manufactured Wood Packing Policy and Non-manufactured Wood Packing Enforcement Regulations. Only Manufactured Wood is used for packaging of shipments.

The following procedures that meet the MIL-STD 2073-1D Department of Defense Standard Practice for Military Packaging use an index as a look-up tool for finding the proper procedure for packaging each item listed.

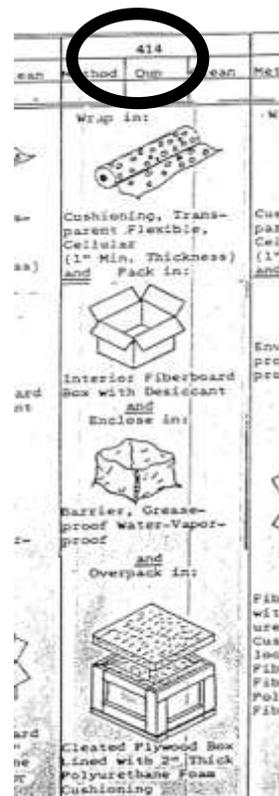
Find the Index Number

Find the item you are looking for using the alphabetically arranged index in Attachment 1 and choose the size you will need. The index number corresponding with item and size will be the instruction number you will use for the packaging. For example, the index number for a “large” oscilloscope is “414.”

“O”-Ring	200	200	200
Orifice	404	404	405
Oscillator	404	404	405
Oscilloscope	405	413	414
Pamphlet	303	303	303

Find the Instruction Graphic

All instructions are depicted as graphics. They are found in Attachment 2 and are listed in numerical order. For example, the large oscilloscope, index number 414, corresponds to the graphic instructions with 414 at the top of the figure.



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ADDITIONAL PACKAGING REQUIREMENTS NOT COVERED BY MIL-ST 2073

Material that is *not* covered by Mil-St 2073 will be packed as follows:

1. Single pack no less than 2” foam or bubble wrap, place in a tight fitting container
2. For multi-packs, bubble wrap with at least 1” foam on side’s top and bottom of container
3. Skids with more than one container needs to be stretch wrap and banded
4. Packaging over 100 lbs. much have a skid (keep skid close to size of container)

Exception:

Items that are packed/signed by the customer (packed by originators: PBO)

Index

Packing Code for Standard Items
Meets or exceeds Mil-STD 2073

ITEM DESCRIPTION	SMALL	MEDIUM	LARGE
Accumulator	404	405	420
Actuator	405	412	420
Armature	405	412	420
Aluminum Sheet	303	303	320
Ammeter	405	412	413
Amplifier	405	413	414
Battery, Dry Cell	302	305	319
Blanket, Insulation	005	005	005
Bolt, Standard	001/002	001/002	001/002
Bolt Close Tolerance	003/004	003/004	003/004
Bolt, Eye	373	373	370
Boot, Rubber	202	202	205
Box, Junction	303	303	305
Bracket	302	303	305
Bushing	202	204	205
Cable Assembly	011	010	010
Cap	382	383	383
Capacitor	012	012	012
Circuit Board	015	015	015
Circuit Breaker	405	412	420

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ITEM DESCRIPTION	SMALL	MEDIUM	LARGE
Clamp	302	303	305
Coil, Electrical	202	204	205
Connector, Electrical	202	204	205
Connector, Mechanical	302	303	305
Cord, Electrical	302	303	303
Coupling	302	303	305
Cylinder	405	412	420
Computer	312	312	323
Decal Paper	209	209	209
Decal, Metal	209	209	209
Duct	305	305	305
Drawer Unit, Electrical	202	204	205
Electrical Cable	011	010	010
Element, Electrical	202	204	205
Electronic Assemblies	305	312	314
Ferrule	382	383	383
Filler, Cap	006	006	006
Filter	102	104	105
Fittings	302	303	305
Fuse	382	383	383
Foam in Place	324	324	324
Cage, Electrical	404	404	405
Gage, Hydraulic	404	404	405
Gasket, Cork	389	389	389
Gasket, Rubber	209	209	209
Gear	202	204	209
Generator	405	418	420
Grommet	382	383	383
Heat Exchanger	405	412	414
Hose, Flexible	021	021	021
Hose, Rigid	021	021	021
Housing	303	305	312
Indicator	402	404	405

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ITEM DESCRIPTION	SMALL	MEDIUM	LARGE
Insulator, Electrical	012	012	012
Insert	373	373	373
Insulation Blanket	005	005	005
Jack, Electrical	202	204	205
Knob	302	303	305
Label	209	209	209
Lamp	204	205	205
Latch	302	303	305
Lens	202	204	205
Lug	382	383	383
Lock Wire	382	383	383
Machinery*			
Manifold	303	305	313
Meter	404	404	405
Micrometer	204	204	205
Microphone	404	404	405
Models	321	321	321
Modulator	404	404	405
Module	404	404	405
Motor	404	405	420
Nameplate	202	202	209
Nozzle	204	204	205
Nut, Standard	382	383	383
“O”-Ring	200	200	200
Orifice	404	404	405
Oscillator	404	404	405
Oscilloscope	405	413	414
Pamphlet	303	303	303
Panel, Honeycomb	305	312	320
Picture	373	373	373
Pin, Close Tolerance	003/004	003/004	003/004

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ITEM DESCRIPTION	SMALL	MEDIUM	LARGE
Pin, Standard	001/002	001/002	001/002
Piston	405	413	414
Plate	302	303	319
Power Supply	405	413	414
Pump	405	413	414
Rectifier	402	404	405
Regulator	402	404	405
Relay	402	404	405
Resistor	012	012	012
Retainer	382	383	383
Ring, Retainer	382	383	383
Rivet, Standard	382	383	383
Rod End	102	104	105
Roller	202	202	205
Rubber, Sheet	389	301	301
Screw	003/004	003/004	003/004
Seal	202	202	209
Shim	389	389	389
Shaft, Close Tolerance	003/004	003/004	003/004
Sheet, Rubber	389	301	301
Sheet, Plastic	389	303	303
Semiconductor	402	404	405
Sleeve	373	373	373
Solenoid	202	204	205
Spacer	373	373	373
Spring	302	303	305
Stationary Supplies	301	301	301
Strap	302	303	303
Stud	373	373	373
Switch	102	104	105
Server	312	312	323
Tape	302	303	303
Tape, Magnetic	019	019	019
Terminal	382	383	383
Thermocouple	209	209	209

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ITEM DESCRIPTION	SMALL	MEDIUM	LARGE
Transducer	105	305	305
Transformer	402	405	417
Tubing	302	301	301
Tubing, Bent	305	305	305
Turnbuckle	302	303	305
Transistors	012	012	012
Union	302	301	305
Utility Box	301	301	305
Vacuum Tube	205		
Valve	402	405	418
Voltmeter	402	405	412
Washers	382	383	383
Wire	011	011	011

*Not Applicable

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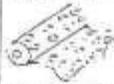
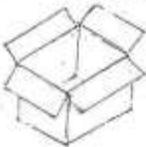
Attachment 2

Instructions by Index Number

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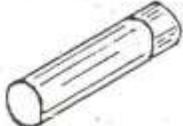
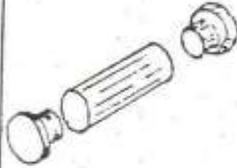
Instructions 100 - 105

100			102			104			105		
Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean
<p>Enclose in:</p>  <p>Envelope, Grease-proof, Water-Vaporproof, Heat Sealable</p>			<p>Wrap in:</p>  <p>Neutral Tissue OR Neutral Kraft OR Polyethylene Film <u>and</u></p> <p>Enclose in:</p>  <p>Envelope, Grease-proof, Water-Vaporproof, Heat Sealable</p>			<p>Wrap in:</p>  <p>Neutral Tissue OR Neutral Kraft OR Polyethylene Film <u>and</u> Cushion with:</p>  <p>Cellulosic Cushioning OR Wrap and cushion with:</p>  <p>Cushioning Transparent Flexible, Cellular <u>and</u> Enclose in:</p>  <p>Envelope, Grease-proof, Water-vapor-proof, Heat Sealable</p> <p>Box, Paperboard Folding OR Box, Fiberboard OR Fiber Tube</p>			<p>Wrap in:</p>  <p>Neutral Tissue OR Neutral Kraft OR Polyethylene Film <u>and</u> Cushion with:</p>  <p>Cellulosic Cushioning OR Wrap and cushion with:</p>  <p>Cushioning Transparent Flexible, Cellular <u>and</u> Enclose in:</p>  <p>Envelope, Grease-proof, Water-vapor-proof, Heat Sealable <u>and</u> Pack in:</p> 		

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Instruction 107

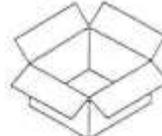
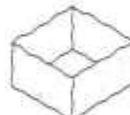
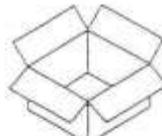
107									
Method	Qup	Clean							
Package in:  Vial, Plastic with Lid <u>or</u>  Vial, Flexible acrylate Tubing Cap and Plug As Required <u>or</u>  blister or Skin Pack <u>and</u> Enclose in:  Envelope, Grease- proof, Water-vapor- proof, Heat Sealable									

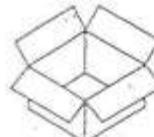
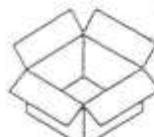
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EXPIRATION DATE: 02/01/2021

Instruction 108 and 109

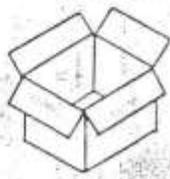
ITEM 5. ADD THE FOLLOWING TO TABLE II:

108		
METHOD	QTY	CLEAN
WRAP IN		
		
POLYETHYLENE FILM AND PACK IN		
		
INTERIOR FIBERBOARD BOX AND ENCLOSE IN		
		
BARRIER, GREASEPROOF, WATER-VAPORPROOF AND OVERPACK IN		
		
EXTERIOR FIBERBOARD BOX		

109		
METHOD	QTY	CLEAN
WRAP IN		
		
CUSHIONING, TRANSPARENT, FLEXIBLE, CELLULAR AND PACK IN		
		
INTERIOR FIBERBOARD BOX AND ENCLOSE IN		
		
BARRIER, GREASEPROOF, WATER-VAPORPROOF AND OVERPACK IN		
		
EXTERIOR FIBERBOARD BOX		

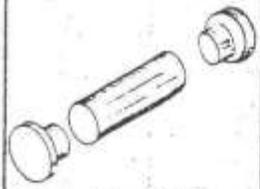
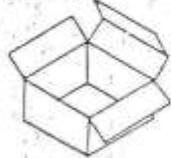
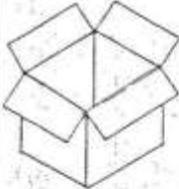
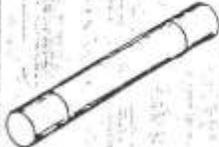
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Instructions 200 - 205

200			202			204			205		
Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean
<p>Enclose in:</p>  <p>Envelope, Grease-proof, Waterproof, Heat Sealable</p>			<p>Wrap in:</p>  <p>Neutral Tissue <u>or</u> Neutral Kraft <u>or</u> Polyethylene Film <u>and</u> Enclose in:</p>  <p>Envelope, Grease-proof, Waterproof, Heat Sealable</p>			<p>Wrap in:</p>  <p>Neutral Tissue <u>or</u> Neutral Kraft <u>or</u> Polyethylene Film <u>and</u> Cushion with:</p>  <p>Cellulosic Cushioning <u>or</u> Wrap and cushion with:</p>  <p>Cushioning Transparent Flexible, Cellular <u>and</u> Enclose in:</p>  <p>Envelope, Grease-proof, Waterproof, Heat Sealable</p>			<p>Wrap in:</p>  <p>Neutral Tissue <u>or</u> Neutral Kraft <u>or</u> Polyethylene Film <u>and</u> Cushion with:</p>  <p>Cellulosic Cushioning <u>or</u> Wrap and cushion with:</p>  <p>Cushioning Transparent Flexible, Cellular <u>and</u> Enclose in:</p>  <p>Envelope, Grease-proof, Waterproof, Heat Sealable <u>and</u> Pack in:</p> 		
						<p>Box, Paperboard Folding <u>or</u> Box, Fiberboard <u>or</u> Fiber Tube</p>					

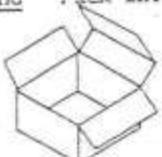
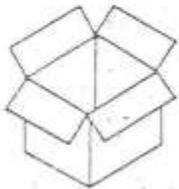
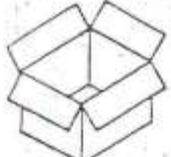
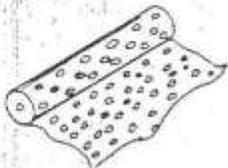
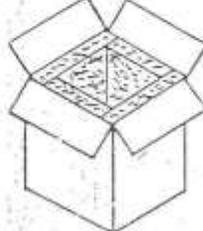
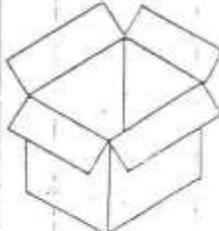
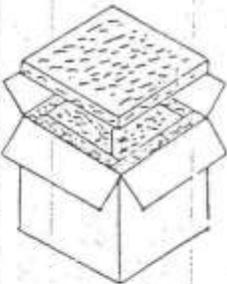
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Instructions 207, 209, 301 and 302

207			209			301			302		
Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean
Package in:  Vial, Plastic with Lid <u>or</u>  Vial, Flexible Butyrate Tubing Cap and Plug As Required <u>or</u>  Blister or Skin Pack <u>and</u> Enclose in:  Envelope, Grease-proof, Waterproof, Heat Sealable			Position on:  Fiberboard Sheet <u>and</u> Enclose in:  Envelope, Grease-proof, Waterproof, Heat Sealable			Pack in:  Box, Paperboard Folding <u>or</u>  Box, Fiberboard <u>or</u>  Fiber Tube			Wrap in:  Neutral Tissue <u>or</u> Neutral Kraft <u>or</u> Polyethylene Film <u>and</u> Enclose in:  Envelope, Kraft		

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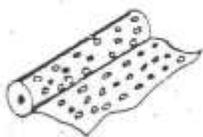
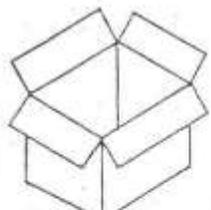
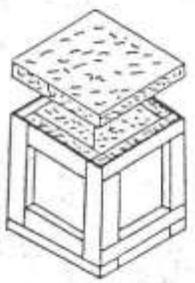
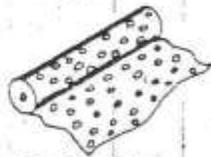
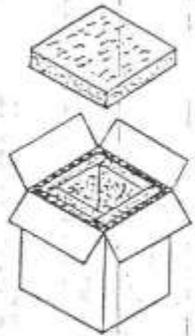
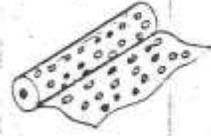
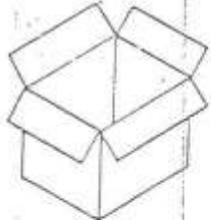
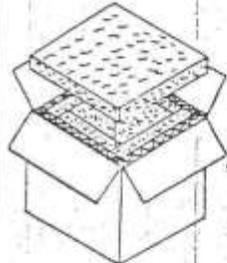
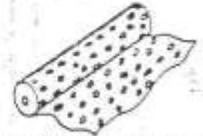
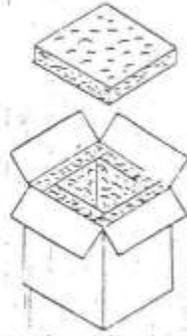
Instructions 303, 305, 312, 313

303			305			312			313		
Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean
<p>Wrap in:</p>  <p>Neutral Tissue OR Neutral Kraft OR Polyethylene Film and Pack in:</p>  <p>Box, Paperboard Folding OR</p>  <p>Box, Fiberboard OR</p>  <p>Fiber Tube</p>			<p>Wrap in:</p>  <p>Neutral Tissue OR Neutral Kraft OR Polyethylene Film and</p> <p>Cushion with:</p>  <p>Cellulosic Cushioning OR Wrap and Cushion with:</p>  <p>Cushioning Flexible, Cellular and Pack In:</p>  <p>Box, Paperboard Folding OR Box, Fiberboard OR Fiber Tube OR "Fast Pack"</p>			<p>Wrap in:</p>  <p>Cushioning, Transparent Flexible, Cellular (1" min thickness) and Pack in:</p>   <p>Exterior Fiberboard Lined with 2" Thick Polyurethane Foam Cushioning or "Fast Pack"</p>			<p>Wrap in:</p>  <p>Cushioning, Transparent Flexible, Cellular (1" min thickness) and Pack in:</p>  <p>Interior Fiberboard Box and Overpack in:</p>  <p>Exterior Fiberboard Box Lined with 2" Thick Polyurethane Foam Cushioning or "Fast Pack"</p>		

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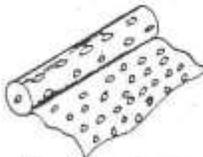
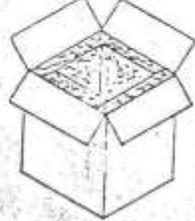
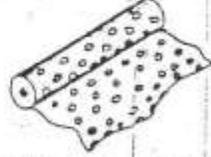
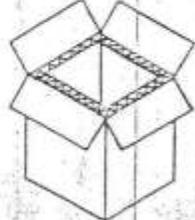
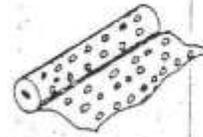
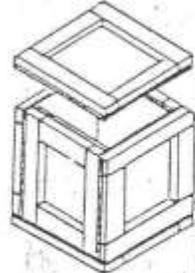
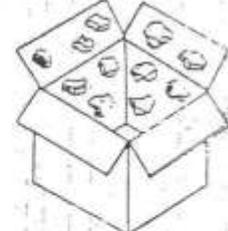
Instructions 314 - 317

314			315			316			317		
Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean
<p>Wrap in:</p>  <p>Cushioning, Transparent Flexible, Cellular (1" Min Thickness) <u>and</u> Pack in:</p>  <p>Interior Fiberboard Box <u>and</u> Overpack in:</p>  <p>Cleated Plywood Box Lined with 2" Thick Polyurethane Foam Cushioning</p>			<p>Wrap in:</p>  <p>Cushioning, Transparent Flexible, Cellular (1" Min Thickness) <u>and</u> Pack in:</p>  <p>Fiberboard Box Lined with 2" Thick Polyurethane Foam Cushioning and Interlocked Laminated Fiberboard. Laminated Fiberboard Between Polyurethane and Fiberboard Box.</p>			<p>Wrap in:</p>  <p>Cushioning, Transparent Flexible, Cellular (1" Min Thickness) <u>and</u> Pack in:</p>  <p>Interior Fiberboard Box <u>and</u> Overpack in:</p>  <p>Fiberboard Box Lined with 2" Thick Polyurethane Foam Cushioning and Interlocked Laminated Fiberboard. Laminated Fiberboard Between Polyurethane and Fiberboard Box.</p>			<p>Wrap in:</p>  <p>Cushioning, Transparent, Flexible, Cellular (1" Min Thickness) <u>and</u> Pack in:</p>  <p>Exterior Fiberboard Box Lined with 1" Thick Polyethylene Foam Cushioning</p>		

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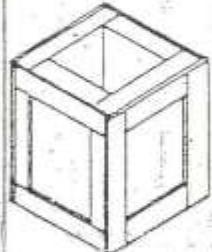
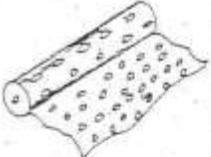
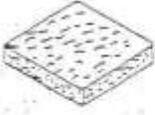
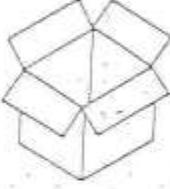
Instruction for 318 - 321

318			319			320			321		
Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean
<p>Wrap in:</p>  <p>Cushioning, Trans- parent, Flexible, Cellular (1" Min Thickness)</p> <p>and</p> <p>Pack in:</p>   <p>Exterior Fiber- board Box Lined with 2" Thick Poly- ethylene Foam Cushioning</p>			<p>Wrap in:</p>  <p>Cushioning, Trans- parent, Flexible, Cellular (1" Min Thickness)</p> <p>and</p> <p>Pack in:</p>   <p>Exterior Fiber- board Box Lined with Interlocked Laminated Fiber- board.</p>			<p>Wrap in:</p>  <p>Cushioning, Trans- parent, Flexible, Cellular (1" Min Thickness)</p> <p>and</p> <p>Pack in:</p>  <p>Cleated Plywood Box</p>			<p>Wrap in:</p>  <p>Polyethylene Film and</p> <p>Pack in:</p>  <p>Exterior Fiber- board Box with Free Flow Cushioning</p>		

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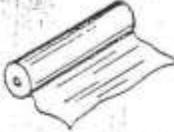
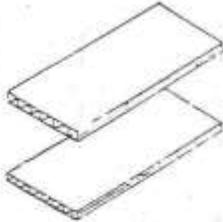
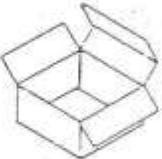
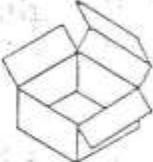
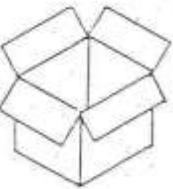
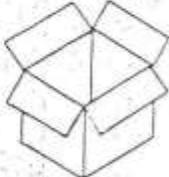
DIRECTIVE NO. 270-WI-6400.1.1N
EFFECTIVE DATE: 02/01/2016
EXPIRATION DATE: 02/01/2021

Instructions for 322-325

322			323			324			325					
Method	Qup	Clean												
<p>Wrap in:</p>  <p>Cushioning, Trans- parent, Flexible, Cellular (1" min thickness)</p> <p>AND</p> <p>Pack in:</p>  <p>cleated Plywood Box Lined with 2" Thick Polyurethane Foam Cushioning.</p>			<p>Wrap in:</p>  <p>Cushioning, Trans- parent, Flexible, Cellular (1" Min Thickness)</p> <p>and OR</p> <p>Pack in:</p>   <p>Tri-wall Box with 2" Thick Polyurethane Foam Cushioning</p>			<p>Wrap in:</p>  <p>Polyethylene Film</p> <p>And Pack in</p>  <p>Box, Fiberboard</p> <p>Lined with 2" Flexible foam-in-place polyurethane</p>								

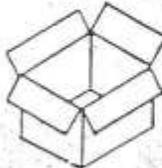
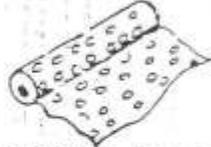
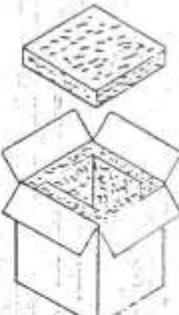
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Instructions for 373, 382, 283, 389

373			382			383			389		
Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean
Wrap each item in:			Wrap in:			Wrap in:			Sandwich Between:		
 Neutral Tissue <u>OR</u> Neutral Kraft <u>OR</u> Polyethylene Film <u>and</u> Pack in:			 Neutral Tissue <u>OR</u> Neutral Kraft <u>OR</u> Polyethylene Film <u>and</u> Enclose in:			 Neutral Tissue <u>OR</u> Neutral Kraft <u>OR</u> Polyethylene Film <u>and</u> Pack in:			 Two (2) Sheets of Fiberboard <u>and</u> Enclose in:		
 Box, Paperboard Folding <u>OR</u>			 Envelope, Kraft			 Box, Paperboard Folding <u>OR</u>			 Envelope, Kraft		
 Box, Fiberboard <u>OR</u>						 Box, Fiberboard <u>OR</u>					
 Fiber Tube						 Fiber Tube					

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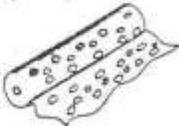
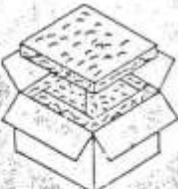
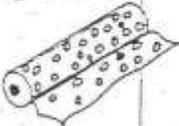
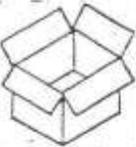
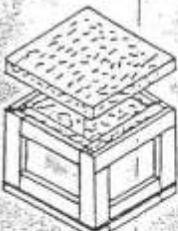
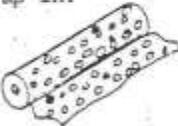
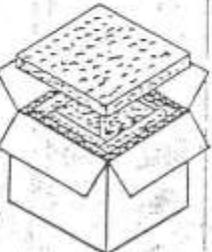
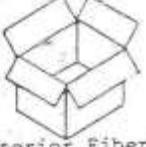
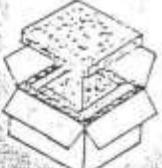
Instructions for 402, 404, 405, 412

402			404			405			412		
Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean
<p>Wrap in:</p>  <p>Neutral Tissue or Neutral Kraft or Polyethylene Film</p> <p>and</p> <p>Enclose in:</p>  <p>Envelope, Grease-proof, Water-vapor-proof with desiccant</p>			<p>Wrap in:</p>  <p>Neutral Tissue or Neutral Kraft or Polyethylene Film and</p> <p>Cushion with:</p>  <p>or</p> <p>Wrap and cushion with:</p>  <p>Cushioning Transparent Flexible, Cellular</p> <p>and</p> <p>Enclose in:</p>  <p>Envelope, Grease-proof, Water-vapor-proof with desiccant</p>			<p>Wrap in:</p>  <p>Neutral Tissue or Neutral Kraft or Polyethylene Film and</p> <p>Cushion with:</p>  <p>or</p> <p>Wrap and cushion with:</p>  <p>Cushioning Transparent Flexible, Cellular</p> <p>and</p> <p>Enclose in:</p>  <p>Envelope, Grease-proof, Water-vapor-proof with desiccant</p> <p>and</p> <p>Pack in:</p> 			<p>Wrap in:</p>  <p>Cushioning, Transparent Flexible, Cellular (1" Min. Thickness) and</p> <p>Enclose in:</p>  <p>Envelope, Grease-proof, Water-Vapor-proof with desiccant</p> <p>and</p> <p>Pack in:</p>  <p>Exterior Fiberboard Box Lined with 2" Thick Polyurethane Foam Cushioning or "Fast Pack"</p>		
			<p>Box, Paperboard Folding or Box, Fiberboard or Fiber Tube</p>								

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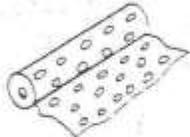
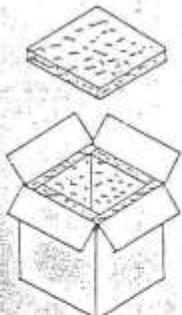
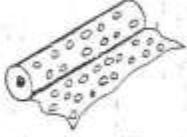
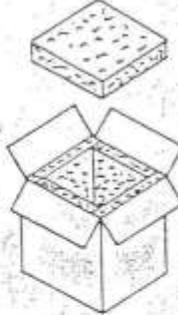
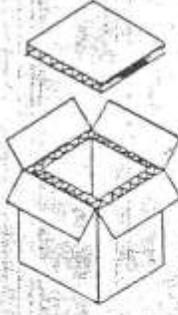
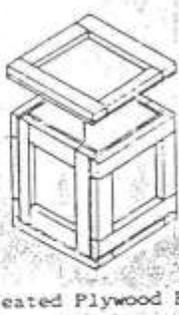
DIRECTIVE NO. 270-WI-6400.1.1N
EFFECTIVE DATE: 02/01/2016
EXPIRATION DATE: 02/01/2021

Instructions for 413 - 416

413			414			415			416		
Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean
<p>Wrap in:</p>  <p>Cushioning, Trans- parent Flexible, Cellular (1" Min. Thickness) and Pack in:</p>  <p>Interior Fiberboard Box with Desiccant and Enclose in:</p>  <p>Barrier, Grease- proof Water-Vapor- proof and Overpack in:</p>  <p>Exterior Fiberboard Box Lined with 2" Thick Polyurethane Foam Cushioning or "Fast Pack"</p>			<p>Wrap in:</p>  <p>Cushioning, Trans- parent Flexible, Cellular (1" Min. Thickness) and Pack in:</p>  <p>Interior Fiberboard Box with Desiccant and Enclose in:</p>  <p>Barrier, Grease- proof Water-Vapor- proof and Overpack in:</p>  <p>Cleated Plywood Box Lined with 2" Thick Polyurethane Foam Cushioning</p>			<p>Wrap in:</p>  <p>Cushioning, Trans- parent Flexible, Cellular (1" Min. Thickness) and Enclose in:</p>  <p>Envelope, Grease- proof, Water-Vapor- proof with Desiccant and Pack in:</p>  <p>Fiberboard Box Lined with 2" Thick Poly- urethane Foam Cushioning and Inter- locked Laminated Fiberboard. Laminated Fiberboard between Polyurethane and Fiberboard Box.</p>			<p>Wrap in:</p>  <p>Cushioning, Trans- parent Flexible, Cellular (1" Min. Thickness) and Pack in:</p>  <p>Interior Fiberboard Box with Desiccant and Enclose in:</p>  <p>Barrier, Grease- proof Water-Vapor- proof and Overpack in:</p>  <p>Exterior Fiberboard Box Lined with 2" Thick Polyurethane Foam Cushioning and Interlocked Laminated Fiberboard. Laminated Fiber- board between Poly- urethane and Fiber- board box.</p>		

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<https://gs279gdmsias.gsfc.nasa.gov/GDMSv2/index.htm> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

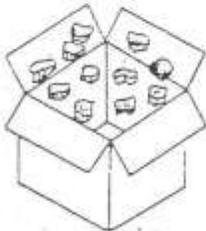
Instructions for 417-420

417			418			419			420		
Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean	Method	Qup	Clean
<p>Wrap in:</p>  <p>Cushioning, Trans- parent, Flexible, Cellular (1" Min. Thickness)</p> <p>and</p> <p>Enclose in:</p>  <p>Envelope, Grease- proof, Water-Vapor- proof with Desiccant</p> <p>and</p> <p>Pack in:</p>  <p>Exterior Fiberboard Box Lined with 1" Thick Polyethylene Foam Cushioning</p>			<p>Wrap in:</p>  <p>Cushioning, Trans- parent, Flexible, Cellular (1" Min. Thickness)</p> <p>and</p> <p>Enclose in:</p>  <p>Envelope, Grease- proof, Water-Vapor- proof with Desiccant</p> <p>and</p> <p>Pack in:</p>  <p>Exterior Fiberboard Box Lined with 2" Thick Polyethylene Foam Cushioning</p>			<p>Wrap in:</p>  <p>Cushioning, Trans- parent, Flexible, Cellular (1" Min. Thickness)</p> <p>and</p> <p>Enclose in:</p>  <p>Envelope, Grease- proof, Water-Vapor- proof with Desiccant</p> <p>and</p> <p>Pack in:</p>  <p>Exterior Fiberboard Box Lined with Laminated Fiberboard</p>			<p>Wrap in:</p>  <p>Cushioning, Trans- parent, Flexible, Cellular (1" Min. Thickness)</p> <p>and</p> <p>Enclose in:</p>  <p>Envelope, Grease- proof, Water-Vapor- proof with Desiccant</p> <p>and</p> <p>Pack in:</p>  <p>Cleated Plywood Box</p>		

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EFFECTIVE DATE: 02/01/2016
EXPIRATION DATE: 02/01/2021

Instructions for 421

421									
Method	Qup	Clean							
<p>Wrap in:</p>  <p>Polyethylene Film</p> <p>and</p> <p>Enclose in:</p>  <p>Envelope, Grease-proof, Water-Vapor-proof with Desiccant</p> <p>and</p> <p>Pack in:</p>  <p>Exterior Fiberboard Box with Free Flow Cushioning</p>									

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT <https://gs279gdmsias.gsfc.nasa.gov/GDMSv2/index.htm> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

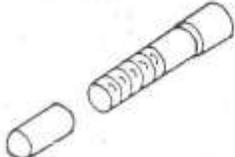
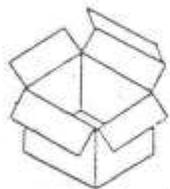
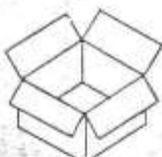
DIRECTIVE NO. 270-WI-6400.1.1N
EFFECTIVE DATE: 02/01/2016
EXPIRATION DATE: 02/01/2021

Cross-Index of Three-Digit Packaging Codes for Standard Packaging Instructions

Code Number	Usage
001	Corrosion Resistant Threaded or Non-Threaded Items, such as bolts, screws, pins and small shafts
002	Non-Corrosion Resistant Threaded or Non-Threaded Items, such as bolts, screws, pins and small shafts.
003	Corrosion Resistant Threaded or Non-Threaded Close Tolerance Items, such as bolts, screws, pins and small shafts.
004	Non-Corrosion Resistant Threaded or Non-Threaded Close Tolerance Items, such as bolts, screws, pins and small shafts.
005	Insulation Blankets
006	Gap Fillers
010	Electrical Cable Assemblies and Similar Items
011	Small Electrical Cables and Cable Assemblies, Wire and Similar Items
012	Axial/Radial Lead Electrical Components such as Resistors, Capacitors, Transistors, Semi-conductor devices and similar items
015	Circuit Board Assemblies and Similar Items
019	Magnetic Tapes
021	Hose and Hose Assemblies

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<https://gs279gdmsias.gsfc.nasa.gov/GDMSv2/index.htm> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

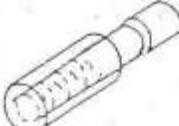
Standard Packaging Instruction Three-Digit Packaging Code 001

<p>Apply:</p>  <p>Compound, Plastic Coating</p> <p>or</p>  <p>Sleeve, Fiberboard or Plastic</p> <p>and Pack in:</p>  <p>Box, Paperboard Folding</p>  <p>Box, Fiberboard</p> <p>or</p>  <p>Fiber Tube</p>	<p><u>STANDARD PACKAGING INSTRUCTION</u> <u>Three-Digit Packaging Code 001</u></p> <p>1. <u>SCOPE:</u> This instruction establishes a method of bulk packaging threaded or non-threaded cylindrical shaped items using a fiberboard or plastic sleeve or strippable plastic compound and a folding box, fiberboard box, or fiber tube. This instruction does not apply to items with precision surface or close tolerance threads.</p> <p>1.1 <u>Applicable Parts:</u> Bolts, screws, pins, small shafts and similar items having plated finishes or fabricated of corrosion resistant material.</p> <p>2. <u>METHOD:</u></p> <p>2.1 <u>Detail Procedures:</u> Details not defined herein shall be in accordance with Method III of specification MK0116-0004 (MIL-P-116).</p> <p>2.2 <u>Quantity per Unit Container (QUP):</u> Bulk</p> <p>2.3 <u>Cleaning:</u> C-1 of specification MK0116-0004 (MIL-P-116).</p> <p>2.4 <u>Special Wrap, Cushion or Other Protection:</u> Apply sleeve or strippable compound to critical surfaces (shank, threads, etc.) over 3/8 inch diameter.</p> <p>2.4.1 Sleeve shall extend slightly beyond critical surface.</p> <p>2.4.2 Sleeve diameter and construction shall assure that sleeve will remain in position on item during normal handling.</p> <p>2.5 <u>Unit Container:</u> Folding box, fiberboard box, or fiber tube.</p> <p>NOTE: Items under 3/8 inch dia. do not require a sleeve or strippable compound.</p>
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Standard Packaging Instruction Three-Digit Packaging Code 002

Apply:



Sleeve Fiberboard or Plastic

and

Wrap in:



Polyethylene Film

and

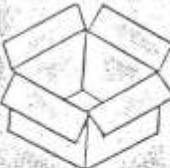
Enclose in:



Envelope, Greaseproof Water-vaporproof with desiccant

and

Pack in:



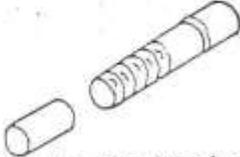
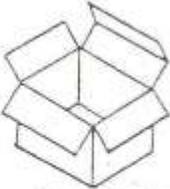
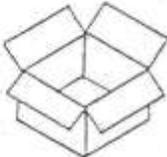
Box, Paperboard Folding
or
Box, Fiberboard
or
Fiber Tube

STANDARD PACKAGING INSTRUCTIONS
Three-Digit Packaging Code 002

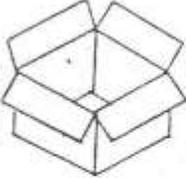
- SCOPE: This instruction establishes a method of bulk packaging threaded or non-threaded cylindrically shaped items using a wrap and envelope and folding box, fiberboard box or fiber tube. This instruction does not apply to items with precision surfaces or close tolerance threads.
 - Applicable Parts: Bolts, screws, pins, small shafts and similar items fabricated of bare ferrous metals without protective finishes or plating.
- METHOD:
 - ~~Quantity per Unit Container (QUP):~~
 - Quantity per Unit Container (QUP): Bulk
 - Cleaning: ~~QUP of specification~~
 - Special Wrap, Cushion or Other Protection:
 - Items over 3/8 inch Diameter: Wrap individually with polyethylene film and place individually into a greaseproof, water-vaporproof envelope with desiccant and heat seal.
 - Items 3/8 inch Diameter or less: Wrap individually or in multiples of 5 with polyethylene film and place into a greaseproof water-vaporproof envelope with desiccant and heat seal.
 - Unit Container: Folding box, fiberboard box or fiber tube.

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Standard Packaging Instruction Three-Digit Packaging Code 003

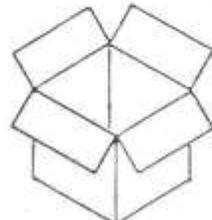
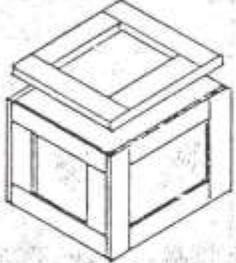
<p>Apply:</p>  <p>Sleeve, Fiberboard or Plastic and Pack in:</p>  <p>Box, Paperboard Folding</p>  <p>Box, Fiberboard or</p>  <p>Fiber Tube</p>	<p><u>STANDARD PACKAGING INSTRUCTION</u> <u>Three-Digit Packaging Code 003</u></p> <ol style="list-style-type: none"> 1. <u>SCOPE:</u> This instruction establishes a method of bulk packaging threaded or non-threaded close tolerance cylindrically shaped items using a fiberboard or plastic sleeve and a folding box, fiberboard box, or fiber tube. <ol style="list-style-type: none"> 1.1 <u>Applicable Parts:</u> Close tolerance bolts, screws, small shafts, pins and similar items having plated finishes or fabricated of corrosion resistant material. 2. <u>METHOD:</u> <ol style="list-style-type: none"> 2.1 <u>Detail Procedures:</u> Details are defined herein shall be in accordance with Method 101 of specification MIL-STD-883C (MIL-STD-883C). 2.2 <u>Quantity per Unit Container (QUP):</u> Bulk 2.3 <u>Cleaning:</u> See specification MIL-STD-883C (MIL-STD-883C). 2.4 <u>Special Wrap, Cushion or Other Protection:</u> Apply sleeve to critical surfaces (shank, threads, etc.). Items under 3/8 inch dia. do not require a sleeve. <ol style="list-style-type: none"> 2.4.1 Sleeve shall extend slightly beyond critical surface. 2.4.2 Sleeve diameter and construction shall assure that sleeve will remain in position on item during normal handling. 2.5 <u>Unit Container:</u> Folding box, fiberboard box, or fiber tube.
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Standard Packaging Instruction Three-Digit Packaging Code 004

STANDARD PACKAGING INSTRUCTION Three-Digit Packaging Code 004	
 Wrap in:  Polyethylene Film and Enclose in:  Envelope, Greaseproof water-vaporproof envelope with desiccant. and Pack in:  Box, Paperboard Folding <u>or</u> Box, Fiberboard <u>or</u> Fiber Tube	<ol style="list-style-type: none"> 1. <u>SCOPE:</u> This instruction establishes a method of bulk packaging threaded or non threaded close tolerance cylindrically shaped items requiring corrosion protection by providing desiccant within an envelope prior to insertion into a folding box, fiberboard box or fiber tube. <ol style="list-style-type: none"> 1.1 <u>Applicable Parts:</u> Close tolerance bolts, screws, pins, small shafts and similar items fabricated of bare ferrous metals without protective finishes or plating. 2. <u>METHOD:</u> <ol style="list-style-type: none"> 2.1 General Procedures: Details not defined herein shall be in accordance with Method II of specification MIL-STD-883C (MIL-883C). 2.2 <u>Quantity per Unit Container (QUP):</u> Bulk 2.3 Cleaning: 0.9 of specification MIL-STD-883C (MIL-883C). 2.4 <u>Special Wrap, Cushion or Other Protection:</u> Wrap individually with polyethylene film and place into a greaseproof, water-vaporproof envelope with desiccant and heat seal. 2.5 <u>Unit Container:</u> Folding box, fiberboard box or fiber tube.

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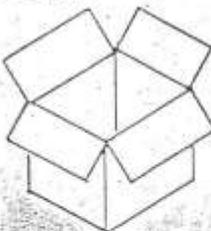
Standard Packaging Instruction Three-Digit Packaging Code 005

STANDARD PACKAGING INSTRUCTION Three-Digit Packaging Code 005	
<p>Wrap in:</p>  <p>Polyethylene Film and Pack in:</p>  <p>Box, Fiberboard and Enclose in:</p>  <p>Polyethylene Film and Pack in:</p>  <p>Cleated Plywood Box</p>	<p>1. SCOPE. This instruction establishes a method of packaging insulation blankets using a plastic wrap and fiberboard box.</p> <p>1.1 <u>Applicable Parts.</u> Insulation blankets</p> <p>2. <u>METHOD.</u></p> <p>2.1 <u>General Procedures.</u> Details are provided in the following documents with Method 117 of Specification 40011-0004 (M17-117)</p> <p>2.2 <u>Quantity Per Unit Package (QUP).</u> 1</p> <p>2.3 <u>Unit Container.</u> 40011-0004 (M17-117)</p> <p>2.4 <u>Special Wrap, Cushion or Other Protection.</u> Wrap each item in polyethylene film and place bulk qty into a fiberboard box. Wrap each fiberboard box with polyethylene film and place bulk quantity of unit containers into cleated plywood box. For shipment of only one (1) blanket, size under 30 x 30, overpack first fiberboard box into another fiberboard box after wrapping with polyethylene film, and omit cleated plywood box. Place sheet of 5/16 plywood on the first fiberboard box (size A/R) for added stiffness and protection of blankets.</p> <p>2.5 <u>Unit Container.</u> Fiberboard box.</p>

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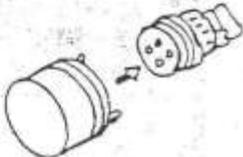
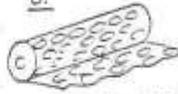
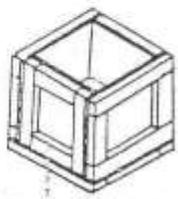
DIRECTIVE NO. 270-WI-6400.1.1N
EFFECTIVE DATE: 02/01/2016
EXPIRATION DATE: 02/01/2021

Standard Packaging Instruction Three-Digit Packaging Code 006

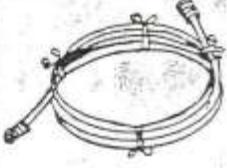
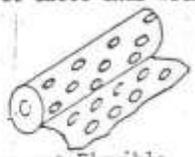
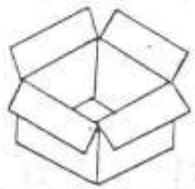
<p>Enclose in:</p>	<p>STANDARD PACKAGING INSTRUCTION Three-Digit Packaging Code 006</p>
	<p>1. SCOPE. This instruction establishes a method of packaging gap fillers using an envelope, cellular cushioning and a fiberboard box.</p>
<p>Envelope, Heat Sealable</p> <p>and</p>	<p>1.1 <u>Applicable Parts.</u> Gap fillers</p> <p>2. <u>METHOD.</u></p>
<p>Wrap Bulk Qty in:</p>	<p>2.1 Special Wrap, Cushion or Other Protection. Enclose each item in envelope and wrap bulk qty with cellular cushion, pack into fiberboard box.</p> <p>2.2 <u>Quantity Per Unit Package (QUP):</u> 1</p>
	<p>2.3 Special Wrap, Cushion or Other Protection. Enclose each item in envelope and wrap bulk qty with cellular cushion, pack into fiberboard box.</p> <p>2.4 <u>Special Wrap, Cushion or Other Protection.</u> Enclose each item in envelope and wrap bulk qty with cellular cushion, pack into fiberboard box.</p>
<p>Cushioning, Transparent Flexible, Cellular</p> <p>and</p>	
<p>Pack in:</p>	
	
<p>Box, Fiberboard</p>	

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Standard Packaging Instruction Three-Digit Packaging Code 010

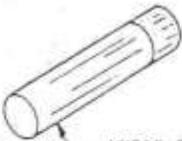
STANDARD PACKAGING INSTRUCTION Three-Digit Packaging Code 010	
<p>Protect Cable Ends With:</p>  <p>Guard Sleeve</p> <p>OR</p>  <p>Protective Cap</p> <p>OR</p>  <p>Transparent flexible, Cellular Cushioning and</p>  <p>Envelope, Polyethylene and</p> <p>Pack in:</p>  <p>Box, Cleated Panel or Box, Fiberboard</p>	<p>1. SCOPE: This instruction establishes a method of individually packaging electrical cable assemblies using a fiberboard or cleated panel box.</p> <p>1.1 Applicable Parts: Electrical cable assemblies and similar items.</p> <p>2. METHOD:</p> <p>2.1 Detail Procedure: Details not defined herein shall be in accordance with Method 10 of specification MIL-STD-883C (MIL-PRC-161) for cables with connectors and Method 101 for cables without connectors.</p> <p>2.2 Quantity per Unit Package (QUP): 1</p> <p>2.3 Marking: See specification MIL-STD-883C (MIL-PRC-161).</p> <p>2.4 Special Wrap, Cushion or Other Protection: Protect cable ends, coil item and insert dunnage in assembly with 10100-0000.</p> <p>2.5 Unit Container: Select fiberboard or cleated panel box or reel assembly in accordance with MIL-STD-883C.</p>

Standard Packaging Instruction Three-Digit Packaging Code 011

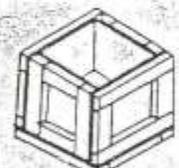
<p>Coil Cable & Tie:</p>  <p>or</p> <p>Protect cable ends with</p>  <p>Transparent Flexible, Cellular Cushioning.</p> <p>and</p> <p>Wrap in:</p>  <p>Polyethylene Film or Barrier Material, Greaseproof, Waterproof Flexible</p> <p>and Insert in:</p>  <p>Bag, Greaseproof, Waterproof</p> <p>and Pack in:</p>  <p>Box, Paperboard, Folding Box, Fiberboard</p>	<p>STANDARD PACKAGING INSTRUCTION Three-Digit Packaging Code 011</p> <hr/> <p>1. SCOPE: This instruction establishes a method of individually packaging small electrical cable and wire using a wrap, bag and folding or fiberboard box.</p> <p>1.1 Applicable Parts: Small electrical cable and cable assemblies, wire and similar items.</p> <p>2. METHOD:</p> <p>2.1 Special Procedures: Deviations not defined herein shall be in accordance with Method 10 of specification 100000-0000 (MIL-STD-883C).</p> <p>2.2 Quantity Per Unit Package (QUP): 1 except kit items package BULK.</p> <p>2.3 Quantity: 100000-0000 (MIL-STD-883C).</p> <p>2.4 Special Wrap, Cushion or Other Protection: Coil items uniformly to prevent kinking and secure by tying. Wrap item with polyethylene film or greaseproof, waterproof paper as applicable. Items not coilable shall be wrapped directly. Protect cable ends.</p> <p>2.5 Unit Container: Insert item into 100000-0000 bag. In addition, items with coiled diameter greater than 6 inches shall be placed into a folding or fiberboard box.</p>
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Standard Packaging Instruction Three-Digit Packaging Code 012

<p>Package in:</p>  <p>MK390-80011 Vial, Plastic with Lid</p>	<p><u>STANDARD PACKAGING INSTRUCTION</u> Three-Digit Packaging Code 012</p> <ol style="list-style-type: none">1. <u>SCOPE:</u> This instruction establishes a method of individually packaging axial/radial lead electrical components using a plastic tube and plug.1.1 <u>Applicable Parts:</u> Resistors, capacitors, transistors, semi-conductor devices and similar items.2. <u>METHOD:</u><ol style="list-style-type: none">2.1 <u>Recall Procedures:</u> Details not defined herein in accordance with Method 300 of specification MK011-80011 (see 2.7.1).2.2 <u>Quantity per Unit Package (QUP):</u> 12.3 <u>Cleaning:</u> See specification MK011-80011 (see 2.7.1).2.4 <u>Special Wrap, Cushion or Other Protection:</u> Place each item in tube and insert plug at each end.2.5 <u>Unit Container:</u> Tube Assembly.2.6 <u>Marking:</u> Apply pressure sensitive label to exterior surface of tube.2.7 <u>Alternate Procedures:</u> When Tube Assembly is not available package in accordance with three-digit packaging code 207.<ol style="list-style-type: none">2.7.1 When the item is too large to be package in one of the unit containers specified, package in accordance with three digit code 205.
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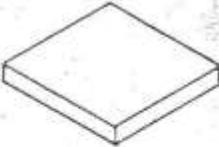
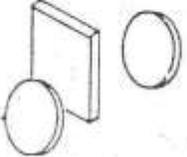
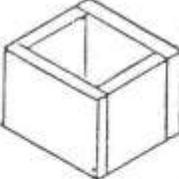
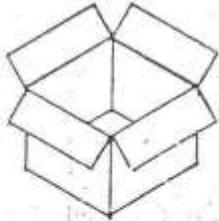
Standard Packaging Instruction Three-Digit Packaging Code 015

<p>Wrap in:</p>  <p>Polyethylene Film and</p> <p>Enclose In:</p>  <p>Envelope, Greaseproof Water-Vaporproof with Desiccant and</p> <p>Sandwich Between:</p>  <p>Two (2) Pieces of Convolute Foam <i>Bubble</i> and <i>RAP</i> Pack in:</p>  <p>Box, Fiberboard and Overpack in:</p>  <p>Box, Cleated Panel</p>	<p style="text-align: center;"><u>STANDARD PACKAGING INSTRUCTION</u> Three-Digit Packaging Code 015</p> <ol style="list-style-type: none"> 1. <u>SCOPE:</u> This instruction establishes a method of individually packaging circuit board assemblies using a plastic wrap and bag, desiccant, convolute-cut polyurethane foam and a fiberboard box. 1.1 <u>Applicable Parts:</u> Circuit board assemblies and similar items. 2. <u>METHOD:</u> <ol style="list-style-type: none"> 2.1 <u>Detail Procedures:</u> Details not defined in this instruction. Details shall be in accordance with Method IIC (see Method 015, when applicable) of specification W0000-0000 (MIL-PRC-116). 2.2 <u>Quantity per Unit Package (QUP):</u> 1 2.3 <u>Cleaning:</u> See specification W0000-0000 (MIL-PRC-116). 2.4 <u>Special Wrap, Cushion or Other Protection:</u> <ol style="list-style-type: none"> 2.4.1 Package item Method IIC for Level A. Wrap each item in polyethylene film and insert into a greaseproof, water-vaporproof envelope with desiccant. Place envelope into convolute-cut polyurethane foam sandwich. Overall thickness of two pieces of convolute foam shall be two inches. 2.4.2 Package item Method III for Level C. Wrap each item in polyethylene film and insert into two inch (overall thickness) convolute-cut polyurethane foam sandwich. 2.5 <u>Unit Container:</u> Fiberboard box. Must not be used as shipping container. Overpack or consolidate in a cleated plywood box. 2.6 <u>Marking:</u> Apply fragile label to container in accordance with drawing MK390-80001.
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Standard Packaging Instruction Three-Digit Packaging Code 019

<p>Pack in</p>  <p>Top Pad</p>  <p>Reel Cans with Separators</p>  <p>Side Pads</p>  <p>Bottom Pads</p>  <p>Shipping Container</p>	<p><u>STANDARD PACKAGING INSTRUCTION</u> <u>Three-Digit Packaging Code 019</u></p> <hr/> <ol style="list-style-type: none"> 1. <u>SCOPE:</u> This instruction establishes a method of packaging magnetic tapes in reel containers. <ol style="list-style-type: none"> 1.1 <u>Applicable Parts:</u> Magnetic Tape 2. <u>METHOD:</u> <ol style="list-style-type: none"> 2.1 <u>Detail Procedures:</u> Reel containers are to be packed on edge. Reel containers defined herein shall be in accordance with Method III of specification 10000-0004 (MIL-P-116). Reel cans may be shipped with reels. 2.2 <u>Quantity per Unit Package (QUP):</u> 1 2.3 <u>Cleaning:</u> Conform to specification 10000-0004 (MIL-P-116) 2.4 <u>Special Wrap, Cushion or Other Protection:</u> Line box with two inch thick polyurethane foam. Separators between each reel to be one inch polyurethane foam. 2.5 <u>Unit Containers:</u> Reel Container 2.6 <u>Quantity per Shipping Container:</u> No Limit 2.7 <u>Shipping Container:</u> Fiber board box up to 40 lbs. gross weight. Cleated plywood box for heavier loads. 2.8 <u>Marking:</u> "This Side Up" Labels
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DIRECTIVE NO. 270-WI-6400.1.1N
EFFECTIVE DATE: 02/01/2016
EXPIRATION DATE: 02/01/2021

CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	10/01/98	Initial Release
A	2/1/99	<ul style="list-style-type: none"> • Change WI title to “Packaging and Preserving NASA Equipment and Material”. • Adds information to section P4 on Quality Records. • Modify section 8.14 to show NASROC contractor involvement in explosive packing. • Adds section 8.18 on Non-conformance Reporting
B	4/27/99	<ul style="list-style-type: none"> • Reformatted entire WI to comply with GPG 1410.1 • P6.k., 8.1.4, 8.8 Insure that shipping container design conforms to requirements of Design Control GPG. • 8.1.4 Add a requirement to check calibration of instrumentation and scales before use. • 8.1.4 check weight test certification on forklift before use. • 8.2.3 Add requirement to document all claims of damage with NCRs. • 8.17 Clarify ESD handling responsibilities. • 8.19.1 Update NCR organization with correct project name and lead designation. • 8.19 Add wording to indicate that all audit discrepancies will be documented with an NCR. • Various locations Designate the WFF Lead Traffic Specialist as having the responsibility for planning and monitoring packing and crating activities at WFF
C	6/1/99	<ul style="list-style-type: none"> • Modified P4 to identify proper Record Retention Schedule • Inserted P8 Cancellation • Renumbered old P8 to P9 and all associated subparagraphs.
D	6/25/99	<ul style="list-style-type: none"> • 9.3 - Modified scheduling for Wallops operations
E	8/13/99	<ul style="list-style-type: none"> • Modified 9.19 to provide for both major and minor non-conformances.
F	2/9/00	<ul style="list-style-type: none"> • Changed reference NHB 6000.1 to NPG 6000.1.

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		<ul style="list-style-type: none"> • P6. References – Added “I” to read “International Maritime Dangerous Goods (IMDG) Code. • 9.1.4 Packaging Engineer – added “packing and crating of flight hardware to accommodate the mode of transportation in order to prevent damage during transit. • 9.1.4 Packaging Engineer – added “I” to read “maintain current copy of all Material Safety Data Sheets (MSDS) for Hazmat items that have been shipped.” • 9.8 Container Design and Fabrication, 2nd paragraph, line “d”. Changed to include a suitable existing container, modify an existing container or build a new one. • 9.9, line “h” to include “IMDG.”
G	6/1/01	<ul style="list-style-type: none"> • Transferred WI to the latest template. • Modified Section 9 to agree with latest WI template. • Add the following to P3. Definitions “h. Blocking and Bracing- Application of special shoring and lumber to prevent movement of material inside the transport vehicle or container.” Move “Special Design Packaging” to “i”. • P6 References – Changed “j” to 239-PLAN-1700.1.1 Health, Safety and Environmental Plan. • 11.1 b and 11.1 i – Corrected MIL-STD-2073 to be consistent with P6, e. Reference. • Instructions 1.3 – Clarify reference to 239-PLAN-1700.1.2 Hazardous Materials Management Plan. • Instructions 1.1 - Change Transportation Branch Head to Project Logistic Branch Manager. • Instructions 2.1 - Add Project Logistics Branch Manager. • Instructions 2.2 - Add Project Logistics Branch Manager.
H	7/13/01	<ul style="list-style-type: none"> • Correct P6 reference to 239-PLAN-1700.1.2, Hazardous Materials Management Plan. • Miscellaneous administrative changes to ensure internal consistency of this document.
I	5/3/04	<ul style="list-style-type: none"> • Changed Reference No P6a from NPG 6000.1 to NPR 6000.1. • 2.2 Preparation of Hazardous Materials added Traffic Manager or Packaging Engineer will review shipment before releasing. • Section 5 Receipts and Inspection – added “d.” The receiving counter in Packing and Crating will be attended at all times during the normal work day. • Section 6 – Documentation – Added

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		<ul style="list-style-type: none"> - Section 6.2 d – The customer verbal instructions for packing and crating will be noted on the 20-4 form and initialed by customer - Section 6.2 f – The packing method used from the “Standard Packaging Methods” S.O.P. will be noted on the GSFC Form 20-4 form by the packer • Section 8.1 Container Design and Fabrication – added <ul style="list-style-type: none"> - Section 8.1.h. – all other packing will be in accordance with the packing and crating reference S.O.P. - “Standard Packaging Methods” - Section 8.1.i – all containers must be labeled and marked in accordance with the latest version of the NASA Standard NPR6000.1 - Section 8.1.j – customer survey cards will be included in all containers that are packed for domestic deliveries • Section 18. Electro-Static Sensitive Material – Added – Should the item be improperly ESD packaged the customer will be informed that it is not properly packaged and that the item will be moved to the ESD Processing Facility for the packing process.
J	2/4/05	<ul style="list-style-type: none"> • Changed all references of Code 239 Project Logistics Branch Manager to Code 239 Transportation Branch Manager to reflect realignment of Packing and Crating Section within the TRAX organization. • Changed all references from Standard Packaging Methods <u>handbook</u> to Standard Packaging Methods <u>S.O.P.</u> • Added in Section P.3 t.; References - NASA Form 1368. • Added in Section P.3 u.; References – 230-SOP-6400.16, Standard Packaging Methods. • Deleted reference to Foam-in-Place Machine, Added Fiberboard Box Maker to Section P5. Tools, Equipment, and Materials. • Added new duties under Section 1.3 d., e., f., and g.; Packaging Engineer. • Added clarification of responsibility to review by the Packaging Engineer under Section 1.3 f. ensure all equipment requested for packing and crating on a GSFC Form 20-4, has be screened and released by the Code 239 Property Management Branch, <u>prior to fulfilling the request</u>; • Added new duties under Section 1.4 a.,b.,c., and d.; Packers /Craters. • Added language in Section 2 under the headings of “Preparation of Hazardous Materials” and “Improper Packaging” that reference the Performance Metrics that govern the tasks.

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		<ul style="list-style-type: none"> • Added language in Section 3.2, “Scheduling Adherence Procedures” under subsections c. (removed “designated representative, <u>substituted</u> “in his absence, the Lead Packer/Crater...””) and d. (<u>added</u> language regarding procedure to follow for any missed shipments). • Changed language in Section 3.3, “Wallops” subsection c.; from “Management”, to “The Packaging Engineer or the Transportation Branch Manager”. • Added new language in Section 6.2 e, Documentation; requiring Packing & Crating to forward original GSFC Form 20-4 to Property Management for screening prior to packaging or shipment. • Changed language in Section 13, Hazardous Materials; regarding re-certification time period from 36 months (per CFR 49 requirement) to 24 months (per IATA requirement). • 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). All changes were reviewed and approved by the Code 230/239 Management Chain.
K	3/08/06	<ul style="list-style-type: none"> • General update for organizational code and name changes. • 15 – Clarified process for shipping radioactive materials.
K	5/14/06	<ul style="list-style-type: none"> • Administratively updated to reflect a change in the owning organization code from 230 to 270.
L	9/10/08	<ul style="list-style-type: none"> • Incorporated “Standard Packing Procedure” into this Work Instruction as Attachment 1. • Changed references numbers to reflect changes in Metrics (Section P.9) • Updated References (Section P.3) to reflect additions to Instrumentation services. • Removed references to Traffic Management Section Head. Reassigned duties to Traffic Management Specialist or Transportation Branch Manager (Section P.8 Records and 1.1 and 1.2).

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		<ul style="list-style-type: none"> Added responsibilities to the Mechanical Engineer (Section 1.3) and Packaging Engineer (Section 1.4) positions to reflect involvement with Instrumentation services.
M	9/26/13	<ul style="list-style-type: none"> P.4 CANCELLATION Added reference 270-WI-6400.1.1 L, Packaging and Preserving NASA Material and Equipment. P.5 TOOLS, EQUIPMENT, AND MATERIALS part a. Added “panel” P.6 SAFETY PRECAUTIONS AND WARNINGS <ul style="list-style-type: none"> d. added requirement for GPR 8120 Hearing Conservation program P.7 TRAINING, reformatted in table form, added training requirements for Hearing Conservation Program. P.8 METRICS, the Performance Requirement for Packing and Crating. Removed old contract metric references. 1.4, p Packaging Engineer duties. Added reference of Code 540 1.6 Packers/Craters, part(s) h. and i. Added new duties 3.2, c Scheduling Adherence Procedures. Substituted position title under section from Lead/Packer/Crater to Lead Traffic Management Specialist. 6.1,f Added language regarding use of rubber stamp referencing packaging standard used. 15 Radioactive Materials. Substituted the Code 250 WI reference and replaced with Code 350 WI reference.
N	2/1/16	<ul style="list-style-type: none"> P.3 REFERENCES: Removed reference to cancelled GPR-1710.1. P.4 CANCELLATION: 270-WI-6400.1.1 M, Packaging and Preserving NASA Material and Equipment P.6 SAFETY PRECAUTIONS AND WARNINGS <ul style="list-style-type: none"> Section (e.) error correction from GPR 8120.1 to 1820.1 P.7 TRAINING: Added Basic Packing and Crating Training Course. Section 20.0 NON-CONFORMANCE MANAGEMENT <ul style="list-style-type: none"> Substituted New non-conformance standard requirements.

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		<ul style="list-style-type: none">• Section 3.2 Removed reference to GSFC-20-16 Storage Request from body and from References and Records. Now being handled by SIMS.• Replaced all “Packaging Engineer” with Mechanical/Packaging Engineer• Material Safety Data Sheets (MSDS) are now referred to as Safety Data Sheets (SDS)
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