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MILITARY SPECIFICATION

CONTAINERS, SHIPPING AND STORAGE, METAL, REUSABLE

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification establishes the requirements for a reusable metal shipping and storage container. The equipment herein referred to as the container, shall be a controlled breathing container for worldwide shipment, storage and handling. The containers shall provide both natural and induced environmental (water-vapor-proof and physical) protection for the prime item defined in 6.2 and its associated hardware.

1.2 Classification. Shipping containers shall be of the following types as specified (see 6.2).

Type I - Vertical mount - Designed so the item is mounted in the containers with its longitudinal axis perpendicular to the base of the container.

Type II - Horizontal mount - Designed so the item is mounted in the container with its longitudinal axis parallel to the base of the container.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Air Force Packaging Evaluation Activity, HQ AFLC/DSTZ, Bldg 70, Area C, Wright-Patterson AFB OH 45433-5999; by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 8145

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS

FEDERAL

A-A-208	Ink, Marking, Stencil, Opaque (Porous and Non-porous Surfaces)
QQ-P-416	Plating, Cadmium (Electro Deposited)
QQ-S-698	Steel, Sheet and Strip, Low-Carbon
QQ-S-741	Steel, Carbon, Structural Shapes, Plate and Bars
TT-E-515	Enamel, Alkyd, Lusterless, Quick-drying
TT-E-516	Enamel, Lusterless, Quick Drying Styrenated Alkyd Type
TT-E-485	Enamel, Semi-Gloss, Rust-Inhibiting
TT-W-571	Wood Preservation: Treating Practices
ZZ-R-765	Rubber, Silicone

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MIL-P-116	Preservation, Methods of
MIL-G-835	Glove Inserts, Cold Weather
DOD-D-1000	Drawing, Engineering and Associated List
MIL-W-6858	Welding, Resistance: Spot and Seam
MIL-B-7883	Brazing of Steels, Copper, Copper Alloys, Nickel Alloys, Aluminum and Aluminum Alloys
MIL-P-9024	Packaging, Handling, and Transportability in System/Equipment Acquisition
MIL-Q-9858	Quality Program Requirements
MIL-T-10727	Tin Plating; Electrodeposited or Hot-dipped, for Ferrous and Nonferrous Metals
MIL-P-15024	Plates, Tags and Bands for Identification of Equipment
DOD-P-15328	Primer (Wash), Pretreatment (Formula No 117 For Metals) (Metric)
MIL-W-22248	Weldment, Aluminum and Aluminum Alloy
MIL-P-23377	Primer Coating: Epoxy Polyamide, Chemical and Solvent Resistant
MIL-S-23769	Seal, Security
MIL-I-26860	Indicator, Humidity, Plug, Color Change
MIL-V-27166	Valve, Pressure Equalizing, Gaseous Products
MIL-P-27443	Pallets, Cargo, Aircraft, Type HCU-6/E, HCU HCE-12/E, and HCU-10/C

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MIL-N-27444	Net, Cargo, Tiedown, Pallets, HCU-7/E, HCU-15/C, HCU-11/C and HCU-16/C
MIL-W-45205	Welding, Gas Metal-arc and Gas Tungsten-arc, Aluminum Alloys, Readily Weldable for Structures, Excluding Armor
MIL-I-45208	Inspection System Requirements
MIL-C-46168	Coating, Aliphatic Polyurethane, Chemical Agent Resistant
MIL-P-52192	Primer Coating, Epoxy
MIL-S-81733	Sealing and Coating Compound, Corrosion Inhibitive
MIL-C-87115	Coating, Immersion Zinc Flake/Chromate Dispersion
MIL-G-82242	Glove Shells, Radioactive Contaminants, Protective

STANDARDS

FEDERAL

FED TEST METHOD Test Procedures for Packaging Materials
 STD No. 101
 FED-STD-595 Colors

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DOD-STD-100	Engineering Drawing Practices
MIL-STD-105	Sampling Procedures and Tables For Inspection By Attributes
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-130	Identification Marking for U.S. Military Property
MIL-STD-171	Finishing of Metal and Wood Samples
MIL-STD-209	Slinging and Tiedown Provisions for Lifting and Tying Down Military Equipment
MIL-STD-210	Climatic Information to Determine Design and Test Requirements for Military Systems and Equipment
MIL-STD-648	Design Criteria for Specialized Shipping Containers
MIL-STD-731	Quality of Wood Members for Containers and Pallets
MIL-STD-808	Finish, Materials and Processes for Corrosion Prevention and Control in Support Equipment
MIL-STD-889	Dissimilar Metals
MIL-STD-1189	Standard Department of Defense Bar Code Symbolology
MIL-STD-1261	Arc Welding Procedures for Constructional Steels

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MIL-STD-1472	Human Engineering Design Criteria for Military Systems, Equipment and Facilities
MIL-STD-1568	Materials and Processes for Corrosion Prevention and Control in Aerospace Weapons Systems
MIL-STD-1587	Materials and Process Requirements for Air Force Weapon Systems
MIL-STD-2073-1	DOD Materiel Procedures for Development and Application of Packaging Requirements
MIL-STD-45662	Calibration Systems Requirements
MS70085-1	Clevis, Tie Down, Air Delivery, Type II

2.1.2 Other Government documents, and publications. The following other Government documents, and publications form a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation.

FEDERAL ACQUISITION REGULATION (FAR):

FAR 52.246-2 Inspection of Supplies - Fixed Prices

DRAWINGS:

NAVAIR (Code Ident No. 80020):

616271	Adapter, Bracket, Aero 91A
616856	Beam-Weapon, Cradle Hoisting HLU-216/E
64A114H1-4	Skid, Weapon, Aero 21C

NAVSEA (Code Ident No. 10001):

2642780	Container Compatibility with Handlift Trucks, MK42/MK45
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(Copies of specifications, standards, publications, and other Government documents required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.2 Other publications. The following document(s) form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS shall be the issue of the nongovernment documents which is current on the date of the solicitation.

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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):

E380 Standard for Metric Practice

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race St., Philadelphia PA 19103.)

(Nongovernment standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Standard, commercial, and qualified parts. Standard, commercial, and qualified parts shall be specified to the maximum extent, consistent with reliability, maintainability, and performance. Commercial utility parts such as screws, bolts, nuts, and cotter pins with suitable properties may be used provided they can be replaced by the standard parts (MS and AN) without alteration; corresponding standard part numbers are referenced in the parts list on the contractor's drawings; and commercial parts have passed environmental tests to ensure quality throughout the life cycle of the container.

3.2 First article. When specified in the contract or purchase order, a sample shall be subjected to first article inspection (see 4.4, 6.2 and 6.3).

3.3 Materials. Materials, parts and processes shall be selected to pass the performance and test requirements specified herein. The materials shall conform to military/federal specifications unless otherwise specified (see 6.2), due to unique item or logistical requirements. Materials used in manufacturing containers shall conform to MIL-STD-1568 and MIL-STD-1587 as modified herein. The container shall be designed so that the materials used are not nutrients for fungi or have been treated to provide resistance to attack by fungi.

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3.3.1 Foam material. If foam materials are used in the shock isolation system, the material shall conform to a military/federal specification and shall be of the fire resistant type.

3.3.2 Metals. Unless otherwise specified (see 6.2), the container shall be constructed of aluminum. Metals shall be treated in accordance with 3.9 to resist corrosion. Dissimilar metals, as defined in MIL-STD-889, shall not be used in intimate contact unless protected against electrolytic corrosion. When it is necessary that any combination of such dissimilar metals be assembled, an interposing material compatible to each shall be used.

3.3.2.1 Steel. When unpainted steel is required, 300 series stainless steel should be used or plated carbon steel conforming to QQ-S-698 or QQ-S-741, which has been corrosion protected in accordance with MIL-STD-808.

3.3.2.2 Aluminum. Aluminum used in the container design shall be 6061-T6 or 6005-T5, unless otherwise specified in 6.2.

3.4 Design and construction. Metric conversion of physical properties of the container design are in accordance with ASTM E380 and shown in table III.

3.4.1 General design features. The container shall meet the general requirements of MIL-STD-648. The container closure shall be secured against accidental opening during all shock and vibration tests specified herein. The fasteners, either in the open or closed position, shall be protected by the container from damage. The closure fasteners shall be permanently affixed to the container. The container shall be constructed to permit the safe handling of the empty or loaded container. Handles, lifting rings and accessories when not in use shall recess or retract within the outer limits of the container.

3.4.1.1 Base section. The base section shall consist of a shell of sufficient strength to be handled with the container cover removed and to meet the requirements specified herein. The container forklift entry pockets shall be located in the base to assure balance of an empty or loaded container when resting on the forks, and shall be accessible from both sides and ends if the container length is shorter than 110 inches. Indexing provisions shall be provided on the bottom of the base section to facilitate stacking and stabilize stacked containers. The following two container base closure configurations shall be acceptable: a) a configuration containing the water lip, tongue, and physical stop (see figure 1, closure configuration A); and b) a configuration containing the water lip, gasket groove, and

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physical stop (see figure 2, closure configuration B). When closure configuration A is used, the water lip inboard of the tongue shall be of sufficient height to protect the tongue sealing surface when a flat bar is laid across the physical stop to the water lip. The clearance between the tongue and the flat bar shall be a minimum of 0.12 inches (see figure 1). When practical, the container base shall be equipped with a desiccant receptacle, humidity indicator, pressure relief valve, and record receptacle, otherwise some or all of these accessories may be located on the container cover as long as they are all at the same end of rectangular configured containers or on the same quadrant of upright cylindrical containers.

3.4.1.2 Cover section. The cover shall have indexing provisions for the base that do not obstruct forklift tine access when stacked. The cover shall be equipped with handles permitting manual handling or hoisting provisions to facilitate removal of the cover by machine. The cover section shall contain the groove with the gasket entrapped/recessed in the groove as shown in closure configuration A (see figure 1) or a flat sealing surface as shown in configuration B (see figure 2). The cover shall be designed to divert rainfall from the cover-to-base joint. The container cover shall be equipped with standoffs, handles and/or lifting rings.

3.4.1.3 Section assembly. Unless otherwise specified, the cover and base sections of the container that can be assembled in more than one relative position shall be furnished with suitable markings to permit assembly in one relative position only. When specified (see 6.2), alignment guides shall be used on the container design to permit assembly in one relative position only.

3.4.1.4 Permanent joints. Unless otherwise specified (see 6.2), all seams, permanent joints and accessories (i.e. handles, hoisting provisions, latches, etc.), excluding gaskets, shall be welded in accordance with 3.15.1.

3.4.1.5 Container seal. The container shall maintain an internal pressure specified in 4.7.2. In addition, the container shell and closure mechanisms, excluding the pressure equalizing valve, shall withstand an internal pressure as specified in 4.7.2.

3.4.1.5.1 Gasket. The container gasket shall be either solid or hollow; however, unless otherwise specified (see 6.2) the hollow gasket wall thickness shall not be less than 0.09 inches thick. The gasket shall be one continuous piece of silicone conforming to ZZ-R-765, Class II or equal with a durometer of 40 ± 5 and a

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minimum tear strength of 80 inch pounds. Gasket joints are permissible but should not exceed four in any one gasket and shall withstand a static pull specified in 4.7.5.3.

3.4.1.6 Water lip/protective lip. A lip shall be part of the container base which extends above the sealing surface sufficiently to protect the sealing surface from physical damage and water intrusion. The lip shall be continuous around the container base inboard of the gasket, fit inside the cover and prevent lateral and longitudinal movement of the container cover.

3.4.1.7 Physical stop. A physical stop shall be part of the container base. The physical stop shall limit compression of the gasket to approximately 30 percent for rectangular gaskets or 40 percent for cylindrical gaskets. When the cover is placed on the base and the latches are engaged, the physical stop shall bear the load of the cover.

3.4.1.8 Free Drainage. Pockets on the exterior of the container shall be provided with a means of drainage in the normal container storage position. Where necessary, holes shall be drilled a minimum of 0.25 inches (diameter) to prevent subsequent stoppage if the container is painted. At faying surfaces, discontinuous welds or other areas where drilling is impractical, the openings shall be filled with a sealing compound conforming to MIL-S-81733, or equivalent.

3.4.1.9 Strength. The container shall withstand the loads of 3.4.6, 3.6.4 and 3.6.5 without deformation that would impair the container function or cause an unsafe condition. (See sections 4.7.6 and 4.7.7).

3.4.1.10 Stand off. A minimum of four stand offs for rectangular containers or three stand offs for cylindrical containers shall be placed on the cover. The stand offs shall extend below the container cover sealing surface, allowing the cover to be set aside in an upright position without damaging the sealing surface. Additional stand offs may be used depending on the container size and the construction material. (See 4.7.5.1).

3.4.1.11 Latches. The container shall be equipped with quick release latches that meet the closure device requirements of MIL-STD-648, 4.10. T-bolts, nut and bolt, etc. shall not be used. Unless otherwise specified (see 6.2), cam over-the-center latches shall be used. (See 4.7.5.2).

3.4.1.12 Security seals. All containers shall incorporate security seals. Unless otherwise specified (see 6.2), the security seals used shall conform to MIL-S-23769.

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3.4.2 Internal component parts.

3.4.2.1 Shock isolation system. The shock isolation system shall provide shock and vibration isolation as required in 3.6.4 and 3.6.5. Unless otherwise specified (see 6.2), the item restraint or hold down features shall be captive to the container and not require tools to release or fasten interior item restraints.

3.4.2.2 Cure date on shock isolation system. If used, shock and vibration attenuation system shall be marked with its manufacturing cure date. This date will be plainly visible when installed. If the date is not visible when installed, the mount shall be remarked with waterproof ink conforming to A-A-208. Shock mounts shall not be older than one year when newly installed in containers (see 4.7.1).

3.4.2.3 Accessibility. The container design shall permit the installation and removal of the item by overhead lifting devices through a sequence of simple operations (see 4.7.3).

3.4.3 Service/maintenance facilities. Unless otherwise specified (see 6.2), the service/maintenance facilities shall be placed on the end of the container adjacent to the extremity of the item normally identified or designated as the aft/rear end (see 3.4.1.1 and 4.4.1).

3.4.3.1 Desiccant receptacle. The container shall be equipped with a desiccant receptacle accessible from the outside of the container and when required (see 6.2) accessible from the interior of the container. The receptacle shall retain desiccant bags while permitting free passage of air. A desiccant port cover shall be captive to the container and be readily removed and installed without the use of tools. The port cover when installed, shall not degrade the integrity of the container seal. The port cover gasket shall be in accordance with ZZ-R-765, Class II or equal with a durometer of 40 and captive to either the port cover or the container. Provisions for installation of a pressure equalizing valve shall be made in the desiccant port cover whenever practical.

3.4.3.2 Humidity indicator. A humidity indicator conforming to MIL-I-26860 Type II, with a 3/4 inch straight pipe thread shall be visible from the exterior and permit unrestricted container airflow to the indicator for accuracy of indication. It shall be placed as far as practical away from the desiccant receptacle, but on the same end. The humidity indicator mounting nut shall be secured to the inside of the container. Unless otherwise

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specified (see 6.2), the humidity indicator shall be irreversible. The indicator shall not require the use of any special tools to remove/replace.

3.4.3.3 Pressure equalizing valve. An automatic pressure equalizing valve shall be provided conforming to MIL-V-27166 and be located as close as practical to the desiccant receptacle, if not located in the desiccant port cover. The valve mounting nut shall be secured to the inside of the container. A manual means of stabilizing interior pressure shall be provided either alone or in combination with the pressure equalizing valve. For manual operation the button shall be recessed in the valve and the valve shall be recessed or within the outer limits of the container. Unless otherwise specified (see 6.2), the pressure equalizing valve shall be Type III for level A preservation, with a reseal pressure/vacuum of 1.0/1.0 PSID. The valve shall not require the use of any special tools to remove/replace.

3.4.3.4 Visual inspection ports. When specified (see 6.2), each container shall be provided with two visual inspection ports conforming to MIL-I-26860, with the cobaltous chloride indicating element removed from the humidity indicator. The inspection ports will be located on the container end with the service/maintenance facilities and placed in a horizontal line a minimum of 4 inches apart.

3.4.3.5 Air filling valve. When specified (see 6.2), an air valve; Schrader 645E6, or equivalent, shall be placed in a receptacle or area recessed into the container wall so that no portion of the valve protrudes beyond the outside surface of the wall. The valve shall be located as near as practical to the desiccant receptacle.

3.4.3.6 Record receptacle. When specified (see 6.2), a record receptacle shall be provided of such size and shape to permit easy insertion and removal of a 12 x 10 x 2 inch record book without rolling or bending. The receptacle shall be located to preclude damage by material handling equipment and in a position that water will not collect when the cover is open. The record receptacle cover shall be watertight and mounted in such a way as to swing away to permit access. The closure hardware shall be captive. Smaller record receptacles may be provided when dimensions are specified by the procuring activity (see 6.2).

3.4.3.7 Drain plug. When specified (see 6.2), a 3/4 inch drain plug shall be installed in the lowest point of the container shell at the end containing the service/maintenance facilities. The plug shall be installed in a bushing from the outside and shall be protected from damage during forklift handling. The plug shall be removable without the use of special tools,

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removing the cover or lifting the container. Use of the desiccant port as a drain port is preferred over the use of a drain plug. When a drain plug is required, the interior base of the container shall allow drainage of the water/liquid from the base when the end opposite the drain plug is elevated 4 inches.

3.4.3.8 Fuel leak detector. When specified (see 6.2), a fuel leak detector shall be located as close to the top of the container as possible and on the same end as the other service/maintenance facilities. The fuel leak detector mounting nut shall be secured to the inside of the container and allow replacement of the fuel leak detector without removal of the container cover.

3.4.4 Handling provisions. The procuring activity shall identify any special or unusual functions that the container shall be expected to perform (i.e. loading from the container, periodic inspection or test in the container, handling fixture during maintenance action, etc.) (see 6.2).

3.4.4.1 Container hoisting/tiedown provisions. The base of the container shall have hoisting/tiedown provisions in accordance with MIL-STD-648 and MIL-STD-209, resulting in stable handling and compatibility with normal transportation/handling procedures. The hoisting/tiedown rings shall be constructed of solid material (i.e. wire rope and cable are not acceptable), recessed or retractable when not in use, withstand a static load of five times the weight of the maximum unit load and located on the base section. The tiedown attachment points on the container shall be compatible with tiedown points of MIL-P-27443 HCU-6/E pallet and MIL-N-27444 HCU-7/E side cargo and HCU-15/C top cargo net. When specified (see 6.2), the container shall be compatible with AERO 21c weapon skid and adapters (NAVAIR 64A114H1-4 and 616271, respectively). Unless otherwise specified (see 6.2), the use of D ring MS70085-1 shall be required. (See 4.7.4).

3.4.4.2 Handles. The cover section shall be equipped with handles on each end, allowing easy removal and installation of the cover. Each handle shall be constructed of solid material (i.e. wire rope and cable are not acceptable), and compatible with 3.7. The handles shall stand perpendicular to the wall of the container when in use and retract when not in use. Each handle shall be capable of withstanding a pull force equal to the cover weight and meet the strength requirements of MIL-STD-648, 4.17.2.1. Container covers that weigh more than 150 pounds shall also be equipped with lifting rings and/or handles as specified in 6.2. (See 4.7.4.1).

3.4.4.2.1 Small containers. Container covers that weigh less than 150 pounds shall be equipped with two handles on each end.

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On containers less than 50 cubic feet, or on container covers which weigh less than 150 pounds, the handles, hoisting and tiedown provisions may be the combined. (See 4.7.4).

3.4.4.3 Hoisting beam. When specified (see 6.2), hoisting provisions for the Navy HLU-216/E Weapon Cradle Hoisting Beam (NAVAIR 616856) shall be included in the container design. The hoisting provisions shall withstand three times the weight of the heaviest container, recess or retract when not in use, be located and attached to the base of the container. The container shall remain parallel to the floor when hoisted. (See 4.7.4).

3.4.4.4 Forklifting. Unless otherwise specified (see 6.2), the container forklift entry pockets shall be located in the base to assure the balance of an empty or a loaded container and shall be accessible from both sides and ends, if the container length is less than 110 inches. The design of the forklift access on the container shall permit the use of forklift truck tines that measure 42 x 6 x 2 inches, with tine spacing a maximum of 40 inches and a minimum of 15 inches when measured from the outside of the tines. Typical forklift pockets shall measure 10 x 3 inches as a minimum. When specified (see 6.2), forklift pockets shall be 15 x 3 inches to facilitate shipboard handling. The forklift access shall be reinforced from skid to skid as required to preclude damage to the lower container skin by insufficient/inaccurate forklift entry. The physical stops/cross braces used to restrict relative displacement of stacked containers shall not interfere or hamper the use of a forklift when unstacking containers. The container shall have forklift tine puncture proof surfaces around the tine entry points. The opening of each forklift pocket shall be completely enclosed and of sufficient strength to withstand damage when banded through the forklift pocket. When compatibility with pallet jacks is specified (see 6.2), the forklift opening shall be 8 inches apart inside to inside and a minimum of 3.5 inches high. (See 4.7.5).

3.4.4.5 Handlift truck. When specified (see 6.2), the container shall be compatible with the Navy MK45 Handlift Truck (NAVSEA 2642780) with access located on the base of the container. The MK45 hoisting provisions shall withstand three times the weight of the heaviest loaded container and recessed within the maximum extremes of the container. The guide pin interface for the MK45 should be located on the container base but may be on the container cover if necessary. (See 4.7.5).

3.4.4.6 Skids. A minimum of two skids shall be provided on the base of all containers that exceed 150 pounds. Unless otherwise specified (see 6.2), the vertical clearance between the base plane of the skids and the bottom of the container shall be a minimum of 4 inches. Skids on Style II containers having a total

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length of 50 feet or less shall be spaced so that the distance between their outer edges coincides with the major width of the container. Unless otherwise specified (see 6.2), the skids shall be of the same basic material as the rest of the container. When wood is required, rough sawed wood conforming MIL-STD-731, group IV shall be used. The wood for the skids shall be free from all defects that materially affect strength or interfere with fastenings. The maximum moisture content at the time of assembly shall not exceed 26 percent. The lower 1 inch ends of the skids shall be beveled 30 degrees from the horizontal base. The attachment of the skids to the container shall be designed to a total strength of the assembly (of all skids) with a longitudinal shear equal to ten times the gross weight of the container. After fabrication is complete (drilling of holes, sawing or chamfering ends, etc.), the skids shall be treated in accordance with TT-W-571, to a retention of 10 pounds per cubic foot or refusal. (See 4.7.4 and 4.7.5).

3.4.5 Stacking interface.

3.4.5.1 Top/bottom stacking interface. The containers shall interface (top/bottom) symmetrically (with the service facility end in the same direction) with like containers in both loaded and unloaded configurations for stacking. A positive means shall be provided for restricting relative displacement of stacked containers under impact loads encountered in shipment or multi-container handling. Banding for multi-container handling shall be accomplished through the forklift pockets and/or over reinforced areas of container cover. (See 4.7.6).

3.4.5.2 Side to side stacking interface. When required (see 6.2), the container sidewalls shall have a smooth continuous interface or be equipped with squaring blocks. The squaring blocks (a minimum of 2 on each side) shall extend upward over 75 percent of the container height and fit flush with the maximum extremes of the container. The smooth continuous interfaces shall allow transportation of like containers without the use of additional blocking and bracing. (See 4.7.6).

3.4.6 Stacking strength and height. The container shall have sufficient strength to permit transportation of stacked, loaded containers during shipment. The container design shall also permit the stacking of loaded like containers to a maximum height of 16 feet for indefinite storage with a structural safety factor of 1.5. Containers with continuous flat roofed structure shall withstand a distributed load of 175 pounds per square foot (see 4.7.6.2).

3.5 Maintainability. All maintenance (shipping, handling, and storage included) shall be capable of being accomplished in field

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shops using standard tools and skills with procedures furnished by the container supplier. The records receptacle cover and seal, humidity indicator and seal, desiccant port cover and seal and pressure equalizing valve and seal shall each be replaceable without removing the container cover from the container base.

3.6 Performance.

3.6.1 Item testing/inspection When specified (see 6.2), the container with the cover removed shall permit functional testing or inspection of the item without removal from the container or any restraining devices. The container must be compatible with interfacing equipment for checkout purposes. When specified (see 6.2), the container shall permit a built in test (BIT) without removal of the container cover.

3.6.2 Item uploading. When specified (see 6.2), the container or the cradle system with the item installed and the cover removed shall serve as a handling fixture.

3.6.3 Installation time. The time required to open the container, remove and reinstall the item and close the container for shipment shall be less than the maximum allowable as specified in 6.2, when tested in accordance with 4.7.3. Opening/closing of the container and operating the item restraint system shall be accomplished using only common hand tools, unless otherwise required.

3.6.4 Transmission of vibration The container design shall prevent damage to the item resulting from the transportation vibration environment. The transmissibility at the resonant frequency in the major translational modes of vibration shall not exceed that specified in MIL-STD-648, 5.3.2 (see 4.7.7.1).

3.6.5 Shock transmission. The container shall limit transmission of shocks to the contents to the maximum level specified in 6.2. This attenuation shall apply when testing in accordance with FED TEST METHOD STD No. 101 (FTMS 101), level A (see 4.7.7.2).

3.6.5.1 UN drop test. When specified (see 6.2), a loaded container shall be subjected to a series of five drops from the height specified in 6.2. The UN drop tests may be required on explosives or hazardous materials (see 4.7.7.2.5).

3.6.6 Environmental requirements. The container shall protect the item and withstand the environmental conditions specified herein. No degradation of materials or performance shall result during testing. The container shall be designed to be capable of withstanding the worldwide extremes of MIL-STD-210, with

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temperature extremes of -65° to $+165^{\circ}\text{F}$, and relative humidity extremes ranging from 0 to 100% over the temperature extremes.

3.6.7 Conductivity. When specified (see 6.2), the container design shall provide a conductive path as specified in 4.7.9. Testing shall be in accordance with 4.7.9.

3.6.8 Size and weight. The container shall be of the minimum practical size and weight consistent with the performance requirements of 4.7.10. Whenever practical, the container size shall be capable of palletization/unitization or compatible with the International Standards Organization (ISO) container system for transportation.

3.6.9 Useful life. The loaded container shall be capable of meeting performance requirements of section 3.6 when exposed to environments in 3.6.6 during handling, storage and transportation for 20 years.

3.6.10 Transportability. The container shall protect all items from the hazards of transportation/handling and be transportable by all modes of transportation in accordance with MIL-P-9024.

3.7 Human factors. Unless otherwise specified (see 6.2), the container design shall meet requirements as defined in MIL-STD-1472. As a minimum, the lifting handles, latches, fasteners, desiccant port, and records receptacle shall be sized to permit operation by personnel wearing chemical/arctic gloves with liners (MIL-G-82242 and MIL-G-835).

3.8 Color. Unless otherwise specified (see 6.2), the container shall be olive drab color No. 34087 of FED-STD-595. When a paint system is specified, only the exterior of the aluminum containers shall be primed and painted, while the interior and exterior of steel containers shall be primed and only the exterior painted.

3.9 Finish. When specified (see 6.2), the finish shall conform to MIL-STD-808.

3.9.1 Aluminum. When required, surfaces of aluminum and aluminum alloy shall be cleaned, surface treated, primed and painted in accordance with MIL-STD-171; paragraph 5.1.3.4 for cleaning, finish No. 7.3.1 for surface treatment and finish No. 21.19 for the top coats (priming and painting). Coatings conforming to TT-E-515 or TT-E-516 may be used in lieu of TT-E-485 in the top coats of the finish.

3.9.2 Steel. Steel surfaces shall be cleaned, surface treated, primed and painted in accordance with MIL-STD-171; paragraph 5.1.3.1 for cleaning, finish No. 5.2 for surface treatment and

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finish No. 20.9 for the top coat (priming and painting). Primer conforming to DOD-P-15328 may also be used in lieu of MIL-STD-171, finish No. 5.2 for surface treatment. Coating conforming to TT-E-515 or TT-E-516 may be used in the top coat of the finish.

3.9.2.1 Plating. Tin-plating in accordance with MIL-T-10727 or zinc-plating in accordance with MIL-C-87115 shall be used in lieu of cadmium plating to the maximum extent practical. If cadmium plating is used, it shall conform to QQ-P-416.

3.9.3 Chemical agent resistant coating. When specified (see 6.2), containers requiring chemical agent resistant coating shall have all steel surfaces, except threaded and other working surfaces, painted with one coat of primer conforming to MIL-P-52192. All aluminum alloy surfaces shall be painted with one coat of primer conforming to MIL-P-23377. All the primed exterior surfaces and skids shall be painted with two coats of paint conforming to MIL-C-46168, Type I, color green 383. The container design shall facilitate the removal of contaminants through the use of decontamination equipment/methods.

3.10 Markings. Markings shall be waterproof ink conforming to A-A-208 or paint conforming to TT-E-515 or TT-E-516. Color shall be black conforming to Color No. 37038 of FED-STD-595. Containers finished with paint conforming to MIL-C-46168 shall be marked with paint conforming to MIL-C-46168, color black, and shall include the letters "CARC" marked in 1-inch letters, in an area as near as practical to the nameplate. Markings shall be in accordance with MIL-STD-648, as applicable, to indicate center of balance, forklift, stacking, lifting, hoisting, and slinging points, record receptacle, desiccant receptacle, pressure relief valves, humidity indicator and caution notes for opening and closing the containers. Letter sizes for the service/maintenance facilities (see 3.4.3) shall be 1/2 inch high. All other markings such as for container handling, opening/closing, etc. shall be 1 inch high and any subnotes 3/4 inch high.

3.11 Identification. A nameplate conforming to MIL-P-15024 shall be permanently attached to the cover exterior. In addition, nameplate information shall be included as part of the installation instructions. The nameplate shall contain the following minimum information:

CONTAINER: REUSABLE SHIPPING AND STORAGE (nomenclature of contained items)
PART NO:
FSCM:
NSN:
CONTRACT NO:

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PROPERTY OF U.S. _____ (Insert appropriate service)
MANUFACTURER'S NO:

Other markings required by MIL-STD-130 shall also be provided.

3.12 Installation instructions. When specified (see 6.2), each container shall be accompanied by installation instructions printed on Tyvek, Mylar, or equivalent. The instructions shall be bonded to the inner wall of the container bottom half and positioned for easy viewing. When the container has a record receptacle, a second set shall be inserted within the receptacle. Instructions shall include a container isometric illustration, nameplate information, a step-by-step procedure for installation and removal of the item, load limitation of the container, desiccant units required, etc.. Adequacy of the instructions shall be demonstrated as an integral part of the form and fit test of paragraph 4.7.3.

3.13 Government furnished property. The procuring activity shall identify any piece parts used in or provided on the container, which will be provided by the government for use during either the prototyping or production phase of the contract (see 6.2 and 6.7).

3.14 Government loaned property. The procuring activity shall identify any property, such as component parts or component part models which will be used during inspection, demonstration or test either during the prototyping or production phase of the contract (see 6.2 and 6.8).

3.15 Workmanship. The container shall be free of defects that may affect strength, durability, safety or serviceability. The quality of the welds, the finish of exposed edges and preparation of surfaces before painting are of particular interest. The container shall be smooth, free of sharp or jagged edges.

3.15.1 Welding. Welding shall be in accordance with MIL-STD-1261, MIL-W-45205, MIL-W-6858, or MIL-W-22248. Brazing shall be in accordance with MIL-B-7883. Welds shall be reasonably smooth, free of craters and porosity. Welds shall exhibit characteristics of fusion, penetration, and soundness of weld deposit representative of good welding practice. All welding fluxes, scale, loose weld spatter, acids, or basic solutions shall be completely removed prior to application of any finish. External assemblies welded to the container body shall be applied with a continuous weld, if practical. When specified (see 6.2), interrupted welds shall be used and filled with caulking conforming to MIL-S-81733 or equivalent, to fill the gaps. Gaps shall not be permitted, internally, between the lip of the container shell and closure.

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3.15.2 Bolted joints. All bolted support structure shall have flat mating surfaces that are free of burrs, weld spatter, etc.

3.16 Interchangeability. The container design shall be such that the following components are interchangeable and replaceable with like components:

- Cover and Base
- Records Receptacle Cover
- Humidity Indicator
- Desiccant Port Cover
- Pressure Equalizing Valve
- Seals and Gaskets
- Fasteners and Latches

Other components such as support items, container closure devices, and skids may be designated during design reviews as interchangeable or replaceable; depending upon specific part design and the replaceability of the part in the field.

3.17 Drawings. Drawings shall conform to Level 3, DOD-D-1000 and shall be prepared in accordance with DOD-STD-100. The drawings shall be subject to review and approval prior to acceptance of production containers.

4. QUALITY ASSURANCE PROGRAM

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements of section 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

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4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.4).
- b. Quality conformance inspection (see 4.5).

4.3 Inspection conditions. Unless otherwise specified, all inspections shall be performed at ambient temperature.

4.4 First article inspection. Unless otherwise specified (see 6.2), first article inspection shall be conducted in the order listed herein. The first article inspection shall be specified by the following:

- a. Visual examination (4.4.1 and 4.7.1).
- b. Analysis (4.4.2).
- c. Demonstration (4.4.3).
- d. Test (sections 4.6 and 4.7).

First article inspection shall be conducted on the number of units specified in 6.2. The contractor shall prepare written procedures for all quality assurance actions required to meet this specification. All visual examinations, analyses, demonstrations, and tests shall be recorded, with results, in a style and format which will facilitate review by the government.

4.4.1 Visual examination. Visual examination shall be the review and comparison of drawings, documents, subcontractor inspection records, and actual hardware listed under visual examination of table I.

4.4.2 Analysis. Analysis shall be the review and comparison of compiled data from various sources, performing mathematical calculations and drawing conclusions. Analysis documentation shall include identification of all input data sources, limitations, restrictions on input data, assumptions, mathematical calculations, results and limitations or restrictions on results. Analysis shall be required for all items annotated by an asterisk (*) in table I.

4.4.3 Demonstration. Demonstration shall be made of the simple tasks requiring no specialized facilities or technical expertise, requiring little or no instrumentation, and the results are not subject to technical interpretation. The contractor shall prepare written procedures describing all demonstrations to be conducted. When demonstrations require the use of the item, a

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dummy load or an unserviceable item may be used. Demonstrations shall be required for all items under analysis and demonstration in table I that are not annotated by an asterisk (*). Demonstration results shall be documented in a consistent format under a single cover.

4.5 Quality conformance inspection. Quality conformance inspection on a product for delivery shall be as specified by the visual examinations in table I, 4.7.2 and 4.7.3. All examinations shall be performed and documented in accordance with MIL-I-45208 or MIL-Q-9858. Inspections performed on a production quantity less than 10 containers, may conform to FAR 52.246-2. All containers used in the qualification program shall have passed all first article testing prior to use for qualification purposes. Records of all qualification data, including proof of compliance shall be submitted to the government for approval. The frequency of testing, and characteristics for evaluation shall be as specified in the contract or purchase order. The order of quality conformance inspection shall be left to the discretion of the contractor, with approval by the procuring activity (see 6.2).

TABLE I. Quality conformance inspection.

Inspection	Requirement paragraph	Inspection paragraph	Classification of defects	
			Major	Minor
VISUAL EXAMINATION				
Standard parts	3.1	4.4.1, 4.7.1		x
Materials	3.3	4.4.1, 4.7.1	x	
General design	3.4.1	4.4.1, 4.7.1	x	
Base section	3.4.1.1	4.4.1, 4.7.1	x	
Cover section	3.4.1.2	4.4.1, 4.7.1	x	
Section assembly	3.4.1.3	4.4.1, 4.7.1	x	
Permanent joints	3.4.1.4	4.4.1, 4.7.1	x	
Gasket	3.4.1.5.1	4.4.1, 4.7.1	x	
Water lip	3.4.1.6	4.4.1, 4.7.1	x	
Physical stop	3.4.1.7	4.4.1, 4.7.1	x	
Free drainage	3.4.1.8	4.4.1, 4.7.1		x
Cover stand offs	3.4.1.10	4.4.1, 4.7.1	x	
Latches	3.4.1.11	4.4.1, 4.7.1	x	
Security seals	3.4.1.12	4.4.1, 4.7.1	x	
Shock isolation system	3.4.2.1	4.4.1, 4.7.1	x	
Cure date, shock isolation system	3.4.2.2	4.4.1, 4.7.1	x	
Desiccant receptacle	3.4.3.1	4.4.1, 4.7.1	x	
Humidity indicator	3.4.3.2	4.4.1, 4.7.1	x	

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TABLE I. Quality conformance inspection (Cont'd).

Inspection	Requirement paragraph	Inspection paragraph	Classification of defects	
			Major	Minor
Pressure valve	3.4.3.3	4.4.1, 4.7.1	X	
Visual inspection ports	3.4.3.4	4.4.1, 4.7.1	X	
Air filling valve	3.4.3.5	4.4.1, 4.7.1	X	
Record receptacle	3.4.3.6	4.4.1, 4.7.1		X
Drain plug	3.4.3.7	4.4.1, 4.7.1		X
Skids	3.4.4.6	4.4.1, 4.7.1	X	
Color	3.8	4.4.1, 4.7.1		X
Finish	3.9	4.4.1, 4.7.1		X
Marking	3.10	4.4.1, 4.7.1		X
Identification	3.11	4.4.1, 4.7.1		X
Installation instructions	3.12	4.4.1, 4.7.1	X	
Workmanship	3.15	4.4.1, 4.7.1	X	
Drawings	3.17	4.4.1, 4.7.1	X	

ANALYSIS (*) AND DEMONSTRATION

* Fungi resistance	3.3	4.4.2	X	
* Corrosion resistance	3.3.2	4.4.2	X	
Container seal	3.4.1.5	4.7.2	X	
Accessibility	3.4.2.3	4.7.3	X	
Stacking interface	3.4.5	4.7.6	X	
* Maintainability	3.5	4.4.2	X	
Item testing	3.6.1	4.7.3		X
Item uploading	3.6.2	4.7.3		X
Installation time	3.6.3	4.7.3		X
* Safety	3.6.7	4.7.9	X	
* Useful life	3.6.9	4.4.2	X	
* Transportability	3.6.10	4.4.2	X	
Human factors	3.7	4.7.3	X	
* Environmental requirements	3.6.6	4.7.8	X	
* Interchangeability	3.16	4.4.2	X	

4.5.1 Inspection lot. Lot inspection shall be as defined in MIL-STD-105. However, the lot size shall not exceed one truck load quantity or one month's production, whichever is smaller.

4.5.2 Sampling plan. The sampling plan shall be in accordance with MIL-STD-105 and table II.

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TABLE II. Inspection levels.

Examination	Inspection level	Acceptable quality levels (AQL)
Major defect	Pressure test	100 %
Major defects	II	1.5
Minor defects	II	6.5

4.5.3 Noncompliance. Failure of any container to conform to table I shall be cause for rejection. In the event that additional test samples are required, the next (second) production sample shall be used. Before resubmitting, full particulars concerning previous rejection and the action taken to correct the defects shall be furnished to the procuring activity. Failure to complete testing on the third submittal shall be cause for contract termination.

4.6 Test conditions.

4.6.1 Instrumentation. Rough handling and vibration tests shall be performed with an electronically instrumented dummy load mounted in the container. The dummy load shall be instrumented with a triaxial accelerometer or three single axis accelerometers located at the center of gravity as a minimum. As required by size or fragility of specific areas/components of the actual item (see 6.2), additional accelerometers shall be placed at other locations. The response of the complete measuring system from accelerometers through the readout instrument shall be a minimum of 90% from 2-1000 Hz. The magnitude of the acceleration shall be determined by the vector addition of the three (3) components as measured by the triaxial accelerometer whose sensitive axes are mounted perpendicular to one another. The data shall be analyzed point by point along the common time base to determine the maximum resultant peak acceleration.

4.6.2 Dummy loads. A dummy load shall have the same following characteristics of the item:

a. Envelope dimensions (voids are permissible provided they do not interfere with the ability of the dummy load to simulate the item during all tests.)

b. Mounting points.

c. Size, weight and weight distribution.

d. As specified (see 6.2), moments of inertia.

Note: An unserviceable item may be used as a dummy load.

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4.7 Test methods. The containers shall be tested in accordance with the applicable methods of FTMS 101 as specified herein. All testing shall be conducted under surveillance of a representative of the procuring activity. All equipment used in testing procedures shall conform with the calibration requirements of MIL-STD-45662. The contractor shall prepare a written test plan describing all tests to be conducted. Documentation of test results shall be in a consistent format under a single cover.

4.7.1 Examination of product. The container shall be carefully examined to determine conformance with the materials, design, Table I (visual examination), applicable drawings and MIL-I-45208. Castings and machinings used in the primary support structure shall be visually inspected for cracks and flaws.

4.7.2 Pressure test. The container shall be examined for leakage when assembled, loaded and sealed, as if prepared for shipment, except the relief valve shall be immobilized or removed. Unless otherwise specified (see 6.2), the container shall maintain an internal pressure of 1.0 PSID. A measurable pressure change in excess of 0.05 PSI per hour shall be cause for rejection when adjusted for temperature and barometric pressure changes. The container shell and closure mechanism shall be pressurized to a minimum of 1.5 PSID, without permanent structural deformation or failure. (See 3.4.1.5).

4.7.3 Form and fit test. The item for which the container is designed shall be installed and removed from the container in accordance with the installation and removal instructions. The item and container shall demonstrate interface compatibility. Ease of operation and freedom from interference shall constitute acceptance. The container thereby shall be inspected for proper form and fit. During this demonstration, operation of the hoisting/tiedown provisions, closure fasteners and the service and maintenance facilities shall be accomplished. In addition, the container's installation instructions shall be inspected for adequacy, clarity, completeness and proper location. Records shall be maintained of the work and the number of manhours required for removal and installation of the item. (See 3.4.2.3, 3.6.1, 3.6.2 and 3.12)

4.7.4 Handling provisions test. Handling provisions specified in 3.4.4, 3.4.4.1, 3.4.4.3, 3.4.4.4, 3.4.4.5 and 3.4.4.6 shall be examined and tested in accordance with MIL-STD-648, sections 4.17 and 5.8.

4.7.4.1 Handle strength test. The cover section shall be lifted by one handle, using a single-point lifting mechanism, and held completely above the ground for five minutes. Permanent

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deformation/failure of the handle or supporting structure, or creation of an unsafe handling condition, shall be cause for failure of this test. (See 3.4.4.2 and 3.4.4.2.1).

4.7.5 Mechanical handling test. The mechanical handling tests shall be conducted in accordance with FTMS 101, method 5011.1, paragraphs 6.2, 6.5 and 6.6. (See 3.4.4.4).

4.7.5.1 Cover stand off test. The standoffs shall withstand a force of two times the container cover weight without deformation or damage. The stand offs shall slide 5 feet on a concrete floor in each of four different directions. (See 3.4.1.10).

4.7.5.2 Latch strength test. Each latch shall withstand a tensile load of 4500 pounds applied axially to the drawbolt, without permanent deformation. However, the contractor may submit certification of compliance in lieu of testing (see 6.2). (See 3.4.1.11).

4.7.5.3 Gasket pull test. The container gasket shall withstand a pull test not less than 20 pounds, without any sign of separation. However, the contractor may submit certification of compliance in lieu of testing (see 6.2). (See 3.4.1.5.1).

4.7.6 Stacking.

4.7.6.1 Load resistance. The container shall be tested for the stacking of like containers in accordance with MIL-STD-648, paragraph 5.7.2 (see 3.4.5.1 and 3.4.5.2). Containers with continuous flat roofed structures shall be tested in accordance with FTMS 101, method 5017, except that the roof shall bear a pressure of 175 pounds per square foot (see 3.4.5 and 3.4.6).

4.7.6.2 Stacking strength. The container design shall be tested for its stackability in accordance with MIL-STD-648, paragraph 5.2.7.1 (see 3.4.6).

4.7.7 Induced environment.

4.7.7.1 Vibration. Unless otherwise specified (see 6.2), the vibration environment shall be as defined in MIL-STD-648, paragraph 5.3.2. (See 3.6.4).

4.7.7.2 Shock. Unless otherwise specified, the shock environment shall be in accordance with FTMS 101, Level A. (See 3.6.5).

4.7.7.2.1 Cornerwise-drop (rotational) test. Cornerwise drops shall be conducted in accordance with method 5005.1 and 4.7.8. (See 3.6.5).

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4.7.7.2.2 Edgewise-drop (rotational) test. Edgewise drops shall be conducted in accordance with method 5008.1 and 4.7.8. (See 3.6.5).

4.7.7.2.3 Impact test. The impact test shall be in accordance with method 5012 or method 5023 (see 6.2 for specified drop height and velocity) and 4.7.8. A stacked impact test may be required for Navy containers weighing less than 2000 pounds (see 6.2). (See 3.6.5).

4.7.7.2.4 Free fall drop test. A free fall flat drop shall be conducted in accordance with method 5007.1, except the drop height shall be 18 inches.

4.7.7.2.5 UN drop test. Containers carrying explosives or hazardous materials shall be subjected to a total of five drops from a drop height specified in 6.2. The container shall be dropped as follows:

- a. Flat on bottom.
- b. Flat on top.
- c. Flat on long side.
- d. Flat on short side.

e. Most vulnerable corner as identified by procuring activity representative during testing.

A different container may be used for each drop, but is not required. Pass-fail criteria shall be no spillage and safe disposal of the contents. (See 3.6.5.1)

4.7.7.3 Repetitive shock (superimposed loads). The repetitive shock (superimposed loads) environment shall be at ambient temperature as defined in MIL-STD-648, paragraph 5.2.2. (See 3.6.5).

4.7.8 Environmental tests. Unless otherwise specified (see 6.2), environmental tests shall be conducted at $-20 (+0/-10)$ °F and $+140 (+10/-0)$ °F for tests described in 4.7.7.2.1, 4.7.7.2.2 and 4.7.7.2.3. (See 3.6.6).

4.7.9 Conductivity. Connect an ohmmeter of DC resistance between each terminating and breaking point from the item to the container wall. The measured conductive path shall not exceed 0.10 OHM. The grounded container shall reduce a surface charge of 5,000 volts to 0 volt or less within 0.05 seconds. (See 3.6.7).

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4.7.10 Weight test. The fully assembled container, including the cushioning/shock isolation system and restraint straps, shall be weighed. Production containers shall weigh ± 5 percent of the first article container weight. (See 3.6.8).

4.8 Inspection of packaging. The sampling and inspection of the preservation and interior package marking shall be in accordance with groups A and B quality conformance inspection requirements of MIL-P-116. The sampling and inspection of the packing and marking for shipment and storage shall be in accordance with the quality assurance provisions of the applicable container specification shown in section 5 and the marking requirements of MIL-STD-129.

5. PACKAGING

5.1 Preservation. Not applicable.

5.2 Packing. No additional packing is required except that each container shall be completely assembled. The item support system shall be mounted in place.

5.3 Marking. All marking shall conform to MIL-STD-129. The identification marking shall have the national stock number (NSN) and contract number bar coded in accordance with MIL-STD-1189. The bar coded NSN and contract number shall appear above the "in the clear" NSN and contract number identification markings.

6. NOTES

6.1 Intended use. These containers are intended for domestic and overseas shipment and storage of weapon systems and/or components, helicopter transmissions, engines, gear boxes, propeller hubs, electronic gears, etc. The container shall provide water-vapor proof, physical and level A protection as defined in MIL-STD-2073-1 for the item during handling, storage and transportation.

6.2 Order data. Procurement documents should specify the following:

- a. Title, number and date of this specification.
- b. Identify the item and the quantity the container will house (see 1.1).
- c. Type required (see 1.2).
- d. Whether first article inspection is required, the number of units required for inspection, and the test method order for first article and quality conformance inspections (see 3.2, 4.4, 4.5 and 6.3).

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- e. Material conformance to military/federal specifications if other than specified (see 3.3).
- f. Type of material used in container design (see 3.3.2 and 3.3.2.2).
- g. Whether markings and/or alignment guides are required (see 3.4.1.3).
- h. Whether welding is not required for some seams, joints, or accessories (see 3.4.1.4).
- i. Pressure/vacuum valve settings and pressure test levels if other than specified (see 3.4.1.5, 3.4.3.3 and 4.7.2).
- j. If hollow gasket is other than thickness specified (see 3.4.1.5.1).
- k. Specify latch design if other than specified (see 3.4.1.11).
- l. Whether security seals should conform to MIL-S-23769 (see 3.4.1.12).
- m. Specify item restraint if other than specified (see 3.4.2.1).
- n. Whether desiccant receptacle is accessible from interior of container (see 3.4.3.1).
- o. Type of humidity indicator (see 3.4.3.2).
- p. Whether end of container for placement of service/maintenance facilities is other than specified and whether inspection ports are required (see 3.4.3 and 3.4.3.4).
- q. Whether an air filling valve is required (see 3.4.3.5).
- r. Whether a record receptacle is required or should be of smaller dimensions (see 3.4.3.6).
- s. Whether a drain plug is required (see 3.4.3.7).
- t. Whether a fuel leak detector is required (see 3.4.3.8).
- u. Identify any special or unusual functions of the container (i.e. end entry forklift capability, compatibility with AERO 21c weapon skid and adapters, type of hoisting/tiedown rings, number of handles for a cover section weighing more than 150 pounds, Navy HLU-216/E hoisting provisions, forklift pockets size if other than specified, compatibility with pallet jack, compatibility with Navy MK45 handlift truck, clearance between the bottom of the skid and the container if other than specified, if skids are other than specified in 3.4.4.6) (see section 3.4.4).
- v. Whether squaring blocks shall be required (see 3.4.5.2).
- w. Whether item testing/inspection shall be required with cover removed or BIT with container cover installed (see 3.6.1).
- x. Whether item uploading is required (see 3.6.2).
- y. The required installation time in manhours (see 3.6.3).
- z. The maximum shock transmission limit of the actual item (fragility) (see 3.6.5 and 4.6.1).
- aa. Whether UN drops are required and the specified drop height (see 3.6.5.1 and 4.7.7.2.5).
- bb. Identify variations with MIL-STD-1472 (see 3.7).
- cc. The required conductive path resistance (see 3.6.7).

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- dd. The required exterior color and surfaces to be primed and painted on the container if other than specified (see 3.8).
- ee. Requirement for use of MIL-STD-808 (see 3.9).
- ff. When chemical agent resisting coating is required (see 3.9.3).
- gg. When installation instructions are necessary and instruction sheet material type (see 3.12).
- hh. When Government furnished and/or loaned property is required (see 3.13, 3.14, 6.7 and 6.8).
- ii. Whether interrupted welds shall be used and gaps caulked (see 3.15.1).
- jj. Facilities where inspection requirements shall be performed (see 4.1).
- kk. Whether dummy load shall have the same moment of inertia characteristics as the item (see 4.6.2).
- mm. Whether latch and gasket test certifications shall be submitted (see 4.7.5.2 and 4.7.5.3).
- nn. Vibration and shock test requirements if other than specified (see 4.7.7.1 and 4.7.7.2).
- oo. The required drop height and impact velocity if other than specified and whether stacked impact test is required (see 4.7.7.2.3).
- pp. Whether environmental tests are required (see 4.7.8).

6.3 First article. When first article inspection is required, the item(s) shall be a first article sample. The first article shall consist of the number of units determined in 6.2. The contracting officer shall include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results and disposition of first articles. Invitations for bids shall provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

6.3.1 First article sample. Before starting production, a sample of the finished container shall be submitted for approval in accordance with 4.4. The approval of the first article sample authorizes the commencement of production, but does not relieve the supplier of responsibility for compliance with all applicable provisions of this specification. The first article sample shall be manufactured in the same facilities as the first article (see 4.4).

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6.4 Subject term (key word) listing.

Container
 Container, Shipping and Storage
 Container, Shipping and Storage, Metal
 Container, Metal Reusable
 Container, Shipping and Storage, Metal Reusable
 Packaging
 Packaging, Metal Container
 Packaging, Metal Reusable

6.5 Metric conversion. Metric conversions conforming to ASTM E380 are compiled in table III.

TABLE III. Metric conversions.

English	Metric	Reference
110 inches	279 cm	3.4.1.1, 3.4.4.4
0.12 inch	0.30 cm	3.4.1.1, Figure 1
1.0 PSID	6.9 kPa	3.4.3.3, 4.7.2
1.5 PSID	10 kPa	4.7.2
0.09 inch	0.23 cm	3.4.1.5.1
80 in lbs	92 cm kg	3.4.1.5.1
20 lbs	9.1 kg	3.4.1.5.1, 4.7.5.3
0.25 inch	0.64 cm	3.4.1.8
3/4 inch	1.91 cm	3.4.3.2, 3.4.3.7, 3.10
4 inches	10 cm	3.4.3.4, 3.4.3.7, 3.4.4.6
12 inches	30 cm	3.4.3.6
10 inches	25 cm	3.4.3.6, 3.4.4.4
2 inches	5 cm	3.4.3.6, 3.4.4.4
3 inches	8 cm	3.4.4.4
150 lbs	68 kg	3.4.4.2, 3.4.4.2.1, 3.4.4.6, 6.2
50 cu ft	1.42 cu m	3.4.4.2.1
42 inches	107 cm	3.4.4.4
6 inches	15 cm	3.4.4.4
40 inches	102 cm	3.4.4.4
15 inches	38 cm	3.4.4.4
8 inches	20 cm	3.4.4.4
3.5 inches	8.9 cm	3.4.4.4
1 inch	2.5 cm	3.4.4.6, 3.10
50 ft	15 m	3.4.4.6
10 lbs/cu ft	160 kg/cu m	3.4.4.6
16 ft	4.9 m	3.4.6
175 lbs/sq ft	854 kg/sq m	3.4.6, 4.7.6.2
-65 °F	-54 °C	3.6.6
165 °F	74 °C	3.6.6
1/2 inch	1.3 cm	3.10
0.05 PSID	0.35 kPa	4.7.2

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TABLE III. Metric conversions (Cont'd).

English	Metric	Reference
5 ft	1.5 m	4.7.5.1
4500 pounds	2041 kg	4.7.5.2
2000 lbs	907 kg	4.7.7.2.3
18 inches	46 cm	4.7.7.2.4
-20 °F	-29 °C	4.7.8
-40 °F	-40 °C	4.7.8
140 °F	60 °C	4.7.8
10 °F	6 °C	4.7.8

6.6 Disposability. One or more of the following methods shall be used to accomplish disposal of the container: reuse, recycling, sanitary landfill, incineration pyrolysis, or sea disposal.

6.7 Government furnished property. The contractin officer should arrange to furnish the property listed in 3.13.

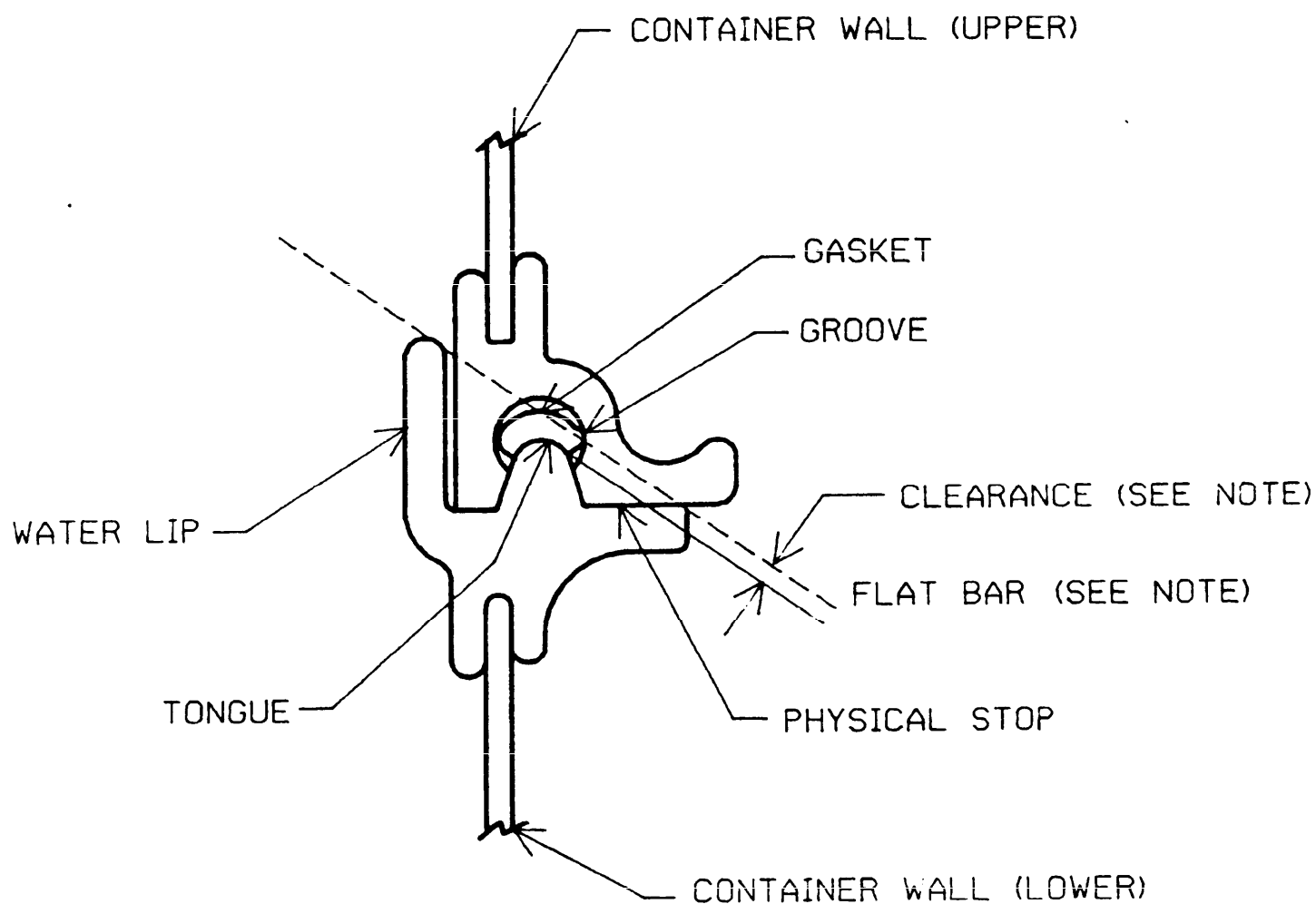
6.8 Government loaned property. The contracting officer should arrange to load the property in 3.14.

6.9 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes. Classification changes are shown in table IV.

TABLE IV. Classification changes.

MIL-C-5584C	MIL-C-38770A	MIL-C-5584D
Style I	Style B	Type I
Style II	Style A	Type II
	Type I	-----
	Type II	-----

MIL-C-5584D



NOTE: The clearance between the tongue and a flat bar laid on and contacting the physical stop and the water lip shall be a minimum 0.12 inches (see 3.4.1.1).

FIGURE 1. CLOSURE CONFIGURATION A.

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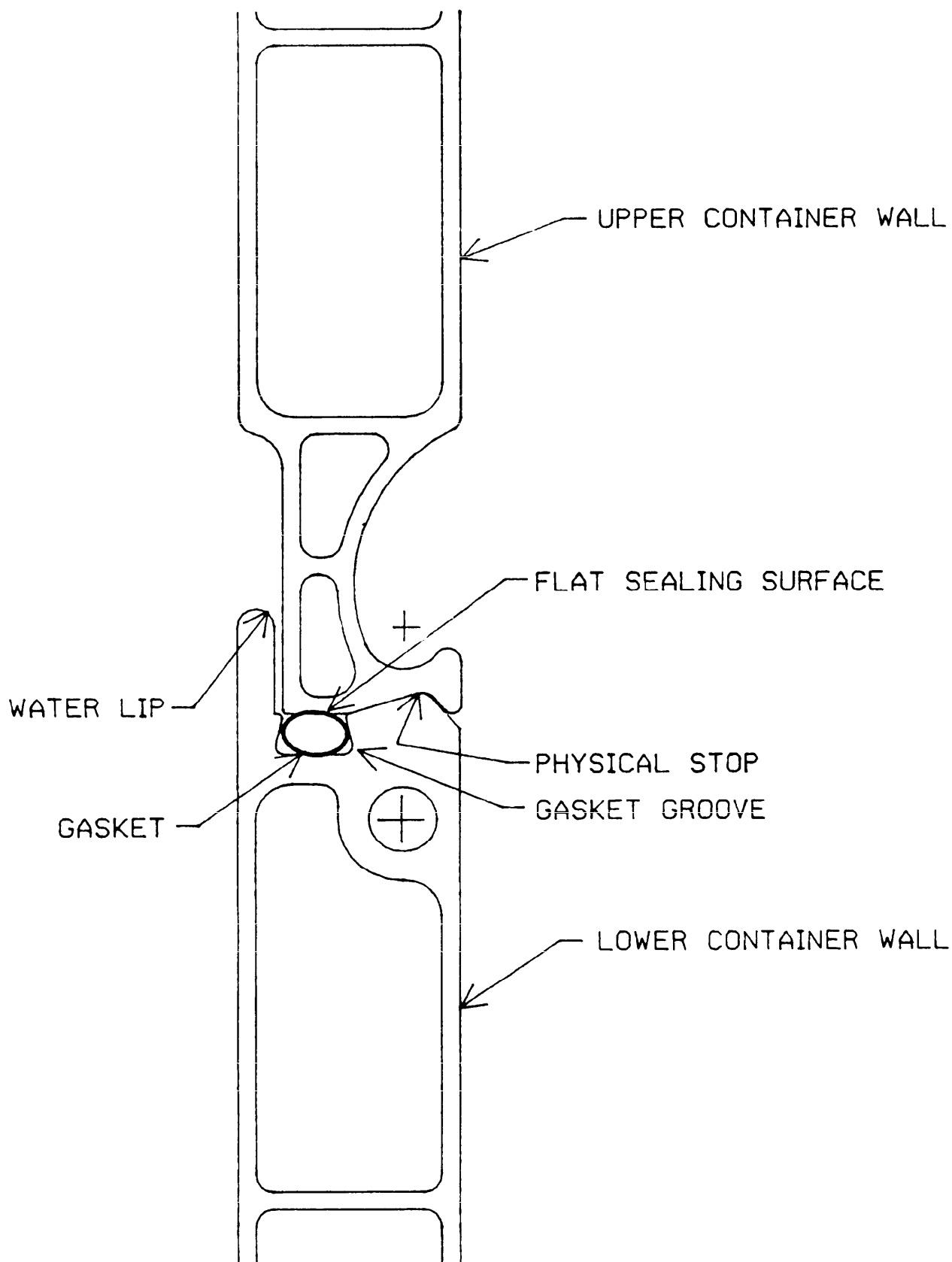


FIGURE 2. CLOSURE CONFIGURATION B.

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Custodians:

Air Force - 69

Army - AV

Navy - AS

Preparing activity:

Air Force - 69

(Project No. 8145-0024)

Reviewer activities:

Air Force - 71, 82, 84, 99

Army - AR, AT, ME, MI

User activities:

Air Force - 11, 70, 80

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER MIL-C-5584D		2. DOCUMENT TITLE CONTAINERS, SHIPPING AND STORAGE, METAL, REUSABLE	
3a. NAME OF SUBMITTING ORGANIZATION		4. TYPE OF ORGANIZATION (Mark one)	
b. ADDRESS (Street, City, State, ZIP Code)		<input type="checkbox"/> VENDOR	
		<input type="checkbox"/> USER	
		<input type="checkbox"/> MANUFACTURER	
		<input type="checkbox"/> OTHER (Specify) _____	
5. PROBLEM AREAS			
a. Paragraph Number and Wording:			
b. Recommended Wording			
c. Reason/Rationale for Recommendation			
6. REMARKS			
7a. NAME OF SUBMITTER (Last, First, MI) - Optional		b. WORK TELEPHONE NUMBER (Include Area Code) - Optional	
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