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Attachment 0047 (SOWC-4275)

**LLRC DESIGN
PROPOSAL FORMAT**

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LLRC DESIGN PROPOSAL FORMAT

Develop Long Life Reusable Containers (LLRC) for the _____

1.0 PURPOSE

The ___ Assembly (part number _____) requires the development, validation, and documentation of a new reusable shipping and storage container due to its unique dimensions and Government requirements described within this document. Upon completion of the efforts described within this document, the new reusable shipment and storage container will be implemented for the spare and repair part packaging, handling, storage, and transportability requirements of the ___ Assembly. The container will be designed to accommodate the ___ Assembly only. The Government requirements of the container are contained in SAE ARP 1967A with the exceptions listed in Appendix A of this document.

2.0 REUSABLE CONTAINER DEVELOPMENT

The LLRC vendor shall provide a reusable container for the ___ Assembly (part number ___) in accordance with SAE ARP 1967A. Exceptions from this practice are noted in Appendix A. The effort includes cost for development, design prototype construction, validation, and completion of the technical data package for competitive procurement.

This container shall only be fabricated from steel, aluminum or composite material and must be Chemical Agent Resistant Coatings (CARC) finished as defined in SAE ARP 1967A. The use of wood in the design and fabrication of this reusable container is forbidden except for the container skids. This container should, as required, incorporate energy absorbing systems, dehumidification systems, and other special features to ensure protection of the item. This container should be capable of being repaired and/or retrofitted to prolong container service life or modified to adapt reusable container for shipment of the items other than for which it was originally intended. TB 9-289, Technical Bulletin for the Reconditioning of Type I and Type II Reusable Metal Containers, shall be used as a guide.

The container size shall be of the minimum, consistent with the size of the contents and the performance requirements of SAE ARP 1967A. During the life of the container, it will experience multi-modal transportation (truck, rail, air, and ocean) so size considerations shall include all modes of transportation.

3.0 DEVELOPMENT PROCESS

- _____ will solicit LLRC vendors with Request For Quote (RFQ).
- LLRC vendors to submit an itemized proposal with line item pricing to include, but not limited to, the following items:
 1. Produce Design Concept (drawing package or 3-D model) for Approval.

2. Host the Design Review.
 3. Construct the Prototype Container.
 4. Develop and Submit Test Plan for Approval.
 5. Validation of Container for Approval.
 6. Develop and Deliver Technical Data Package for Approval.
- _____ to select LLRC vendors and award a purchase order.
 - LLRC vendor to provide design concept to _____
 - Design review and acceptance.
 - _____ to authorize LLRC vendor to build prototype.
 - LLRC vendor to submit test plan to _____ for acceptance.
 - LLRC vendor to validate/test the prototype and receive acceptance from _____
 - LLRC vendor to develop technical data package and submit to _____ for acceptance.

4.0 VALIDATION

Upon receiving _____ approval of the reusable container design test report, the LLRC vendor shall provide a complete Technical Data Package (TDP) for the reusable shipping and storage container. The TDP shall include engineering drawings and associated lists in sufficient detail to provide for a competitive procurement. _____ will supply Army part numbers and/or drawing numbers for the new parts and drawings. Engineering drawings shall comply with ASME-Y14.100 2000 and ASME-Y14.5M 1984. Configuration management data shall comply with MIL-HDBK-61. Electronic drawing file format shall be PRT, IGES, and PDF.

5.0 ITEMS PROVIDED BY

Upon purchase order acceptance, _____ will provide the LLRC vendor with one _____ Assembly (part number _____), drawings, and other relevant information. _____ will pay shipping cost for shipping the item to the LLRC vendor. The LLRC vendor will pay shipping cost for returning the item together with the prototype LLRC to _____.

6.0 ITEMS PROVIDED BY LLRC VENDOR

Upon purchase order acceptance, the LLRC vendor will provide the following;

- Project Management (showing project cost and schedule).
- Design concept/report (drawing package or 3-D model).
- Prototype container.
- Validation testing plan, perform testing, and validation test report including instrument record data.
- Technical Data Package (TDP).

7.0 DATES

Included in the proposal shall be a detailed schedule. The schedule shall include, but is not limited to, the following dates:

- Provide design concept and host design concept review.
- Completion of prototype, validation testing plan, and perform testing.
- Validation test report and records are due 30 days after validation.
- Completion of TDP provided to ____.

8.0 TECHNICAL CONTACT

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Appendix A

Revisions and Exceptions to SAE ARP 1967A

The below listed paragraphs are exceptions to SAE ARP 1976A as requested by the U.S. Army Tank Automotive Command (TACOM) and shall be included with the container development/design effort for the ___ Assembly container. The exceptions listed apply to the specific paragraph noted and do not flow down to the sub-paragraphs in each section.

3.3.1.4 – Add the following sentence at the end of the paragraph: Elastomeric isolators shall meet the requirements of A-A-52486, have the transmissibility of no more than 5 to 1, and transmit no more than 12 G's to the item during drop testing.

3.3.2 – The last sentence does not apply.

3.3.3.2.2 – Replace the first sentence with: All sealing surfaces shall be such to ensure sealing under performance requirements of this specification at 20 kPa (3.0 psig) positive pressure.

3.3.4.2 – N/A.

3.3.5.3 – N/A.

3.3.5.5 – N/A.

3.3.5.6 – N/A.

3.3.5.9 – N/A.

3.4.3 – Replace paragraph with the following: Welding: Welding shall be in accordance with drawing 19207 – 12479550, Reference MIL-STD-1261, Class 2 (steel) and 19207 – 12472301, Reference Section 8 and/or 9 (aluminum).

3.8.2- Delete the last sentence and replace with the following: Shock loads transmitted to the item shall not exceed 12 G's. To demonstrate this requirement, longitudinal, vertical and lateral accelerations shall be measured by accelerometers mounted as close as possible to the center of gravity of the item. An oscillograph having facilities for direct recording of accelerometer signals shall be used. The system shall have a range of from one to 100 cycles per second (CPS).

3.9 a. – Change from: **TIEDOWN/LIFT HERE** to: **LIFT HERE**. The rest of **Paragraph 3.9 a.** does not apply.

3.9 m. – N/A.

3.9 n. – N/A.

4.5.3 – Container high and low temperature drop tests not applicable. Additional sub test apply at ambient conditions except as noted.

4.5.3.1- Replace paragraph with the following:

Edgewise Drop Test. The loaded container shall be supported at one end of its base on a wood sill nominally six inches high, placed perpendicular to the skids. The opposite end of the container shall be raised and allowed to fall freely from heights of 6, 12, 18, 24, 30 and 36 inches successively to a concrete or similarly hard surface. Two drops shall be made from the 36 inch height. This test shall be applied to the other end of the container. If the size of the container and the location of the center of gravity are such that drop tests cannot be made from all of the prescribed heights, the greatest attainable height shall be repeated for a total of six drops.

4.5.3.2- Replace paragraph with the following:

Cornerwise Drop Test. The loaded container shall be supported at one corner of its base on a block nominally six inches high. A block nominally 12 inches high shall be placed under the other corner of the same end of the container. The opposite end of the container shall be raised and allowed to fall freely from heights of 6, 12, 18, 24, 30 and 36 inches successively (as measured from the lower of the two corners) to a concrete or similarly hard surface. Two drops shall be made from the 36 inch height. If the size of the container and the center of gravity are such that drop tests cannot be performed from all of the prescribed heights, the greatest attainable height shall be repeated for a total of six drops. This test shall be applied to diagonally opposite corners on each end of the container. If during the testing, the blocks shift more than six inches from the end of the skids, the blocks shall be repositioned at the ends of the skids.

4.5.3.3- N/A

4.5.3.4 - Replace paragraph with the following:

Flatwise Drop Test. The container shall be raised in its normal storage position and allowed to fall freely from heights of 6 and 12 inches to land flat on a concrete or similarly hard surface. Container, 5 cubic feet to 25 cubic feet exterior volume, shall be dropped four times at each height. Containers 25 to 50 cubic feet shall be dropped twice from each height. Containers over 50 cubic feet shall be dropped once from each height.

4.5.4- Replace paragraph with the following:

Roll-Over Test. The container in normal storage position shall be rolled slowly sideways until it falls freely onto its side on a concrete or similarly hard surface. This procedure shall be repeated with a fall from one side to the top, from the top to the other side, and from the other side to the base. This test shall be applied to vertical cylindrical containers. In vertical cylindrical containers the component is mounted from one end with its longitudinal axis perpendicular to the base of the container.

Tip-Over Test. The test applies to containers having a width less than $\frac{1}{4}$ of the height. The container in normal storage position on a hard level surface shall be slowly tipped to

the heavier side until it falls freely to the ground. If the container has no heavier side, two falls, each 180 degree apart, shall be made.

4.5.5 – N/A.

4.5.6 – Replace paragraph with the following:

Pendulum Impact Test. The container shall be suspended as a pendulum from four chains or cables (two chains or cables shall be used for cylindrical containers with two hoisting devices). The chains or cables shall be of sufficient length to provide a distance of 16 feet from bottom of the container to point of suspension. The impact bumper shall be stationary and vertically flat and may be faced with a nominal two inch thickness hardwood impact surface. The bumper impact surface shall be at least six inches high. The suspended container shall clear the floor or ground surface by two or three inches while swinging. The ends of the skids shall be the point of impact. The suspended container shall be pulled back perpendicularly from the bumper until a height of 18 inches or more than the floor clearance is reached. This measurement shall be taken vertically between a measuring reference point on the container and the floor or ground. The container shall be released to swing freely in a perpendicular line to strike the bumper. One impact shall be made on each end of the container.

4.5.7.1- Replace paragraph with the following:

Static Load Test. One of the following tests, whichever is the greater load, shall be applied.

Concentrated Load Resistance. A simulated load equal to twice the weight of the container with its designated contents shall be stacked on top of the container. If the stacked height of three containers does not equal 16 feet, add additional weight until it simulates containers stacked to a minimum height of 16 feet. Containers shall not be pressurized during this test. Measurements shall be taken to determine if permanent deformation has taken place.

Distributed Load Resistance. A load of 175 pounds per square feet shall be evenly distributed on the top surface of the container. This test shall not be applied to areas with curved or dome shaped cross-section. Containers shall not be pressurized during this test. Measurements shall be taken to determine if permanent deformation has taken place.

4.5.8.1 – Replace paragraph with the following:

Hoisting Test. The loaded container shall be suspended for at least two minutes clear of the ground (or other supports) by one of the hoisting provisions. The hoisting provision shall be capable of withstanding this test without failure or visible permanent deformation. This test shall be applied separately to each individual hoisting eye, ring, lug or bracket. Stationary hoisting devices shall not be positioned to extend beyond the maximum dimensions of the container. The same requirement applies to retractable hoisting devices when not in use.

4.5.8.3.2. – N/A.

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4.5.8.3.5 – Use bottom section positioned on top section to validate integral stacking.

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