

Inch-Pound

MIL-PRF-23199/1 (SH)
Revision A
28 February 2003
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**PERFORMANCE SPECIFICATION
 PACKAGING, PACKING AND MARKING (PP&M) REQUIREMENTS
 FOR INSTRUMENTATION AND CONTROL EQUIPMENT**

This specification is approved for use by the Naval Sea Systems Command (NAVSEA), Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the requirements for packaging, packing, and marking of Instrumentation and Control components to safeguard cleanliness, prevent damage and corrosion, and preserve identification during shipment and storage.

1.2 Definitions:

DOT	Department of Transportation
ESD	Electro-Static Discharge
GBL	Government Bill of Lading
GPA	Government Procurement Agency
INSSRP	Initial Navy Supply System Repair Parts
INS	Initial Navy Stock
Marking	Marking, as used in this specification refers to marking and labeling of packaging and packing.
NSN	National Stock Number
OBRP	On-Board Repair Parts
OBS	On-Board Spares
PP&M	Packaging, Packing and Marking
SLL	Shipyard Load List
TCN	Transportation Control Number

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems command, SEA 05Q4, Department of the Navy, Washington DC 20362-5101, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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1.3 Field Service. Unless otherwise specified or requested by the Government Procurement Agency (GPA), the requirements contained herein do not apply to materials or equipment that is hand carried by vendor field service personnel. The Seller field service personnel are responsible for protecting and handling the hand carried items. Materials and equipment that is shipped separately in support of field service is required to be packaged, packed and marked in accordance with this specification.

1.3.1 Shipment in Place. Unless otherwise specified or requested by the GPA, the requirements contained herein do not apply to items where the GPA has authorized shipment in place. In such cases, the Seller is responsible for storing, protecting and maintaining the identification of the items until the GPA has authorized shipment to final destination. Items shipped in place are considered Government Furnished Equipment (GFE) and shall be controlled as such in accordance with Seller procedures for control of GFE. The requirements specified herein apply for shipment to final destination.

1.4 PP&M Procedures: Seller PP&M procedures written in accordance with the requirements contained herein are subject to GPA on-site review. The Seller may also submit the procedure via the Coordinated Procedure Review System (CPRS). Alternatively, the Seller may develop a facility based PP&M plan that describes, in general terms, the methods to be used for PP&M. The plan must document compliance with the requirements specified herein. If this method is chosen, PP&M details such as lumber size, etc. may be implemented in Seller work instructions. Such details and the overall plan shall be made available to the GPA for on-site review upon request. Deviations from this specification may be authorized by the GPA on a case basis (i.e., Alternate packaging methods may be authorized when the packaged equipment is intended for near term installation and long term preservation is not required, or otherwise when considered acceptable by the GPA.) When the GPA authorizes commercial packaging, ASTM D 3951 should be used as a guideline. However, the Seller remains responsible to safeguard cleanliness, prevent damage (including electro-static protection if required) and preserve identification during shipment. The use of "loose fill" cushioning is prohibited and all marking requirements identified in this specification remain in effect.

1.4.1 Loading and Blocking The Seller shall prepare a procedure providing the minimum requirements for loading and blocking of each equipment type. One generic facility wide plan is acceptable. Loading and blocking requirements shall apply for all equipment packaged per paragraphs 3.2.1 or 3.2.2. The procedure shall be made available for GPA on-site review. All shipments shall be made in closed trailers. Loading and blocking shall be in accordance with DOT CFR Title 49 paragraphs 392.9 (Safe Loading), 393.1000 (General rules for protection against shifting or falling cargo), 393.102 (Securement systems), and 393.104 (Blocking and bracing).

1.5 Applicability. This specification is a stand-alone specification that is specific to I&C equipment, and therefore, it is not necessary to refer to the base MIL-PRF-23199 specification. Previous revisions to MIL-PRF-23199 (i.e., MIL-P-23199) referenced levels A, B and C of packaging and packing. This specification eliminates these level designations; thus, any reference to these levels in contractual documents is not applicable. The entire specification should be assumed applicable unless otherwise noted in contractual documents.

2. **APPLICABLE DOCUMENTS**

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in that issue of the Department of Defense Index of Specifications and

Standards (DoDISS) and supplement thereto, cited in the solicitation. Unless otherwise specified, later issue of the specifications and standards may be used at the option of the Seller.

STANDARDS

MILITARY

MIL-STD-129 - Marking for Shipment and Storage
MIL-STD-767 - Control of Hardware Cleanliness
MIL-STD-2041 - Control of Detrimental Materials
MIL-STD-2073-1 - Standard Practice for Military Packaging

SPECIFICATIONS

MILITARY

MIL-C-104 Crates, Wood: Lumber and Plywood Sheathed, Nailed and Bolted
MIL-DTL-117 Bags Heat-Sealable
MIL-C-17361 Circuit Breakers, Air, Electric, Insulated Housing, (Shipboard Use), General Specification for
MIL-C-17587 Circuit Breakers, Low Voltage, Electric Power, Air, Open Frame, Removable Construction
MIL-P-24466 Polyethylene Bags, Sheet, and Tubing, Green
MIL-PRF-81705 Barrier Materials Flexible, Electrostatic-Free, Heat Sealable
MIL-P-81997 Pouches, Cushioned, Flexible, Electrostatic-Free Reclosable, Transparent

FEDERAL

A-A-3174 Plastic Sheet, Polyolefin
A-A-59135 Packaging Material, Sheet
DOT-CFR-049 Federal Motor Vehicle Safety Standards
PPP-C-00795 Cushioning Material, Packaging (Flexible Closed Cell Plastic Film, For Long Distribution Cycles)
PP-C-1797 Cushioning Material, Resilient, Low Density, Unicellular, Polypropylene Foam

INDUSTRY

ASTM F 392 Standard Test Method for Flex Durability of Flexible Barrier Materials
ASTM F 1249 Standard Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor
ASTM D 3951 Standard Practice for Commercial Packaging

3. **PACKAGING, PACKING AND MARKING REQUIREMENTS**

3.1 General Requirements

3.1.1 Materials

3.1.1.1 “Loose fill” cushioning: Use of “loose fill” cushioning is prohibited.

3.1.1.2 Fiberboard Boxes: The gross weight of a fiberboard box, including contents, shall not exceed the manufacturer’s maximum gross weight described on the box. In no case, shall the gross weight of a fiberboard box including contents exceed 200 pounds.

3.1.1.3 Wooden Boxes: Wooden boxes for gross shipments under 200 pounds do not require skids. Component shipments in wooden boxes exceeding 200 pounds shall have skids suitable for fork lifting. Wooden boxes shall be girth strapped using rust resistant steel banding around the box in not less than two places. For skids, the girth straps shall be applied to and immediately adjoining the inner edge of each skid. Wooden boxes, including contents, shall not exceed 800 pounds. Reinforced wooden box sketches that include the blocking, bracing and anchoring arrangement shall be provided in the Seller’s procedure.

3.1.1.4 Wooden Crates: Components exceeding 800 pounds shall be packed in skid based wooden crates per the construction requirements of MIL-C-104 using material per 3.1.1.5. Reinforced wooden crate sketches that include the blocking, bracing and anchoring arrangement shall be provided in the Seller’s PP&M procedure.

Unless otherwise specified by the GPA, for items packed in accordance with 3.2.1.2, the front of the crate shall be fastened to the sides (ends) using a minimum number of quick release fasteners, lag bolts or deck screws. A minimum number of these types of fasteners shall also be used to fasten the bottom of the sides (ends) to the skid base. Except for attachment of the quick release fasteners, nails, staples, or other types of fasteners, shall not be used to secure the front of the crate to the sides (ends) of the crate, or the sides (ends) of the crate to the skid base.

3.1.1.5 Materials of construction. Wooden boxes and crates shall be enclosed and constructed using commercial quality lumber and/or plywood fabricated in a manner to adequately protect the component. Knots, knot holes, splits and moisture content shall not impair the integrity of the container and component. Commercial nails and/or other fasteners shall be of sufficient size, spacing and quantity to provide a construction that will adequately protect the component under normal handling during shipment. Nails and other fasteners shall be driven so that neither the head nor the point projects above and through the surface of the wood (except for the quick-release fasteners and lag bolt heads defined in par 3.1.1.4). Steel banding shall be rust resistant.

3.1.1.6 Envelopes for use with Detectors. Envelopes shall be pigmented green polyethylene film conforming to the following requirements:

- (a) The polyethylene shall meet the detrimental material control limits in MIL-STD-2041 for mercury and leachable halides and sulfur. Polyethylene meeting the requirements of MIL-P-24466 is considered acceptable.
- (b) The polyethylene shall be free from gels, holes and foreign material and have uniform texture.

- (c) The polyethylene shall be capable of meeting the physical properties for Type II polyethylene as described in A-A-3174.
- (d) Envelope size shall be kept to a minimum.
- (e) Envelope nominal thickness shall be .006 inches (.004 inches minimum). Multiple layers may be used for component protection.

3.1.1.7 ESD Control: Items subject to damage by electromagnetic and electrostatic field forces shall be initially wrapped in material conforming to MIL-PRF-81705, Type I, Type II or Type III; or PPP-C-795, Class 2; or A-A-59135, Class 1, Grade B; or PPP-C-1797, Type II to prevent bag puncture, and unit packed in a heat-sealed bag conforming to MIL-B-117, Type I, Class F, Style 1. Reclosable cushioned pouches conforming to MIL-P-81997 Type I or Type II may be used in lieu of initial wrap or cushioning. Lead or terminal configurations for all items shall be maintained as manufactured without causing loads or stresses capable of causing damage to the item. Materials used to maintain item position and lead or terminal configuration shall permit item removal without damage to the item. Electrostatic discharge (ESD) sensitive caution labels shall be applied in accordance with MIL-STD-129.

When meeting the requirements of paragraph 3.2.7.1.6, as a minimum, the unit packaging that encloses desiccant shall meet MIL-PRF-81705 Type I requirements for flexibility, ESD protection, mechanical strength and puncture resistance. The bags shall be heat-sealed. The water vapor transmission rate (WVTR) shall be ≤ 0.002 -gm/100 square inch in 24 hours at 40 degrees Centigrade after flex testing per Condition E of ASTM F 392-93. The WVTR is measured using ASTM F 1249.

3.1.1.8 Other Packaging Materials. At a minimum, other packaging materials shall be of good commercial quality and shall be capable of performing their intended function. Envelope material shall be able to be heat sealed resulting in a water/vapor proof barrier and shall be of sufficient thickness to prevent puncture and tearing during handling and shipment. Cushioning materials, dunnage, blocking and bracing shall be applied as required to protect the item and the enclosing media and restrict the movement of the item within the container.

3.1.2 Foreign Materials. All items packaged and packed and all packaging/packing medium shall be free from debris and other foreign materials.

3.2. Detailed Packaging, Packing and Marking Requirements

3.2.1 Cubicles, Panels and Equipment Enclosures

3.2.1.1 Packaging. Cubicles, Panels and Equipment Enclosures shall be packaged in a heat sealed, floating bag with desiccant and humidity indicators per the preservation requirements of MIL-STD-2073-1 Method 53. Materials shall be in accordance with paragraph 3.1.

3.2.1.2 Packing. Cubicles, Panels and Equipment Enclosures shall be packed in wooden crates (3.1.1.4) designed to be shipped and handled under cover and stored in warehouses or other structures affording equivalent protection from weather. The packing shall afford adequate protection during multiple reshipments.

3.2.1.3 Marking. In addition to the marking requirements per paragraph 3.3, the following marking shall be provided:

3.2.1.3.1 Sheltered Building Marking. The outer container shall be marked on all four sides in red as follows:

**STORAGE REQUIREMENTS: SHELTERED BUILDING
MINIMUM TEMPERATURE 40EF**

3.2.1.3.2 Front Location Marking. The crate shall be marked to identify the location of the front of the cubicle, panel or equipment enclosure.

3.2.2 Drawers, Chassis

3.2.2.1 Packaging. Drawers and chassis shall be packaged in a heat sealed bag with desiccant and humidity indicators per the preservation requirements of MIL-STD-2073-1 Method 51 or Method 52. Materials shall be in accordance with paragraph 3.1. For drawers or chassis with ESD sensitive components mounted directly on the drawer or chassis (other than plug-in modules), the barrier shall be made from ESD protective material (3.1.1.7) For drawers containing plug-in modules containing ESD sensitive components, the barrier material shall be made from ESD protective material, or, as an alternative, a non-ESD protective barrier material may be used so long as the drawer connector(s) is covered with an ESD protective shipping cap, or other ESD protective material.

3.2.2.2 Packing. Drawers and chassis shall be individually packed in wooden boxes (3.1.1.3) designed to be shipped and handled under cover and stored in warehouses or other structures affording equivalent protection from weather. The packing shall afford adequate protection during multiple reshipments.

3.2.2.3 Marking. Marking shall be in accordance with paragraph 3.3.

3.2.3 Detectors (other than Neutron/Gamma Detectors)

3.2.3.1 Packaging. Detectors (other than Neutron/Gamma Detectors) shall packaged in a heat sealed green polyethylene bag (3.1.1.6) with desiccant and humidity indicators per the preservation requirements of MIL-STD-2073-1 Method 51. Materials shall be in accordance with paragraph 3.1.

3.2.3.2 Packing. Detectors shall be individually packed in wooden boxes (3.1.1.3) designed to be shipped and handled under cover and stored in warehouses or other structures affording equivalent protection from weather. The packing shall afford adequate protection during multiple reshipments.

3.2.3.3 Marking. Marking shall be in accordance with paragraph 3.3.

3.2.3.4 Additional Requirements for Primary Plant Detectors. For detectors intended to be in contact with primary plant fluid, contract cleanliness requirements (i.e., MIL-STD-767) shall apply through all steps of packaging and handling. In addition, the green polyethylene bag shall be purged with dry inert gas (nitrogen or argon) having a dew point of minus 40 degrees Fahrenheit or lower prior to sealing.

3.2.3.5 Calibration Data Sheets. When calibration data sheets are required, three copies of the data sheets shall be placed in a heat sealed waterproof envelope and packaged with the detector. The data envelope shall be labeled with its contents, and the detector standard identifier (SI) and serial number. Additionally, the data envelope shall be labeled:

DATA SHEETS
REQUIRED FOR DETECTOR INSTALLATION
STORE WITH THE DETECTOR
DO NOT DISCARD

3.2.4 Neutron and Gamma Detectors.

3.2.4.1 Packaging.

3.2.4.1.1 Each Neutron Detector shall be packaged per the preservation requirements of MIL-STD-2073-1 Method 51. The detector shall be placed in a green polyethylene bag (3.1.1.6) with desiccant and humidity indicators. A second bag made from water/vapor proof material shall be heat sealed around the first, green polyethylene bag. The water/vapor proof bag shall be purged with dry inert gas (nitrogen or argon) having a dew point of minus 40 degrees Fahrenheit or lower prior to sealing. Materials shall be in accordance with paragraph 3.1.

3.2.4.1.2 Each Gamma Detector shall be packaged in a heat sealed green polyethylene bag (3.1.1.6) with desiccant and humidity indicators per the preservation requirements of MIL-STD-2073-1 Method 51. The green polyethylene bag shall be purged with dry inert gas (nitrogen or argon) having a dew point of minus 40 degrees Fahrenheit or lower prior to sealing. A second bag made from water/vapor proof material shall be heat sealed around the first green polyethylene bag. Materials shall be in accordance with paragraph 3.1.

3.2.4.2 Packing. Each detector shall be packed in a wooden box (3.1.1.3) designed to be shipped and handled under cover and stored in warehouses or other structures affording equivalent protection from weather. The packing shall afford adequate protection during multiple reshipments.

3.2.4.3 Marking. In addition to any special labeling or marking required by the Department of Transportation (DOT) and the marking requirements identified in paragraph 3.3, the following requirements apply:

3.2.4.3.1 The shipping container for each detector shall be marked "Fragile"

3.2.4.3.2 Irradiated (operated or tested in a reactor facility) or radioactively contaminated detectors to be shipped to a GPA program facility shall be marked and labeled in accordance with applicable DOT regulations.

3.2.4.4 Shipping Caps. Each detector connector shall have a weatherproof coaxial connector protective cap to prevent damage to the connector threads and degradation to the connector insulation resistance.

3.2.4.5 Integral Cable. The detector's integral cable shall be coiled and held together with twisted wire ties or other suitable methods.

3.2.4.6 Information furnished with Neutron Detectors. A data sheet with the serial number and measured sensitivity value shall be transmitted in a heat sealed waterproof envelope with each compensated ion chamber.

3.2.5 Special Tools. Special tools, which are not required to be installed in the equipment, shall be separately packaged and packed as Spare Components (3.2.7).

3.2.6 Miscellaneous Items. Miscellaneous items such as printed wiring assemblies, connectors, meters, resistors, capacitors, magnetic components, switches, microcircuits, semiconductors, sheet metal items, hardware, etc. shall be packaged and packed in accordance with the requirements for Spare Components (3.2.7).

3.2.7 Spare Components. Spares including On-Board Repair Parts (OBRP), Shipyard Load Lists (SLL) Items, Initial Navy Supply System Repair Parts (INSSRP), items bought to individual repair part ordering data (IRPOD) and field change (F/C) kit material shall be packaged, packed and marked as follows. ESD control requirements are defined in paragraph 3.1.1.7. Moisture protection requirements are defined in paragraph 3.2.7.1.6.

3.2.7.1 Unit Packaging Quantity Unless otherwise specified by the GPA, all items shall be individually unit packaged. Each unit package shall conform and be labeled to requirements noted elsewhere in this specification. A unit is as defined in the purchase order to be a single item, set, box, kit or assembly. All items included in a set/kit of OBRP, INS, INSSRP or SLL shall be individually unit packaged. If the unit is not clearly defined in the purchase order then the unit shall be considered to be a single item.

3.2.7.1.1 Envelopes Envelope size should be kept to a minimum. Prior to sealing the envelope, excess atmosphere shall be expelled by reducing the envelope to its smallest volume practical without damage to the component. Envelope materials shall meet the requirements of 3.1.1.7 and/or 3.1.1.8 as applicable. Envelope size is based on the inside dimensions.

3.2.7.1.2 Parts/assemblies under 6.0" in length, width or depth. As a goal, this envelope should be a standard 3"x3" envelope (or smaller) whenever possible. The size of the envelope should not exceed 2" in height or width greater than the part/assembly after the part/assembly has been placed inside the envelope. However, to allow space for label information for envelopes containing very small parts, the packager/Seller is not required to utilize an envelope smaller than 3" in height or 3" in width. The Seller may increase the envelope size due to GPA/Government supplied labels as specified in paragraph 3.2.9.3 below.

3.2.7.1.2.1 Resealing Requirements For sealed unit pack envelopes containing parts/assemblies under 6" in length, width or depth, the envelope shall permit opening and resealing once. All other envelopes shall permit opening and resealing two times. The intent is to provide sufficient material so that the envelope may be opened by cutting off the portion that is sealed and then resealed using a heat sealer.

3.2.7.1.3 Parts/assemblies greater or equal to 6.0" in length, width or depth. The size of the envelope should not exceed 4" in height or width greater than the part/assembly size after the part/assembly has been placed inside the envelope. The envelope shall permit opening and resealing two times. The intent is to provide sufficient material so that the envelope may be opened by cutting off the portion that is sealed and then resealed using a heat sealer.

3.2.7.1.4 Cushioning & Protection

3.2.7.1.4.1 Unit-pack containers (tubes, vials, fastpacks, boxes, totes, etc.) In order to minimize total package size for on-board storage, the use of unit pack containers for unit packaging is prohibited. Upon receipt of GPA approval, the following items are exempt from this prohibition:

- Parts that are not suitable for end-use (i.e. EPROMS removed from end-use applications intended for reprogramming, etc.)
- Items included in Field Change Kits that are intended to be installed (not designated as Spare, OBRP or OBS)
- Where the 'unit' is defined as more than a single piece (i.e. the unit is defined as a 'lot', 'box', 'set' or 'kit')
- Surface mount devices

3.2.7.1.4.2 Cushioning Material Thickness. The cushioning for the protection of the leads and terminals shall not exceed a standard size of approximately 5/16" thickness unless the device leads/terminals exceed 1/4" from the bottom of the device. Should a cushioning thickness greater than 5/16" be required, then the cushioning shall not exceed the length of the leads/terminals (as measured from the bottom of the device) by more than 3/32". The protective material shall prevent physical damage and maintain leads and terminals in the manufactured condition under handling and transportation environments.

3.2.7.1.4.3 ESD Cushioning. For ESD sensitive multi-pin electronic devices, the cushioning material shall be high-density conductive foam.

3.2.7.1.4.4 ESD Handling. All ESD sensitive components shall be handled and packaged only at a field force protected workstation. For packaging purposes, all microcircuits, and any part marked by the part manufacturer with one or more triangles to identify the part is static sensitive, are considered to be ESD sensitive electronic devices.

3.2.7.1.5 Cushioning/Protection (other than as discussed in 3.2.7.1.4). Cushioning included inside the sealed envelope shall be the minimum required to protect the part/assembly during normal handling and storage (Typically, cushioning inside a sealed envelope, other than as defined in 3.2.7.1.4, need not exceed 1/16" to 1/8" in thickness.). Any additional cushioning required to protect the part/assembly during shipment shall be added outside the sealed envelope as a part of intermediate or final pack and packaging.

3.2.7.1.6 Protection From Moisture Unit packaging of all plastic encapsulated microcircuits (PEMs), circuit cards containing PEMS, circuit cards that are not conformal coated on both sides and modules containing these types of circuit cards shall be unit packaged similar to Method 51 of MIL-STD-2073-1 except as modified by this or other paragraphs of this specification. Barrier material per paragraph 3.1.1.7 shall be used for both an inner and an outer heat sealed bags. The required desiccant and humidity indicator shall be attached to the outside of the inner bag. The desiccant shall not come in contact with the item being packaged. The reseal requirements identified elsewhere in this specification apply to both the inner and outer unit package bag. The size of the outer bag shall be determined utilizing the final size of the inner bag in lieu of the size of the

part/assembly. Unit package marking is only required on the outer bag. In addition to marking requirements specified in paragraph 3.3, the unit packaging shall be marked "DESICCATED PACKAGE - DO NOT OPEN UNTIL READY FOR USE".

For example, when packaging a PEM mounted on high-density conductive foam or a moisture sensitive circuit card assembly, the item is placed in a heat sealed bag. The desiccant and humidity indicator are attached to the outside of this bag, wrapped in cushioning material and then placed into a second heat sealed bag which will be labeled as required.

3.2.7.2 Unit Pack Spare components shall be individually packed unless the provisions of paragraph 3.3.2 or 3.2.10 apply.

3.2.7.3 Marking See paragraphs 3.2.9, 3.2.10 and 3.3.1.

3.2.8 Circuit Breaker and Solid State Interrupter (SSI) Packaging, Packing and Marking

3.2.8.1 Circuit Breakers Packaging of Circuit Breakers shall be as specified in the Circuit Breaker Military Specification (MIL-C-17361 (SH) for AQB type and MIL-C-17587(SH) for ACB type circuit breakers).

3.2.8.2 SSI: Packaging SSIs shall be based on weight in accordance with the following:

<u>Weight</u>	<u>Package as</u>
Less than 75 pounds	Drawers, Chassis (3.2.2)
75 pounds or more	Cabinets, Panels (3.2.1)

3.2.9 Unit Pack Labels

3.2.9.1 Warranty markings Warranty markings are not required on sealed unit pack envelopes.

3.2.9.2 Marking Size and Font. The marking size and font, including bar code density, shall be determined such that the label/marking requirements will not increase the package size. Except as noted in paragraph 3.2.9.3, the package size shall be determined per paragraph 3.2.7.2 and not by the label/marking size. All markings must meet the requirements of MIL-STD-129.

3.2.9.3 GPA/Government Supplied Labels. Labels fabricated by the packager/Seller shall conform to paragraph 3.2.9.2 above. Any label, supplied by the GPA or a Government agency, which exceeds the size of the envelope (as specified in paragraph 3.2.7.2.1) may be trimmed and/or folded over both sides of the envelope provided the label remains legible and bar codes are not folded. Should the packager/Seller be unable to fold and trim the label to meet the requirements of paragraph 3.2.7.2.1, then a larger envelope may be used. In this case, the envelope size shall be determined based on the size of the folded and trimmed label and the part size.

3.2.10 Field Change Kits

3.2.10.1 Packaging Items being furnished as part of a field change kit shall be packaged in accordance with the applicable requirements specified herein, for the type of item being shipped (e.g. 3.2.2 for drawers, chassis; 3.2.6 for miscellaneous items; 3.2.7 for spare components, etc.). Packaging instructions provided by the GPA take precedence over the requirements stated herein.

Similar items shall be packaged as a lot provided that the lot size does not exceed the number of parts required to modify one assembly. For example, if four identical screws are required to modify a given drawer and there are two drawers per ship, then the field change kit should allow four screws per bag. Spare items shall be packaged to allow for shipment separate from the installed items.

3.2.10.2 Packing Items being furnished as part of a field change kit shall be packed in accordance with the applicable requirements specified herein, for the type of item being shipped (e.g. 3.2.2 for drawers, chassis; 3.2.6 for miscellaneous items; 3.2.7 for spare components, etc.).

If the GPA has contracted for the Seller to install the field change kit, and long-term storage is not involved, all items (except for spare parts) may be over-packed in one or more wooden or fiberboard boxes per the applicable requirements herein. Alternate methods of over-packing will be considered and authorized by the GPA on a case by case basis. (For example, over packing PWAs in plastic cases or combining the entire unit packaged material in aluminum or wood shipping crates.) Spare parts shall be packed in a separate container in accordance with 3.2.7.

3.2.10.3 Marking Marking shall be in accordance with paragraph 3.3.

3.2.11 Heat Exchangers, Cold Plates, Assemblies With Heat Sinks & Other Similar Items Heat exchangers, cold plates and other similar designed items, that are being shipped as spare components, shall be PP&M the same as for drawers or chassis (3.2.2). Each item shall be packed in a separate wooden box.

Prior to packaging, each item shall be purged free of water using clean, dry shop air. Subsequently, the inlet and outlet ports shall be capped with a suitable cap (of a commercial material that is not detrimental to the part being capped and is not PVC) to preclude the entrance of moisture or foreign material. The caps/plugs shall be designed such that they cannot be inadvertently pushed into the piping ports. This requirement also applies to items that are being shipped installed in a cabinet, enclosure or panel.

Appropriate cushioning material/support shall be provided to preclude damage, bending, deforming, or otherwise causing a dimensional change to the orientation of the inlet port, outlet port, piping and heat exchanger fins. This requirement also applies to items that are being shipped installed in a cabinet, enclosure or panel.

Desiccants and humidity cards are not required.

A label shall be provided with each unit package that contains the following marking, or equivalent:

CAUTION

DO NOT REMOVE CAPS FROM THE PIPING INLET AND OUTLET PORTS EXCEPT FOR INSPECTION OR INSTALLATION. CAPS MUST BE REMOVED PRIOR TO INSTALLATION.

This label shall also be provided on the final pack for items installed in a cabinet, enclosure or panel.

3.3 Marking Requirements

All markings must meet the requirements of MIL-STD-129.

3.3.1 Unit Pack Marking

3.3.1.1 Minimum Label Information. The following minimum information to be printed on the label shall include:

Bar Code Marking
National Stock Number
Description
Drawing/Piece Number, MIL Designation or Catalog Number
Quantity and Unit of Measure
Purchase Order Number
Supplier Name or CAGE Code
Equipment Line Item Number (ELIN) when supplied by the GPA

In addition to the above markings, all labels for ESD sensitive components shall be marked with the standard ESD symbol per MIL-STD-129 and the statement **DO NOT OPEN EXCEPT AT APPROVED FIELD FORCE PROTECTIVE WORK STATION**. The minimum size of the symbol shall be one third of an inch measured vertically. The historical ESD symbol (three arrows in a circle) should no longer be used.

3.3.1.2 Shelf Life Marking. When the item being shipped has a finite shelf life (e.g., 60 months or less), insert the additional information:

- Type I Shelf Life Item
- Cure Date (Seller to insert cure date if an elastometer)
- Expires (Seller to insert shelf life expiration date)
- To be disposed of upon expiration

NOTE: Elastomers with a shelf life between 5-20 years must be marked with a shelf life of 5 years. Elastomers with a shelf life of 20 years or greater must be marked **Cure Date_____**. Do not use 20 years beyond cure date.”

3.3.2 Intermediate Packing and Marking. Unless otherwise specified by the GPA, upon completion of paragraphs 3.2.7 and 3.3.1, the parts for the same NSN for a single address shall be packaged together in a separate carton or bag. The exterior of the carton or bag shall be marked with all unit package information in accordance with paragraph 3.3.1 and the following: **INTERMEDIATE PACKAGE - DO NOT REMOVE EXCEPT FOR USE OR AUTHORIZED INSPECTION**. Repair part packaging shall be accomplished so that the number of line items per page of DD-250/DD-1149 form is the maximum number of items per box, carton or bag.

Intermediate packing for field change kit material shall be in accordance with 3.2.10 and as specified in the field change ordering data.

3.3.3 Outer Container Marking. Exterior markings shall contain only that information specified in 3.3.3.1-4, 6-10, 15 and 16 (Mandatory) and 3.3.3.5, 11-14 and 17 (as appropriate) below. Markings on exterior containers shall not reference any: (1) Project, (2) Equipment Specification, or (3) Number of Installed Components

3.3.3.1 Name and Address of Seller

3.3.3.2 Include the complete destination address as provided by GPA and note **For APA Stock**, **On-Board Spares**, **Shipyards Installation Tools**, **Tender Load List**, or **Tender Allowance**

List" if applicable. Include hull number. The specific destination will be furnished by the GPA prior to shipment.

3.3.3.3 Item description(s), including National Stock Numbers (NSN) with Bar Code marking. When shipments include components intended for both installation and on-board spares, the item descriptions should delineate the quantities intended for each use.

3.3.3.4 Standard Identifier and Serial Number as provided by the GPA. The Serial Number must match exactly the serial number marked on the equipment nameplate and shipping document.

3.3.3.5 Equipment Line Item Number (ELIN), when supplied by the GPA

3.3.3.6 Purchase Order Number

3.3.3.7 Government or Commercial Bill of Lading Number/TCN Number/Registered Number/Way Bill Number

3.3.3.8 Gross weight and cube of the parcel as shipped

3.3.3.9 Boxes containing field change kits shall be identified with the following external markings:

ShipAlt Number_____	Note (a)
Field Change Number_____	Note (b)
OBRP Are/Are Not Enclosed	Note (c)
Box ___ of ___	Note (d)
TCN/Reg. No./GBL Way Bill No._____	Note (e)
Ship Hull Number_____	Note (f)

Notes:

- (a) To be supplied from the GPA if available. If not available, mark "Not Available" or "Later" as directed by GPA
- (b) To be supplied by GPA. Do NOT include project identifier (i.e, S6W)
- (c) Mark one way or the other. OBRP, if required to support the field change, shall be packaged separately and marked (OBRP Field Change_____/ShipAlt No._____) identified on the DD-250/DD-1149 by PVR line item and included in the field change box, unless specifically directed by GPA.
- (d) Mark each box A1 of 3", A2 of 3", A3 of 3" etc. If shipment is made from a single box, mark it A1 of 1". Only complete kits shall be shipped unless GPA specifically authorizes shipments of partial kits; in such cases, GPA may provide additional marking instructions to suitably indicate the shortage.
- (e) Enter data as applicable to the shipment
- (f) To be supplied from the GPA if available. If not available, mark "Not Available" or "Later" as directed by GPA

3.3.3.10 Precautionary note or label (must be in red): "Government-Furnished Equipment - Open per Requirements of Cognizant Government Inspector"

3.3.3.11 Precautionary note or label (must be in red): "Warehouse Storage Only"

3.3.3.12 For primary plant detectors, the container or unpacked item shall bear the precaution note (must be in red): "Do Not Open Seal Closures Except in Clean Area"

3.3.3.13 If arrows are required to indicate the desired position of the container during shipment and storage, place an arrow and the word "AUP" on all four sides of the container.

3.3.3.14 If applicable, mark "FORKLIFT HERE"

3.3.3.15 Two copies of the DD Form 250/DD Form 1149 shall be placed in a waterproof enveloped labeled "Packing List" attached to the outside of each container. In addition, one copy of the DD Form 250/DD Form 1149 shall be placed in a waterproof envelope attached to the inside of the container.

When Government inspection is required, the Government inspector may elect to sign only the shipping forms that are attached to the outside of each container. If this option is chosen, the Seller shall add a note to the Form provided inside the container that indicates that Forms signed by the Government inspector are included in the envelope attached to the outside of the container.

3.3.3.16 Mark center of balance as required by MIL-STD-129

3.3.3.17 If the shipment consists of one box, mark it "1 of 1". If multiple boxes are involved, each box shall be marked "1 of 5", "2 of 5", etc.

3.4 Additional Requirements Applicable to Items that are assigned 2S/X1 National Stock Numbers

For all 2S/X1 components, the unit pack and exterior container must be one and the same (i.e., each 2S/X1 component must be individually packaged for shipment). Individually packaged components may be over packed in a temporary shipping container for transportation to the destination. The over pack container shall not be marked with the GPA provided bar coded labels. Over pack markings shall be in accordance with MIL-STD-129.

In conjunction with providing shipping destinations and applicable shipping documents, the GPA will supply for Seller use two (2) bar coded labels for each component that is assigned a 2S/X1 NSN.

The Seller shall affix one of these labels immediately above the exterior markings required above.

The second GPA furnished label shall be affixed completely opposite of the first (i.e., if the first label is on the front upper left, the second label is on back panel lower right).

When tags are used to meet the requirements for exterior markings the tags must be made of plastic in accordance with MIL-STD-129 and the bar coded labels shall be applied to the front (preferred) or reverse side of such tags.

3.5 Requirements for Classified Shipments. Classified shipments shall be in accordance with the National Industrial Security Program Operating Manual (NISPOM). Additional classified hardware markings shall be as specified in the latest revision of the Contract Security Classification Specification and its attachments.

3.6 Exclusive use of Truck When shipment by "exclusive use of truck" is specified by the GPA, the expectation is that the trailer and the tractor (including the dromedary, if applicable) shall contain only those items that have been authorized for shipment by the GPA. Tandem trailers are also not allowed, except for shipment of items authorized by the GPA.

3.7 Explosives and Other Hazardous Materials No equipment shall be shipped in any transportation vehicle that contains explosive or hazardous materials (except for those materials specifically authorized by the GPA).

4.0 **QUALITY ASSURANCE PROVISIONS**

4.1 Responsibility for Inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of inspection requirements as follows. If PP&M is performed at a packaging supplier and the equipment is to be drop shipped from the packaging supplier, the Seller shall perform periodic audits and over checks to determine compliance with this specification and the applicable PP&M procedure.

(a) PP&M shall be visually inspected as necessary to determine compliance with this specification. Sample inspection per the Seller's sample inspection procedure is acceptable.

(b) The shipping vehicle shall be visually inspected when the shipment exceeds 1,000 pounds. Shipping vehicles with unsatisfactory conditions shall not be used. All truck shipments shall have a driver vehicle inspection report in accordance with DOT CFR Title 49, Chapter III, Part 396.11. The items to be checked on the loaded vehicle prior to release shall be identified in the supplier's loading and blocking procedure (see paragraph 1.4.1) or the packaging, packing, and shipping procedure when the shipment exceeds 1,000 pounds. As a minimum, the loaded truck shall be inspected for (1) load shored and tied down as needed, (2) weight properly distributed and not overloaded, and (3) tailgates and doors closed, and all equipment secured.

MIL-PRF-23199/1 (SH)
Revision A
28 February 2003

Preparing activity:
Navy - SH
(Project PACK-N059-1)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER

MIL-PRF-23199/1, Revision A

2. DOCUMENT DATE (MM/DD/YY)

02/28/03

3. DOCUMENT TITLE

Packaging, Packing and Marking Requirements for Instrumentation and Control Equipment

4. NATURE OF CHANGE (*Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.*)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (*Last, First, Middle Initial*)

b. ORGANIZATION

c. ADDRESS (*Include Zip Code*)

d. TELEPHONE (*Include Area Code*)
(1) Commercial

7. DATE SUBMITTED (*YYMMDD*)

(2) AUTOVON
(*if applicable*)

8. PREPARING ACTIVITY

a. NAME

Commander, Naval Sea Systems Command

c. ADDRESS (*Include Zip Code*)

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IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:

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