The following specification
(80132) 15450 REQUIREMENTS FOR PROCUREMENT OF THE CONTAINER
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REQUIREMENTS FOR PROCUREMENT OF THE CONTAINER

1.0 SCOPE. The following requirements are for reusable containers that shall provide waterproof and physical protection of a variety of avionic assembles during shipping, and storage both ashore NAD afloat. The avionic assembles require protection against shock levels greater than 45 G's.

2.0 DESIGN CRITERIA.

2.1 General. The container shall protect the contents from moisture and physical damage during domestic and overseas shipment and storage. The container's service life is expected exceed ten (10) years.

2.2 Weight and Cube. The container shall be designed for minimum weight and cube consistent with protection of contents, durability, intended use, economy and safety.

2.3 Material. The shell of the container shall be molded out of a material which will bass the required test of Section 3. The container shall mot be susceptible to deterioration by sunlight, salt, atmosphere, ozone, organic solvents, and hydraulic fluids. The material shall be flame retardant and have good weathering characteristics. Use of aluminum supports is permissible.

2.4 Temperature Stability. The container assembly shall be designed to perform satisfactorily between 120° F (49°C) and -20°F (-29°C).

2.5 Water Resistance. The container shall be able to withstand the waterproof test of paragraph 3.4.4.

2.6 Suspension System. The container shall have a suspension system which consists of a platform assembly and shock mounts that are capable of satisfactory operation over the temperature range specified in paragraph 2.4.

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2.6.1 Platform Assembly. The platform assembly shall consist of a platform and tie down straps.

2.6.1.1 Platform. The platform shall be molded of fabricated fo plastic of aluminum material. Platform size shall be sufficient to accommodate the applicable dummy loads. The platform shall have a one inch vertical flange around its outer edge to preclude excessive movement of the load.

2.6.1.2 Tie Down Straps. Quick opening tie down straps conforming to NAVAIR, DWG (30003) 173AS219 shall be used.

2.6.2 Shock Mounts.

2.6.2.1 Shelf Life / Service Life. Elastomeric shock mounts shall be used. These mounts shall have a shelf life and a service life in excess of five years each.

2.6.2.2 Shock Mount Markings. Each shock mount shall be marked with its manufacturing cure date (month and year) permanently molded in the top of the mount material, so as to be plainly visible when the mount is installed. If mount configuration makes this impossible, the cure date (month and year) shall be stamped on the top surface of the flexing element using white waterproof ink conforming to TT-1-1795. Shock mounts shall be no older than one (1) year old when installed in the container.

2.7 Container Closure.

2.7.1 Container Sealing. The container closure shall be a gasketed tongue-in-groove type, with the groove portion located in the container cover. The closure shall incorporate a feature to protect the sealing surfaces of the tongue and the gasket. The loading force on the gasket shall be controlled to prevent compression in excess of 30%. The gasket shall be elastomeric, one continuous length, and easily replaceable. Separately applied sealing compounds or materials are not allowed.

2.7.2 Fasteners. Quick-opening, easily replaceable fasteners shall be used. All fasteners for container sizes #1, 2 and 3 shall be recessed in the container shell to provide protection in either open or closed condition during shipping/handling. Container sizes #4 through #7 can be recessed of protected by ribs in the container shell to provide protection in either open or closed condition during shipping/handling.

2.7.3 Orientation / Security Seal. The container shall be mechanically keyed for proper orientation and alignment of closure mating surfaces. Mechanical keying is not required if the cover is 180° reversible, however, the waterproof test of paragraph 3.4.4 shall be performed with the lid in both positions. The container shall have provisions for the insertion of two leaded sire seals (one each end).

2.8 Drainage. Provisions shall be incorporated to ensure that every possible pocket on the exterior of the container is provided with a means of drainage in the normal storage position of the container.

2.9 Handling Provisions.

2.9.1 Handles. Two (2) handles are required (1 each end) for container sizes #1, #2 and #3. Handles for container sizes #1, 2 and 3 shall be molded into the container shell. Container sizes #4 through #7 shall be equipped with four (4) chest type handles (2 each end) designed for surface mounting with stops to hold the bail at a right angle to the mounting plate when in a carrying position and spring loaded to fold the bail into a down position when released. The pail of the handles shall give a inside length not less than 4.25 inches with a minimum clearance of 1.8 inches between the bail grip and the mounting plate. Handles shall be attached to the container's base by rivet and sealed with a permanent, waterproof type sealant.

2.9.2 Stacking. The same size containers shall be suitable for stacking one upon another. Features shall be incorporated in the design to prevent excessive lateral or longitudinal freedom in the stacked configuration. These features shall be tested in accordance with paragraph 3.4.5. Stacking among the different size containers is desired, when practical.

2.9.3 NISTARS Compatibility. The design features for container sizes #1, 2 and 3 will be designed for maximum compatibility with the Navy Integrated Storage and Retrieval System (NISTARS). The maximum container dimensions are 24" x 24" x 30" with a weight if 55 pounds loaded. The longest dimension of the container shall be the longitudinal axis, the shortest dimension shall be the height. These containers shall be capable of rolling over standard conveyor belts without hanging up in any orientation.

2.10 Pressure Relief. A pressure relief valve is not necessarily required, but a means of stabilizing pressure to protect the contents and container from excessive pressure differentials is required. Pressure differentials, if any, must be capable of being equalized before opening the container. The means of pressure relief shall be selected consistent with container size and construction and shall provide a flow rate which as a minimum is equal to 0.04 times the volume of the container. The pressure relief system shall be designed to control contraction and expansion of the shell to no more than one-quarter inch maximum deflection. The contractor shall provide this information for the technical evaluation and include this data as an integral bart of the drawing package.

2.11 Finish. With the exception of shipping information area specified in Section 2.13.2, the finish of the containers shall be designed with minimum tendency for adhesion of spray paints. Finish shall be designed to discourage, when possible, painting the outer shell of the container.

2.12 Performance.

2.12.1 The Ability of the Container to Withstand Handling. When tested in accordance with the requirements of Section 3, the container shall reveal no significant structural weaknesses. No deformation shall occur that will restrict disassembly, reassembly ***and subsequent reuse of the container.*** Any permanent deformation of the container shell surfaces beyond their normal plane or position shall be considered a significant structural weakness. Minor dimpling is permitted provided the dimples are full recovered with 24 hours after occurring.

2.12.2 Ability of Container to Protect Contents. When tested in accordance with the requirements of Section 3, the shock levels transmitted to the contents of the container shall not exceed a resultant shock level of 45 G's. There shall be no evidence of shifting of the contents with in the container that would create conditions likely to cause damage during shipment.

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2.13 Identification.

2.13.1 Container Identification. The following markings shall be molded (recessed or embossed) into the shell of the container in a recessed area measuring approximately 4 X 4 inches:

CONTAINER, SHIPPING AND STORAGE FOR WRA's/SRA's

NAVY P/N (80132) 15450

NSN (to be furnished at a later date)

MFG. P/N e.g., (12345) 67890

CONTRACT NO. (insert proper number)

PROPERTY OF U.S. NAVY

MANUFACTURED BY (INSERT NAME OF COMPANY)

2.13.2 Shipping Information. A recessed area no smaller than 7 x 6 inches shall be on the upper left corner of two sides of the container. The following shall be molded parallel to the top edge of the area.

Shipping Information Only:

The 7 x 6 inch recessed area shall be used to place the various shipping labels, as well as, material, fragile, and other labels.

2.14 Installation Instructions. Each container shall be accompanied by installation instructions printed on Tyvek or equivalent and are intended to be a permanent part of the container. The instructions shall be bonded to the inner wall of the bottom half of the container for easy viewing. Instructions shall include the following: a container isometric illustration, a step-by-step procedure for installation and removal of the items and a chart to include container part number, NIIN, item size and weight limitations, container tare weight and container outer dimensions.

2.15 Workmanship. The container shall be of clean design, well made and free of any defects which may affect durability, strength, safety and serviceability.

2.16 Bolted Joints. All bolted support structures shall have flat mating surfaces that are free of burrs, weld spatter, etc.

3.0 QUALITY ASSURANCE PROVISIONS.

3.1 Qualifications. Quality Assurance Inspection shall consist of the following:

a. Design Review Conference

b. First Article Inspection

c. Production Inspection

3.2 Responsibility for Inspection. The government shall be responsible for the performance of all first article inspections. The contractor shall be responsible for the performance of all production inspections. All production inspections shall be witnessed by a government representative appointed by the Contracting Officer. The government reserves the right to perform any reinspection or retesting deemed necessary.

3.3 Design Review. A design review meeting shall be held a ASO between contractor's engineers and ASO personnel to review Level 2 drawings and the predicted response of the suspension system to the extremes of the rough handling test (see 4.2.2). The meeting shall be held prior to initiation of prototype fabrication.

3.4 First Article Inspection.

3.4.1 Handling Test specified in Section 3.4.3 shall be performed with the minimum, intermediate and maximum dummy loads.

3.4.2 Dummy Loads. Three dummy loads for each container size shall be supplied by the container vendors with the following characteristics:

a. Minimum, intermediate and maximum weights and sizes as shown in Table I.

b. Center of gravity at the geometric center of the dummy loads.

c. Accommodations for mounting of the accelerometers near the center of gravity.

3.4.3 Rough Handling Test. The rough handling test shall be performed under ambient conditions (70° F ± 20°). All rough handling test in the following paragraphs shall apply. A resultant shock value in excess of 45 G's, transmitted to the dummy load, shall be cause for rejection.

3.4.4.1 Drop Test (Free-Fall-Rectangular Container). The drop test shall be performed in accordance with Federal Test Method Standard No. 101C, Method 5007.1 Procedure A. The drop heights are listed in Table II.

Procedure A shall be repeated three times for each container; the first sequence shall be electronically instrumented and performed with the minimum dummy load, the second sequence electronically instrumented and performed with the intermediate weight dummy load and the third sequence electronically instrumented and performed with the maximum dummy load.

3.4.3.2 Drop Test (Low Temperature). The first article sample shall be tested as described in paragraph 3.4.3.1 with the minimum dummy load. However, only the ten drops which had the highest G value at ambient temperature shall be repeated at low temperature. Drops shall be done immediately after conditioning the container at -20° F (±5°).

3.4.3.3 Drop Test (High Temperature). The first article sample shall be tested as described in paragraph 3.4.3.1 with the maximum dummy load. However, only the ten (10) drops which had the lowest G reading at ambient temperature shall be repeated at high temperature. Drops shall be done immediately after conditioning the container at +120°F (±5°).

3.4.4 Waterproof Test. After completion of the drop test, the container shall be subjected to the water resistance test per ASTM-D-951. The container shall be visually inspected for water penetration. Critical areas such as the closure, rivets, etc. shall be swabbed with clean, absorbent paper towels. Any sign of water penetration will be a cause for rejection.

3.4.5 Stacking Test. The stacking test shall be performed by placing the unloaded base on the cover in normal stacking position. The stacking arrangement shall then be tilted 15˚ from the horizontal in two mutually perpendicular planes. Any slippage in excess of clearances between stacking provisions (e.g., between male and female mating surfaces) constitutes failure.

3.4.6 Fire Test, External Source. An additional container shall be submitted for this test (a non-useable container of the same material may be used). The container shall be subjected to the Fire Test, External Source specified in MIL-STD-648.

3.5 Production Inspection. A one percent sample or a minimum of one production unit from each lot, whichever is greater, shall undergo the quality inspections of paragraphs 3.5.1, 3.5.2 and 3.5.3. A lot shall consist of any scheduled shipment under contract submitted at one time for inspection. Representative sampling shall be used, i.e., the samples are to be selected at random throughout the lot. If any sample fails, the number of original samples shall be doubled and subjected to examination/test. If any of the second sample submission fail, the lot shall be rejected. A rejected bay be reworked only once by the contractor, correcting the area of deficiency. After lot correction, representative sampling (double the original quantity) shall undergo examination/test. All drop and leak test shall be witnessed by a government representative.

3.5.1 Examination. Containers shall be examinated for conformance to the approved first article sample and data package.

3.5.2 Drop Test. The container(s), without the dummy load, shall be subjected to one sequence of Federal Test Method Standard No. 101C, paragraph 6.3 of Method 5007.1, Level A, procedure C (a total of 4 drops). The drops shall not be instrumented.

3.5.3 Waterproof Test. Containers shall be subjected to the waterproof test specified in 3.4.4.

4.0 NOTES.

4.1 Design Information. Item sizes - See Table I.

4.2 Data. The following information shall be provided by the container manufacturer.

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4.2.1 Engineering Drawings. DOD-D-1000B, Level 2 and Level 3. Level 3 drawings shall include the following:

- The production inspection plan as specified in paragraph 3.5.

- The waterproof test as specified in paragraph 3.4.4 as a production requirement.

4.2.2 Shock Mount Performance Data. Performance data shall include estimated performance at temperature indicated in paragraph 2.4. The following information shall be submitted to ASO code EPP1-A ten (10) working days before the design review:

a. Length, width and weight of the suspended mass (frame).
b. Vertical distance form the suspended mass center-of-gravity to the isolator mounting frame.
c. Distance in inches to the forward and aft isolator (shock mounts) form the center of gravity.
d. Lateral distance in inches between isolator.
e. Length and width of the container.
f. The vertical angle the shock mount centerline makes with the plane of the mounting frame and the horizontal angle the shock mount makes with the transverse axis of the mounting frame.
g. The damping factor, spring rate, compression to shear stiffness ratio, and the dynamic to static stiffness ratio of the isolators.
h. Theoretical shock mitigation values during all drop and impact test including supporting calculations.

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TABLE I

NSN 1RD8145-	Navy P/N 15450-	Maximum Shell Outside Dimensions	Maximum Container Tare Weight	Dummy Load Size	Dummy Load Weight (lbs)
LL-WY2-3102	100	19” x 15” x 12”	15	Min. 8” x 4” x 4” Inter. 10” x 6” x 5” Max. 12” x 8” x 6”	3 6 10
LL-WY2-3103	200	21” x 19” x 15”	27	Min. 12” x 8” x 6” Inter. 13” x 10” x 7.5” Max. 14” x 12” x 9”	10 15 20
LL-WY2-3104	300	23.5” x 22” x 16”	35	Min. 14” x 12” x 7” Inter. 15.25” x 13.5” x 9.5” Max. 16.5” x 15” x 10”	15 22 30
LL-WY2-3105	400	35” x 20” x 18”	52	Min. 14” x 12” x 9” Inter. 21” x 12.50” x 10.5” Max. 28” x 13” x 12”	20 30 40
LL-WY2-3106	500	23.5” x 23.5” x 21”	49	Min. 14” x 14” x 10” Inter. 15.25” x 15.25” x 12.5” Max. 16.5” x 16.5” x 15”	30 45 60
LL-WY2-3107	600	35” x 28” x 20.5”	80	Min. 14” x 14” x 10” Inter. 21” x 17.5” x 12.25” Max. 28” x 21” x 14.5”	30 45 60
LL-WY2-3108	700	41” x 28” x 20”	91	Min. 25” x 14” x 10” Inter. 29.5” x 17.5” x 12” Max. 34” x 21” x 14”	45 60 75

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TABLE II

Drop Heights	Gross Loads
30 inches	up to 30 pounds
25 inches	30 - 50 pounds
21 inches	50 - 75 pounds
19 inches	75 - 110 pounds
18 inches	over 110 pounds

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