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MILITARY SPECIFICATION

LIFE RAFTS, INFLATABLE, TWENTY MAN

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

1. SCOPE

1.1 Scope. This specification covers requirements for two types of twenty man inflatable life rafts.

1.2 Classification. The life rafts shall be of the following types, as specified (see 6.2.1b):

F-2B

LRU-15/A

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. Unless otherwise specified, the following specifications, standards, and handbooks of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

L-S-00626	-	Sponge, Synthetic.
FF-O-605	-	Opener, Can, Hand (Disposable, Combination Opener and Punch).
UU-T-81	-	Tag, Shipping and Stock.
PPP-B-636	-	Boxes, Shipping, Fiberboard.
PPP-C-843	-	Cushioning Material, Cellulosic.
PPP-T-60	-	Tape, Packaging, Waterproof.
PPP-T-97	-	Tape, Pressure-Sensitive Adhesive, Filament Reinforced.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Engineering Specifications and Standards Department (Code 93), Naval Air Engineering Center, Lakehurst, NJ 08733, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

MILITARY

MIL-B-18/224	-	Battery, Dry, BA-1328/U.
MIL-P-116	-	Preservation, Methods of.
MIL-K-818	-	Knife, Pocket, General Purpose.
MIL-W-1053	-	Whistle, Ball, Plastic.
MIL-C-5040	-	Cord, Nylon.
MIL-F-8209	-	Flashlight, Hand Generated, Type A-9 (Lamp Assembly, Flashlight, Type A-9).
MIL-P-8258	-	Pumps, Hand, Air.
MIL-B-8571	-	Bag, Storage, Drinking Water.
MIL-S-11262	-	Sunburn Preventative Preparation, (Cream, Paste and Lotion).
MIL-W-15117	-	Water, Drinking, Canned, Emergency.
MIL-F-15381	-	Food, Packet, Survival, Aircraft Life Raft.
MIL-S-17980	-	Sea Marker Packet, Inflatable Survival Equipment.
MIL-M-18371	-	Mirror, Emergency Signaling, Mark 3.
MIL-L-23614	-	Light, Market, Distress, Aircrew, SDU-30.
MIL-B-36964	-	Blanket, Combat, Casualty, Lightweight, Waterproof, Aluminized Plastic.
MIL-L-38217	-	Light, Marker, Distress, SDU-5/E.
MIL-C-81543	-	Container Assemblies, Inflatable Life Raft.
MIL-C-85361	-	Carrying Case Assemblies, Inflatable Life Raft.

STANDARDS

FEDERAL

FED-STD-191	-	Textile Test Methods.

MILITARY

MIL-STD-105	-	Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129	-	Marking for Shipment and Storage.
MIL-STD-130	-	Identification Marking of U.S. Military Property.
MIL-STD-794	-	Parts and Equipment, Procedures for Packaging and Packing of.

2.1.2 Other Government documents, drawings, and publications. The following other Government documents form a part of this specification to the extent specified herein.

CODE OF FEDERAL REGULATIONS

49 CFR 100-199	-	Regulations for the Transportation of Explosives and Other Dangerous Articles.

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, DC 20402.)

DRAWINGS

NAVAL AIR DEVELOPMENT CENTER

CL230D1	-	Life Raft and Equipment Assemblies - Multiplace.

NAVAL AIR SYSTEMS COMMAND

63A80H1	-	20 Man Inflatable Life Raft Assembly, LRU-15/A and F-2B.
63A80H2	-	Canopy Assembly, F-2B Inflatable Life Raft Assembly.
63A80H3	-	Mast and Canopy Rod Assemblies, F-2B Inflatable Life Raft Assembly.
63A80H4	-	Accessory Container Assembly, LRU-15/A (Mark 20) Life Raft.
63A80D5	-	Equalizer Assembly, 20 Man Life Raft, LRU-15/A and F-2B.
63A80H6	-	Carrying Case Assembly, for Droppable LRU-15/A and F-2B Life Rafts (20 Man).
63A80H7	-	Cylinder Sling Assembly, 20 Man Life Raft, LRU-15/A.
63A80H8	-	Cover Assembly, Carbon Dioxide Cylinder, 20 Man Life Raft, LRU-15/A and F-2B.
63A80H9	-	Boarding Ramp Assembly, 20 Man Life Raft, LRU-15/A and F-2B.
63A80H10	-	Folding Procedure for F-2B Life Rafts.
63A80H11	-	20 Man Life Raft Accessory Container Assembly for Wing Installation in KC-130F and C-130F Aircraft.
63A80D12	-	Canopy Folding Procedure, 20 Man Life Raft.
63A80H13	-	Carrying Case Assembly for Wing Installation, LRU-15/A and F-2B Life Rafts (Mark 20).
63A80H14	-	Folding Procedure for Mark 20 Life Raft, LRU-15/A.
63A120H1	-	Inflation Equipment, Carbon Dioxide, for Multiplace Life Rafts.

NAVAL SEA SYSTEMS COMMAND

645-1428951-	Hoisting, Towing and Miscellaneous Fittings, Inflatable Boats.

AIR FORCE

53B6244	-	Clamp, Equalizer, Tube, 20 Man Life Raft.
53D3799	-	Cover, Carbon Dioxide Cylinder, 20 Man Life Raft.
55C3689	-	Cylinder and Valve Assembly, Carbon Dioxide, Multiplace Life Raft.

PUBLICATIONS

NAVAL AIR SYSTEMS COMMAND

NAVAIR 13-1-6.1	-	Aviation Crew Systems Manual Inflatable Survival Equipment.
NAVAIR 00-25-513	-	Code Card.

(Copies of specifications, standards, handbooks, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DoD adopted shall be the issue listed in the current DoDISS and the supplement thereto, if applicable.

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification

(Application for copies should be addressed to the National Motor Freight Traffic, Tariff Department, 1616 P Street, N. W., Washington, DC 20036.)

UNIFORM CLASSIFICATION COMMITTEE, AGENT

Uniform Freight Classification Rules

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 Qualification. The life rafts furnished under this specification shall be products which are qualified for listing on the applicable qualified products list at the time set for opening of bids (see 4.3 and 6.3). Qualification of the F-2B life rafts in this specification will qualify a supplier for the two types specified herein.

3.2 First article. When specified, a sample shall be subjected to first article inspection (see 4.4 and 6.4).

3.3 Materials and components. Materials and components shall conform to applicable specifications, standards and drawings as listed or required herein (see 6.2.1i(1)). Materials and components which are not covered by applicable specifications, standards or drawings, or are not specifically described herein, shall be of the best quality, of the lightest practicable weight, and entirely suitable for the purpose intended. Unless otherwise specified, the materials and components, except for the metallic parts (excluding the carbon dioxide cylinder), used in the construction of the life raft, shall have been manufactured not more than 18 months prior to the date of delivery of the life raft (see 6.2.1i(2)).

3.4 Design and construction. The size, shape, color, arrangement and construction of the twenty man life raft assembly shall conform to applicable drawings specified in Section 2.

3.4.1 Cut edges. All the cut edges of the uncoated nylon fibrous materials, except for the base cloths which are to be coated, shall be seared prior to the fabrication of the life raft to prevent fraying. No sharp edges shall be formed.

3.4.2 Use of the adhesive. In all the cementing operations, the surface to which the adhesive is to be applied shall be thoroughly cleaned with a suitable solvent in such a manner that the dusting materials (zinc stearate or talc) and any other surface contaminant is removed. The surface shall be clean prior to cementing. Care should be exercised to insure that the coating and the base undercloth are not damaged and the adhesion between both is not impaired in any way by prolonged exposure to the solvent. The solvent used shall evaporate completely prior to the application of the adhesive and shall leave no residue. Cemented areas shall not contain trapped air, channels or wrinkles. The adhesive shall be controlled to insure that old adhesive or adhesive which has partly or completely polymerized is not used. A fresh batch of the adhesive shall be used at least every eight hours during the course of manufacture. Containers for the adhesive shall be free from congealed adhesive before being refilled.

3.4.3 Cementing of the seams, seam tapes, patches and attachments. The construction of the seams and sealing areas and the attaching of the seam tapes, patches and attachments shall be undertaken utilizing the technique and precautions outlined in 3.4.2 so that, prior to the inspection of the assembled life raft, the adhesive shall have developed its optimum bonding properties and the adherence of all such seams, sealed areas, seam tapes, patches and attachments shall comply with the requirements of this specification. All the seams, seam tapes, patches, sealed areas and the attachments shall be secured by the adhesive specified in the applicable drawings. The seams shall be covered on the inner and outer sides with seam tape as specified in Drawing 63A80H1. All the seam tapes shall be applied to the seams without tension and shall be applied so that a minimum of 3/8 inch of seam tape is on either side of the seam edge which it covers. All the patches and attachments shall be applied to the life raft without tension. The internal diameter opening in the base patch reinforcing the attachment of the equalizer tube shall coincide with the opening in the equalizer tube. The adhesive shall be applied in a straight line parallel to the edges of the seam tapes, seams, patches and attachments and shall extend from just being visible to a maximum of 1 inch beyond the seam, seam tape or attachment edges. The seam tapes which seal circumferential seams, or where one end of the seam tape comes in contact with the other end of the same seam tape, shall overlap on itself at the ends 3/4, plus 1/2, minus 0 inch. The overlap for the cemented seams shall be in accordance with the applicable drawings. The adhesive shall not be allowed to remain in clots nor permitted to extend in such a manner as to result in localized stiffness. The adhesive upon drying or curing shall not cause the cloth, seam tapes, and attachments to shrink or pucker at any point on the life raft. The life raft shall be free from congealed masses of the adhesive and spots or stains resulting from excess adhesive.

3.4.4 Seams and stitching. No stitching shall be used in any of the life raft seams, through the cloth of any air retaining chamber, or through the life raft floor. Sewing may only be used in the construction of the accessory parts but not in their final attachment to the life raft. All the machine stitching in the accessory parts shall be accomplished as specified in the applicable specification and drawing. Each row of stitching shall be straight and parallel to the seam edge. The ends of the stitching shall be backstitched, by overlapping on itself, a minimum of 1/2 inch. Thread breaks, skips and run-offs shall be over-stitched not less than one inch. The thread tension shall be maintained so that there shall not be any loose or tight stitching and the lock shall be embedded in the materials sewn together. No seam shall be twisted, puckered or pleated and no portion of the accessory parts shall be caught in an unrelated operation or seam. All the thread ends shall be trimmed to a length of 1/4 inch maximum. The seam edges shall be properly forced out and shall not contain any folds.

3.4.4.1 Bartacking. The number of stitches per bartack shall be based proportionally on 1/4 inch long bartack containing a minimum of 14 stitches. The length and location of each bartack shall be as specified in the applicable specification or drawing.

3.4.5 Inflatable life raft. Each twenty man life raft assembly shall contain one inflatable life raft fabricated in accordance with Drawing 63A80H1.

3.4.5.1 Inflatable tubes. The cloth sections used in the inflatable tubes shall be incorporated in such a manner that the warp threads of the straight cloth run in a circumferential direction around the tubes and the warp threads of the bias cloth run in the opposite direction in the adjoining sections. The floor shall be attached and located between the flotation tubes without tension and with sufficient slack to prevent distortion of the tubes, when the raft is inflated. The floor shall be of such size that the attached portion shall extend 4 inches past the centerline of the inflatable tubes as shown in Drawing 63A80H1. The attachment of the life raft floor to the flotation tubes shall be reinforced on the upper and lower sides with the seam tape along the inside tangent line around the entire periphery of the life raft as in Drawing 63A80H1. The attachment of the floor to the tubes shall also be reinforced on the outer side of the raft with the seam tape along the outer tangent line around the entire periphery of the life raft as in Drawing 63A80H1. The outer edge attachment of the floor to the tube shall be reinforced with the seam tape as in the Drawing 63A80H1.

3.4.6 Equalizer clamp. One end of a 5-foot length of the nylon cord conforming to MIL-C-5040, type I, shall be securely tied to the equalizer clamp, conforming to Drawing 53B6244, with a bowline knot. The other end shall be securely tied to the grommet in the equalizer clamp pocket with bowline knot.

3.4.7 Accessory container. Each twenty man life raft assembly shall contain one accessory container fabricated in accordance with MIL-C-81543.

3.4.8 Carrying case. Each twenty man life raft assembly shall contain one carrying case fabricated in accordance with MIL-C-85361.

3.4.9 Canopy assembly, mast and canopy rod assemblies and carbon dioxide cylinder cover. Each F-2B life raft shall contain a canopy assembly in accordance with Drawing 63A80H2, a mast and canopy rod assembly in accordance with Drawing 63A80H3 and a carbon dioxide cylinder cover in accordance with Drawing 53D3799.

3.4.10 Survival equipment.

3.4.10.1 LRU-15/A raft. The survival equipment, type and quantity, as listed in table VII, shall be supplied only for initial aircraft outfitting, when specified (see 6.2.1).

3.4.10.1.1 Sealing clamps. Each LRU-15/A raft shall contain two sealing clamps, 3 inch size, conforming to Drawing 645-1428951. The clamps shall be stowed in the accessory container.

3.5 Marking. Marking shall be in accordance with MIL-STD-130. Ink, color, size and locations shall be as specified on applicable drawings. Letters and numerals 1/4 inch or less in height shall not be stencilled. Serial numbers shall be assigned by the acquiring activity (see 4.5.1.2 and 6.2.1e). Marking shall be thoroughly dry before packing.

3.5.1 Cylinder. In addition to the markings required by MIL-STD-130, the carbon dioxide filled cylinder shall be weighed and marked (stencilled) with the following information:

Tare Weight (empty cylinder, valve, cable and cable housing)

Weight of Carbon Dioxide Charge 1/

Gross Weight (tare weight plus charge)

1/ The carbon dioxide charge shall conform to the requirements of the applicable drawings listed in Section 2.

3.5.1.1 Cylinder warning. The carbon dioxide filled cylinder shall be marked with the following information in 1 inch red letters:

W A R N I N G

COMPRESSED GAS - DO NOT DROP

3.5.2 F-2B life raft. Each F-2B life raft carrying case (after packing of the life raft into the carrying case) shall have a red tag conforming to UU-T-81, type B, not smaller than size no. 4, and strung with twine; affixed to the handles. The tag shall contain the following information:

WARNING - This raft is not complete and should not be used until all the applicable survival equipment has been added.

ATTENTION - Carbon dioxide filled cylinder and valve assembly is not connected to raft and is in accessory container.

3.5.2.1 LRU-15/A life raft. Each LRU-15/A life raft carrying case (after packing of the life raft into the carrying case) shall have a red tag conforming to UU-T-81, type B, not smaller than size no. 4, and strung with twine; affixed to the handles. For the LRU-15/A raft C-130 wing installation wherein the carrying case is not a required component, the tag shall be affixed to one of the webbings used to retain the raft in a folded condition (see 3.7.3.1). The tag shall contain the following information:

WARNING

This life raft shall not be used until subjected to the calendar inspection requirements of NAVAIR 13-1-6.1.

3.6 Performance inspections.

3.6.1 Operation (carbon dioxide). Each life raft, when inspected for operation as specified in 4.7.2, shall inflate to its design shape as shown in Drawing 63A80H1 in not more than 60 seconds without any evidence of hindrance to the flow of the carbon dioxide or restriction by any component. The carrying case, when applicable, shall open correctly, the carbon dioxide shall enter the inflatable tubes through the manifold, and the vent valve in the manifold, as applicable, shall close. The corrected pressure in each inflatable tube after 40 ± 25 minutes shall be 1.50 to 2.20 pounds per square inch gage (psig). All seams, sealed areas and cemented attachments shall remain perfectly intact and shall show no indication of separation. There shall be no evidence of constructional or material failure in any respect. The floor, ramps and flotation tubes shall not be twisted or distorted. This examination and test shall be performed in sequence with the pressure inspections.

3.6.1.1 Operation (extreme temperature). Each life raft, when inspected for extreme temperature operation as specified in 4.7.8 and 4.7.8.1, as applicable, shall inflate without any hindrance to the flow of the carbon dioxide or restriction by any component and shall have rounded into its design shape, as shown in Drawing 63A80H1, within 15 minutes; the time being measured from the instant the carbon dioxide filled cylinder is actuated. While inflated, the raft shall be examined. There shall be no evidence of constructional or material failure in any respect. All the seams, sealed areas and cemented attachments shall remain perfectly intact and shall show no indication of separation. The floor, ramps and flotation tubes shall not be twisted or distorted.

3.6.2 Pressure. The pressure in the raft inflatable tubes shall not be less than 4.75 psig, when inspected as specified in 4.7.3. All the seams, sealed areas and cemented attachments shall remain perfectly intact and shall show no indication of separation. There shall be no evidence of constructional or material failure in any respect. The floor, ramps and flotation tubes shall not be twisted or distorted. Each topping-off valve shall operate without difficulty, shall shut off securely, and the flow of air shall not be blocked by any excess adhesive, talc, zinc stearate or foreign matter.

3.6.3 Leakage.

3.6.3.1 Raft inflatable tubes. The pressure in the raft inflatable tubes shall be not less than 2.60 psig, when inspected as specified in 4.7.4.

3.6.3.2 Inflatable floor support. The pressure in the inflatable floor support shall be not less than 1.60 psig, when inspected as specified in 4.7.4. Each topping-off valve shall operate without difficulty, shall shut off securely and shall not be blocked by any excess adhesive, talc, zinc stearate or foreign matter.

3.6.4 Weight of the raft. When weighed as specified in 4.7.6, the weight of the F-2B or LRU-15/A raft, as applicable, less the unattached accessories and survival equipment, but including the carrying case, carbon dioxide filled cylinder, valve, pull cable and housing assembly and sea anchor shall not exceed 90 pounds.

3.6.5 Strength of attachments. The following attachments shall withstand the indicated pulls without tearing or separating, when inspected as specified in 4.7.7:

Attachment	Pull in pounds
Inner life line patches to the raft floor	100
Inlet valve to the inflatable tubes	250
Topping-off valve to the inflatable tube and inflatable floor support	250
Heaving line pocket loop to the inflatable tube	250
Boarding handle to the raft and boarding ramp	250
Canopy rod support patch to the inflatable tube	250
Canopy rod support socket to the inflatable tube	250
Carrying case handles to the carrying case	250
Sea anchor patch to the inflatable tube	400

3.6.5.1 Flange adhesion to the spool of the topping-off valve. The molded rubber flange on the topping-off valve shall not strip away from the brass spool of the topping-off valve nor shall the rubber flange fail below 75 pounds, when inspected as specified in 4.7.7.1.

3.6.6 Strength of the seam.

3.6.6.1 Seam breaking strength. All the untaped seams shall have a minimum breaking strength of 150 lbs. per inch in width, when inspected as specified in 4.7.9.1.

3.6.6.2 Seam separation. All the untaped seams shall not separate, when inspected as specified in 4.7.9.2.

3.7 Packing of the raft in the carrying case.

3.7.1 Accessories.

3.7.1.1 F-2B raft. The carbon dioxide filled cylinder and valve assembly, and carbon dioxide cylinder cover, whether contractor or Government-furnished, shall be packaged within a close fitting fiberboard container conforming to PPP-B-636. Cushioning protection shall be provided to the valve assembly to preclude accidental drop damage. Closure of the container, including the manufacturer's joint, shall be adhesive sealed (no stapling is permitted) in accordance with the appendix to PPP-B-636. Packaging of the carbon dioxide filled cylinder shall be compatible with the requirements of the Code of Federal Regulations Title 49, Section 172.101. The canopy shall be folded as in Drawing 63A80D12. The mast, mast clamp, canopy and canopy rods shall be stowed in the accessory container. The top of the container shall be folded and then rolled down in such a manner that none of the contents shall be able to fall out. The container shall be securely tied in this position by the strap ties. The sea anchor, heaving line and equalizer clamp shall be stowed in their respective pockets. The pockets shall be snapped closed.

3.7.1.2 LRU-15/A raft. The carbon dioxide filled cylinder and valve assembly, whether contractor or Government-furnished, shall be packaged as specified in 3.7.1.1. The sealing clamps and survival items, when required (see 6.2.1), shall be equally distributed in the accessory container. The unattached end of each cord attached to each hand pump shall be securely attached to the accessory container strap ties with a bowline knot. The top of the container shall be folded and then rolled down in such a manner that none of the contents shall be able to fall out. The container shall be securely tied in this position by the strap ties. The sea anchor, heaving line and equalizer tube clamp shall be stowed in their respective pockets. The pockets shall be snapped closed.

3.7.2 Protection. The accessory and survival equipment, as applicable, shall be placed in their respective containers, as specified in 3.7.1.1 and 3.7.1.2, in such a manner as to afford adequate protection against damage to themselves, to the containers, or to the raft. All the rigid parts such as valves, cylinders, hardware and all the other metal parts, except for the snap hooks of the pull cable and housing assembly and the survivor attaching line of the LRU-15/A raft, as applicable, shall be individually protected against damage by means of the cellulosic cushioning material conforming to PPP-C-843. The rigid and metal parts shall also be covered by the cellulosic cushioning material so as to prevent the puncture or abrading of the raft, pockets or the accessory container, as applicable, and damage to themselves. The grommet in each canopy rod support patch and in the mast socket webbing shall be completely covered by the pressure-sensitive tape conforming to PPP-T-60. The pull cable and housing assembly or the pull cable and valve of the LRU-15/A and F-2B rafts shall be safety wired together as specified in Drawings 63A120H1 and 55C3689, as applicable. All the applicable areas of each raft shall be covered with a sufficient quantity of zinc stearate or talc so as to prevent adhering of the adjacent cloth surfaces.

3.7.3 Folding of the raft and insertion of the raft into the carrying case. The raft inflatable tubes and floor support shall be completely evacuated of air and the topping-off valves then placed in the closed position. The vented inlet manifold valve assembly (Drawing 63A120H1-25), if a required part of the inflation system, shall be set in the open position. The F-2B or LRU-15/A rafts, as applicable, shall be folded and inserted into their carrying cases in accordance with Drawing 63A80H10 (F-2B) or 63A80H14 (LRU-15/A). The raft in its carrying case and the packaged carbon dioxide filled cylinder and valve assembly (refer 3.7.1.1, 3.7.1.2, as applicable) shall be packaged for shipment as per Section 5.

3.7.3.1 LRU-15/A raft (C-130 wing installation). The raft shall be evacuated and folded as outlined in 3.7.3. Since the carrying case is not a required item for this configuration (see 3.4.8), the folded raft shall be retained in a folded condition by means of two individual lengths of appropriate webbing prior to packaging. The folded raft shall be wrapped with cellulosic cushioning material conforming to PPP-C-843. The wrapped raft and the packaged carbon dioxide filled cylinder and valve assembly shall be packaged for shipment as per Section 5.

3.8 Workmanship. The life raft shall not contain any holes, tears, mends, spots or stains, nicks, burrs or sharp edges. Because of the emergency and life support use of this equipment, the importance of providing a product of uniform excellent quality cannot be overemphasized. The rafts shall be uniform in quality and shall be free from irregularities or defects which could adversely affect performance, reliability, or durability. The rafts shall conform to the quality and grade of product established by this specification. The occurrence of defects shall not exceed the acceptance criteria established herein.

4. QUALITY ASSURANCE PROVISIONS

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.

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

a. Qualification inspection. Qualification inspection consists of examinations and tests performed on samples submitted for approval as qualified products (see 4.3).

b. First article inspection. First article inspection consists of examinations and tests performed on samples which are representative of the production item after award of a contract to determine that the production item meets the requirements of this specification (see 4.4).

c. Quality conformance inspection. Quality conformance inspection consists of examinations and tests performed on individual products or lots to determine conformance of the products or lots with the requirements set forth in this specification (see 4.5).

4.3 Qualification inspection. The qualification inspection of the life rafts shall consist of examinations and tests as specified in table I.

4.3.1 Qualification samples. The qualification inspection samples shall consist of the following:

a. Two F-2B life rafts in their carrying cases complete with the inflation gear, sea anchor, heaving line, equalizer clamp, mast, mast clamp, canopy, canopy rods, retaining line, bailing bucket and accessory containers. The qualification samples shall be forwarded to the test facility set forth in the letter of authorization to submit samples (see 6.3). The samples shall be plainly identified by securely attached durable tags marked with the following information:

Samples for qualification inspection
LIFE RAFT, INFLATABLE, F-2B
Manufacturer's designation or number
Name of manufacturer
Submitted by (name) (date) for qualification inspection in accordance with the requirements of MIL-L-9131H under authorization (reference authorizing letter and number) (see 6.3).

4.3.2 Retention. The retention of qualification shall consist of periodic verification to determine compliance of the qualified life raft with the requirements of this specification. Periodic verification shall be by certification unless otherwise specified by the activity responsible for the Qualified Products List and shall be at intervals of not more than two years.

4.4 First article inspection. First article inspection of the F-2B and LRU-15/A rafts shall consist of the tests and examinations specified in table II.

4.4.1 First article samples. Unless otherwise specified, as soon as practicable after award of the contract or order, the manufacturer shall submit three life rafts. The samples shall be representative of the construction, workmanship, components, and materials to be used during production. When a manufacturer is in continuous production of these life rafts from contract to contract, submission of further first article inspection samples on the new contract may be waived at the discretion of the acquiring activity (see 6.2.1c). Approval of the first article inspection samples or the waiving of the first article inspection does not waive the requirements for performing the quality conformance inspection. The first article inspection samples shall be furnished to the Government as directed by the contracting officer (see 6.2.1d).

4.4.1.1 Disposition of first article samples. Upon completion of the first article inspection program, recommendations and comments pertinent for use in monitoring production, will be forwarded by the Government activity responsible for the inspection program to the contracting officer. One approved life raft will be returned to the manufacturer for use in monitoring production. One life raft will be consumed or destroyed in the first article inspection and will not be considered as part of the quantity to be delivered under contract. The other life raft will be retained by the inspection laboratory for reference and will be returned to the manufacturer with the samples from the final lot as required by 4.5.1.3.

4.5 Quality conformance inspection. All the sampling and inspection levels shall conform to MIL-STD-105. The quality conformance inspection shall consist the tests and examinations specified in table III.

4.5.1 Sampling.

4.5.1.1 Inspection lot.

4.5.1.1.1 Topping-off valves. An inspection lot size shall be expressed in units of one topping-off valve. An inspection lot shall consist of all the topping-off valves received by the life raft manufacturer at one time. The sample unit shall be one topping-off valve.

4.5.1.1.2 Carrying case pull cable asembly (see Drawing 63A80H6). An inspection lot size shall be expressed in units of one carrying case pull cable assembly (see Drawing 63A80H6) and shall consist of all the carrying case pull cable assemblies received by the life raft manufacturer at one time. The sample unit shall be one carrying case pull cable assembly.

4.5.1.1.3 Adhesive. An inspection lot size shall be expressed in units of one batch of the adhesive. An inspection lot shall consist of all the batches of the adhesive used by the life raft manufacturer during one day's production of the life rafts (see 3.4.2). The sample unit shall be one batch of the adhesive used during one day's production of the life rafts.

4.5.1.1.4 Life rafts. An inspection lot size shall be expressed in units on one life raft of one type, complete with all the accessories and survival equipment, as applicable, in its carrying case made essentially under the same conditions and from the same materials and components. The sample unit shall be one life raft of one type, complete with all the accessories and survival equipment, as applicable, in its carrying case.

4.5.1.1.5 Packaging. An inspection lot size shall be expressed in units of one fully prepared shipping container, containing life rafts of one type, complete with all the accessories and survival equipment, as applicable, in their carrying cases, fully prepared for delivery from essentially the same materials and components. The sample unit shall one shipping container, containing life rafts of one type, complete with all the accessories and survival equipment, as applicable, in their carrying cases, fully prepared for delivery with the exception that it need not be sealed.

4.5.1.2 Sampling for tests and examinations of the components, the life rafts and packaging. The sample size, acceptance criteria, tests, and examinations required for the components, life rafts and packaging shall be as specified in table III and 4.5.1.3.

4.5.1.3 Sampling for tests and examinations of the life rafts at a laboratory. Upon completion of the tests and examinations specified in 4.5.1.2, a random sample sahll be selected from each lot in accordance with MIL-STD-105, inspection level S-3 (see 6.2.1j). The sample size shall be based only on the applicable sample size code letter corresponding to the inspection level S-3. Each life raft selected as a sample unit shall be identifiable by its assigned serial number (see 3.5), and shall be forwarded to the Government laboratory specified in the acquisition document (see 6.2.1f), for the following tests and examinations:

TESTS AND EXAMINATIONS

Weight	(4.7.6)
Operation (carbon dioxide)	(4.7.2)
Pressure	(4.7.3)
Leakage	(4.7.4)
Visual examination	(4.7.1.1)
Dimensional check	(4.7.1.2)

The Government activity responsible for conducting the inspection program shall be specified in the contract or order (see 6.2.1f). The tests and examinations shall be conducted in the order listed. The acceptable quality level shall be 1.5 defects per hundred units for each test and examination, except that the acceptable quality level for the minor defects (visual examination) shall not exceed 15.0 defects per hundred units and the dimensional check shall not exceed 100 defects per hundred units. The lot, from which the samples were selected, shall not be shipped until the samples have been approved by the cognizant Government activity. Final acceptance of the lot shall be based upon satisfactory completion of the inspection plan by the cognizant quality assurance representative/specialist at the contractor's facility. A rejected lot shall not be resubmitted except with the approval of the contracting officer. The costs of tests and examinations on samples initially submitted from a lot, shall be borne by the Government. The costs of the tests and examinations on samples resubmitted from a reworked lot or from a new lot, which is necessitated by the rejection of a previous lot, shall be borne by the manufacturer. The inspection samples shall be identified by their serial numbers (see 6.2.1e). The serial numbers of the units in the lot, represented by the inspection samples, shall be furnished to the inspection facility. Upon completion of the tests and examinations, the inspection facility shall return the samples to the manufacturer at the manufacturer's expense.

4.6 Inspection conditions.

4.6.1 Atmospheric conditions. Unless otherwise specified, all the inspections required by this specification shall be conducted at an atmospheric pressure of 711.2 to 812.8 mm (28 to 32 inches) of mercury, at a temperature of 25 ± 10 degrees Celsius (77 ± 18 degrees Fahrenheit). If the final values of the ambient temperature or barometric pressure at the end of inspections are different from the initial values recorded at the start of the inspection, the following corrections shall be made to the final pressure readings in pounds per square inch gage (psig).

4.6.1.1 Temperature correction. For each degree Celsius rise in temperature, 0.056 psig shall be subtracted from the final pressure reading. For each degree Celsius drop in temperature, 0.056 psig shall be added to the final pressure reading. The corresponding correction per degree Fahrenheit is 0.031 psig.

4.6.1.2 Barometric pressure correction. For each 2.54 mm (0.1 inch) of mercury rise in barometric pressure, 0.049 psig shall be added to the final temperature corrected pressure reading. For each 2.54 mm (0.01 inch) of mercury drop in barometric pressure, 0.049 psig shall be subtracted from the final temperature-corrected pressure reading.

4.6.2 Pressure measurement. The pressure shall be measured by means of a mercury manometer calibrated in psig or inches of mercury. To convert inches of mercury to psig, multiply the inches of mercury by 0.49.

4.6.3 Inspection area and equipment. The area in which the rafts are inspected shall be adequately protected to preclude damage to the units. The area and inspection equipment shall be free of sharp or rough edges, burrs, protrusions and anything else which will cut, tear or damage the life raft or the components.

4.6.4 Air. When use of air is specified in an inspection, the air used shall not contain any oil or condensed water.

4.7 Inspection methods.

4.7.1 Visual examination.

4.7.1.1 Life rafts. Every life raft assembly shall be visually examined for critical defects to determine conformance to this specification. Every life raft, selected as a sample unit from the lot, shall be thoroughly checked dimensionally and visually examined for minor defects to determine conformance to this specification. The classification and list of defects, tables IV and V, as applicable, shall be used to classify and enumerate the defects found.

4.7.1.2 Packaging. Each of the fully prepared shipping containers, containing life rafts, complete with all the accessories and survival equipment, as applicable, in their carrying cases, selected as a sample unit from the lot, shall be visually examined to determine that the packaging, packing and marking conform to this specification. The list of defects, table VI, shall be used to enumerate the defects found.

4.7.2 Operation (carbon dioxide). Unless otherwise specified, the operation test shall be performed in sequence with the pressure and leakage tests, i.e., operation test first, pressure test second and leakage test last. When performing qualification testing or first article testing on the F-2B or LRU-15/A life rafts, or when required by table III, the life raft shall be folded in accordance with Drawing 63A80H10 or 63A80H14, as applicable, and inserted into its carrying case (if the carrying case is a required component) complete with all the required accessories and survival equipment. When performing operation testing, otherwise required (refer to table III); or when the carrying case is not a required component; or when the carrying case conforms to Drawing 63A80H13; the life raft shall be removed from the carrying case and shall be fully unfolded and spread out on the floor or table of the inspection areas. The accessory containers need not be attached to the life rafts when inspected out of the carrying case. Whether being inspected in, or removed from the carrying case, the specified carbon dioxide inflation assembly, including the specified inlet manifold assembly, and specified pull cable assembly shall be properly installed on the life raft. The F-2B type pull cable looped end and the LRU-15/A wing installation pull cable looped end shall be attached to the carrying case pull cable assembly bowline with any suitable fibrous material for inspection purposes. The life raft shall be inflated in accordance with the instructions on the flap of the carrying case, when applicable, and shall be observed for conformance to the requirements specified in 3.6.1. The operation inspection shall be conducted at the prevailing ambient temperature and barometric pressure. The life raft shall inflate to its design shape as specified in 3.6.1, the time being measured from the instant the carbon dioxide filled cylinder is activated. Forty ± 25 minutes after the raft has been inflated, the equalizer tube shall be clamped shut and the pressure in each tube shall be measured. The pressure readings

shall be taken with the life raft in a horizontal position. Immediately after the pressure in the tubes is determined, the temperature and barometric pressure of the inspection area shall be recorded. Each tube pressure shall then be corrected to a temperature of 21.1°C (70°F) and a barometric pressure of 760 mm (29.92 inches) of Hg, using the correction factors specified in 4.6.1.1 and 4.6.1.2. The corrected pressure in each tube shall be as specified in 3.6.1. The inflation system used to conduct this inspection shall be representative of the specified systems that will ultimately accompany the raft. The inflation assembly used to conduct this inspection (when the inflation system is not a required item under the acquisition) shall conform to Drawing 63A120H1-8, 63A120H1-61 or 63A120H1-69, as applicable. The use of inflation systems solely for test purposes is prohibited. The manufacturer shall furnish recharged cylinders after this inspection has been performed. The recharged carbon dioxide cylinder and valve assembly shall be removed from the raft and shall be packaged as specified in 3.7.1.1 or 3.7.1.2, as applicable. Upon completion of this inspection, the raft inflatable tubes shall be completely deflated and the raft shall then be subjected to the pressure inspection, 4.7.3, unless otherwise specified.

4.7.3 Pressure. Unless otherwise specified, the pressure inspection shall be performed in sequence with the operation inspection, 4.7.2. The life raft shall be placed in a horizontal position on the floor or table of the inspection area. All the temperature and pressure readings shall be taken with the raft in this position. The equalizer tube shall be clamped shut and the vent valve of the manifold, if applicable, shall be in the closed position. Both inflatable tubes shall be inflated through their respective topping-off valves with the air specified in 4.6.4 to a pressure of 5.0 psig. The air supply shall be securely shut off and after a minimum of 10 minutes, the pressure in each tube shall be checked and readjusted, if necessary, to the original pressure of 5.0 psig. At the end of a minimum of 10 minutes after the readjustment period, the pressure in each tube shall be as specified in 3.6.2. The inflatable tubes shall be examined while under pressure for conformance to the requirements of 3.6.2. Upon completion of the inspection, the inflatable tubes shall be completely deflated through their respective topping-off valves. During inflation and deflation of the tubes, the topping-off valves shall be inspected for conformance to the requirements specified in 3.6.2. The inflatable floor support shall not be subjected to the pressure inspection. Upon completion of the test and examination, the life raft shall be subjected to the leakage inspection, 4.7.4.

4.7.4 Leakage. Unless otherwise specified, the leakage inspection shall be performed in sequence with the pressure inspection, 4.7.3. The raft shall be placed in a horizontal position on the floor or table of the inspection area. All the temperature and pressure readings shall be taken with the raft in this position. The equalizer tube shall be clamped shut and the vent valve of the manifold, if applicable, shall be in the closed position. Both inflatable tubes shall be inflated with air (see 4.6.4) to a pressure of 3.0 psig and the inflatable floor support shall be inflated to a pressure of 2.0 psig. Inflation of the inflatable tubes and the inflatable floor supports shall be through their respective topping-off valves. The air supply shall be securely shut off and after a minimum of 15 minutes, the pressure in each tube and in the inflatable floor support shall be checked and readjusted, if necessary, to the original pressure of 3.0 psig and 2.0 psig, respectively. The temperature and barometric pressure shall be recorded at this time. At the end of a minimum of 4 hours after the readjustment period, the pressure shall be measured and corrected for any change in the temperature or baro-

metric pressure (see 4.6). The corrected pressure in each tube and in the inflatable floor support tube shall be as specified in 3.6.3.1 and 3.6.3.2, as applicable. The floor support topping-off valve shall be inspected for function and conformance to the requirements of 3.6.2. The life rafts may be stacked one upon another during the waiting period of the leakage inspection provided the following shall be adhered to:

a. The temperature shall be recorded at a level comparable to the height at which the raft being inspected was stowed during the 4 hour inspection waiting period.

b. At the end of a minimum of 4 hours from the readjustment period, the raft to be checked for pressure shall be removed from the stacking and placed in a horizontal position on the floor of the inspection area. The barometric pressure of the inspection area shall be recorded. The pressure in the raft shall be measured and corrected for any change in the temperature or barometric pressure (see 4.6). In no event shall the pressure in a raft be determined with another raft stacked upon it.

4.7.5 Cylinder weight. Each time a cylinder is expended for inspection purposes and refilled, the cylinder shall be weighed and remarked. The weight of the cylinder and the markings shall be as specified in 3.5.1 and 3.5.1.1.

4.7.6 Weight of the raft. The weight of the raft, less the unattached accessories and survival equipment, as applicable, but including the carrying case, carbon dioxide filled cylinder, valve, pull cable and housing assembly, and sea anchor, shall be determined on a scale capable of weighing to the nearest 0.50 pound. The weight of the raft shall be as specified in 3.6.4.

4.7.7 Strength of attachments. The attachment of the inlet valve to the inflatable tube; the topping-off valve to the inflatable tube and inflatable floor support; the heaving line pocket loop to the inflatable tube; the boarding handles to the raft and boarding ramp; the inner life line patch to the raft floor; the canopy rod support patch to the inflatable tube; the canopy rod support socket to the inflatable tube; the carrying case handles to the carrying case, and sea anchor patch to the inflatable tube; shall be inspected for strength of attachment in a suitable jig. The direction of the pull shall be perpendicular to the point of attachment. The speed of the moveable jaw of the inspection apparatus, under no load, shall be 12 ± 1/2 inches per minute. The individual items tested shall conform to the values specified in 3.6.5, as applicable.

4.7.7.1 Flange adhesion to the spool. The adhesion of the topping-off valve flange to the spool shall be determined as follows: The rubber flange shall be slit into six equal segments. One upper and one lower segment shall be clamped in the jaws of a suitable tensile testing machine operating with the movable jaw separating at a rate of 12 ± 1/2 inches per minute under no load. Failure shall occur in the molded rubber flange and not by merely stripping of the flange from the brass spool. All the segments shall be tested.

4.7.8 Extreme temperature (-18 degrees C). The life raft, with the carbon dioxide filled cylinder, valve, and pull cable and housing assembly, in its carrying case, shall be conditioned at minus 18 ± 1 degrees Celcius (zero ± 2 degrees Fahrenheit) for a minimum of 48 hours. The life raft shall then be removed to a room having a temperature of 24 ± 2 degrees Celcius (75 ± 5 degrees Fahrenheit). The raft shall be examined for conformance to the requirements of 3.6.1.1.

4.7.8.1 Extreme temperature (+71 degrees C). The foregoing shall be repeated, except that the raft, with the applicable carbon dioxide filled cylinder, valve, and pull cable and housing assembly attached, shall be conditioned at 71 ± 1 degrees Celcius (160 ± 2 degrees Fahrenheit), instead of minus 18 degrees Celcius for a minimum of 48 hours. The raft shall be examined for conformance to the requirements of 3.6.1.1.

4.7.9 Strength of the seam.

4.7.9.1 Seam breaking strength. Two inch wide untaped seam specimens shall be cut perpendicular to the seam. The strength of the seam shall be determined in accordance with FED-STD-191, method 5102 and shall conform to the requirements of 3.6.6.1.

4.7.9.2 Seam separation. Two inch wide untaped seam specimens cut perpendicular to the seam shall be subjected to a 90 pound load for 24 ± 1/2 hours at a temperature of 60 ± 1 degrees Celsius (140 ± 2 degrees Fahrenheit). At the end of the prescribed test period, the specimens shall conform to the requirements of 3.6.6.2.

5. PACKAGING

5.1 Preservation. Preservation shall be level A or C in accordance with MIL-STD-794 or industrial, as specified (see 6.2.1g).

5.1.1 Level A. The life rafts complete with all their accessories and survival equipment, as applicable, protected, folded, and inserted into their carrying cases, as specified in 3.7 through 3.7.3.1, as applicable, shall be packaged in accordance with MIL-P-116, method III. The carbon dioxide filled cylinder and valve assembly shall have been removed from the rafts, packaged, and stowed as specified in 3.7.1.1 and 3.7.1.2, as applicable. The life rafts shall be packaged within snug fitting fiberboard containers conforming to PPP-B-636, style CSSC, type CF or SF, weather-resistant class, variety DW, grade V3s or V3c. All seams, joints, flaps, etc., including the manufacturer's joint shall be secured with adhesive. Use of wire stitching or staples is prohibited. Each container shall be reinforced with pressure-sensitive filament tape conforming to PPP-T-97 or with plastic banding. Steel banding is prohibited.

5.1.2 Level C or industrial. The life rafts complete with all their accessories and survival equipment, as applicable, protected, folded and inserted into their carrying cases, as specified in 3.7 through 3.7.3.1, as applicable, shall be packaged to afford the minimum degree of protection necessary to prevent deterioration or damage during shipment under normal environmental conditions and commercial modes of transportation. The carbon dioxide filled cylinder and valve assembly shall have been removed from the rafts, packaged and stowed as specified in 3.7.1.1 and 3.7.1.2, as applicable.

5.2 Packing. Packing shall be level A, B or C in accordance with MIL-STD-794 or industrial, as specified (see 6.2.1g). Shipping containers, insofar as possible, shall be uniform in size and shape and of minimum cube and tare weight. Each shipping container shall contain rafts of only one type.

5.2.1 Level A and B. The life rafts, packaged as specified in 5.1.1, shall be packed within a snug fitting container conforming to PPP-B-636, type CF or SF, weather-resistant class, variety SW, grade V3c or V3s. Each container shall be constructed, closed and reinforced with non-metallic banding or PPP-T-97 reinforced filament tape in accordance with the appendix to PPP-B-636.

5.2.2 Level C or industrial. The packaged life rafts, which require packing for acceptance by the carrier, shall be packed within exterior type shipping containers in a manner that shall insure safe transportation at the lowest rate to the point of delivery. The shipment shall conform to the minimum requirements of the rules and regulations applicable to the mode of transportation selected.

5.3 Marking. The interior and exterior containers shall be marked in accordance with MIL-STD-129 and shall include the date of manufacture (month and year) and the contract or order number. The exterior containers shall also be marked to conform with the Uniform Freight Classification and National Motor Freight Classification Rules, as applicable. In addition, regardless of the mode of transportation, the carbon dioxide filled cylinder, the fiberboard container containing the carbon dioxide filled cylinder, and the exterior shipping container shall contain a green label in accordance with the Code of Federal Regulations for the Transportation of Explosives and Other Dangerous Articles. In addition, the above shall be marked "NON-FLAMMABLE COMPRESSED GAS" and "CARBON DIOXIDE LIQUIFIED". The size and color of the markings shall conform to the Code of Federal Regulations for the Transportation of Explosives and Other Dangerous Articles, Title 49, Section 100-199. The markings shall be conspicuous and legible.

6. NOTES

6.1 Intended use. These rafts are intended for use as emergency equipment by aircraft personnel forced down at sea.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number and date of this specification.

b. Type, Government part number (for LRU-15/A acquisition drawing refer to Drawing CL230D1) and quantity desired.

c. Whether first article inspection is waived (see 4.4.1).

d. Name and address of the first article inspection laboratory and the Government activity responsible for conducting the inspection program (see 4.4 and 4.4.1).

e. Issuance of a block of serial numbers to cover the individual serialization of the life rafts for the quantity to be acquired (to be assigned by the acquiring activity) (see 3.5 and footnote 1/ of table III).

f. Name and address of the quality conformance inspection facility including the laboratory and Government activity responsible for conducting the inspection program (see 4.5.1.3).

g. Selection of applicable levels of preservation and packing (see 5.1 and 5.2).

h. Whether any special markings are required (see 5.3).

i. Certificate of compliance for:

(1) Material and components conforming to applicable specifications, standards and drawings (see 3.3 and 6.2.2).

(2) The age of the materials and components (see 3.3 and 6.2.2).

j. Selection of samples to be performed by the cognizant Government quality assurance representative/specialist (see 4.5.1.3).

k. Whether survival items will be supplied as GFE (Government furnished equipment) for initial outfitting of aircraft (see 3.4.10.1).

l. Whether survival items will be acquired with the life raft assemblies for initial outfitting of aircraft (see 3.4.10.1).

6.2.2 Data requirements. When this specification is used in an acquisition which incorporates a DD Form 1423, Contract Data Requirements List (CDRL), the data requirements identified below shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved CDRL incorporated into the contract. When the provisions of DAR 7-104.9 (n) (2) are invoked and the DD Form 1423 is not used, the data specified below shall be delivered by the contractor in accordance with the contract or purchase order requirements. Deliverable data required by this specification is cited in the following paragraphs:

Paragraph no.	Data requirements	Applicable DID no.
3.3	Certificate of compliance for the age of materials and components.	DI-E-2121
4.4.2	First article inspection reports.	DI-T-5329

(Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the Naval Publications and Forms Center or as directed by the contracting officer.)

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time set for opening of bids, qualified for inclusion in Qualified Products List (QPL-9131) whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. The activity responsible for the Qualified Products List is the Commander, Naval Air Systems Command, Department of the Navy, Washington, DC 20360; however, authorization for qualification of products shall be obtained from the Commanding Officer, Naval Air Development Center, Warminster, PA 18974, Attention: Code 6031. Prior to submission of the samples for qualification inspection, the manufacturer shall submit a request to the Naval Air Development Center (Code 6031) indicating a date on which the samples can be forwarded and requesting an authorization number to accompany the samples plus the name and address of the qualification inspection facility.

6.3.1 Qualification inspection report. When requested, the manufacturer shall submit an inspection report in accordance with SD6, Provisions Governing Qualification.

6.4 First article. When first article inspection is required, the life rafts will be tested and should be a first production item. The first article should consist of three units. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, test and approval of the first article.

6.5 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.

Custodians:
Army - ME
Navy - AS
Air Force - 99

Preparing activity:
Navy - AS

(Project No. 4220-0274)

TABLE I. Qualification examinations and tests (see 4.3).

Inspection	Paragraph	
	Requirement	Method
Weight of the raft	3.6.4	4.7.6
Cylinder weight	3.5.1	4.7.5
Operation (carbon dioxide)	3.6.1 and 3.6.1.1	4.7.2, 4.7.8 and 4.7.8.1
Pressure	3.6.2	4.7.3
Leakage	3.6.3 through 3.6.3.2	4.7.4
Visual examination	-	4.7.1.1
Dimensional check	-	4.7.1.1
Packaging	-	4.7.1.2
Strength of attachments	3.6.5	4.7.7
Seam breaking strength	3.6.6.1	4.7.9.1
Seam separation	3.6.6.2	4.7.9.2

TABLE II. First article examinations and tests (see 4.4).

Inspection	Paragraph	
	Requirement	Method
Weight of the raft	3.6.4	4.7.6
Cylinder weight	3.5.1	4.7.5
Operation (carbon dioxide)	3.6.1 and 3.6.1.1	4.7.2, 4.7.8 and 4.7.8.1
Pressure	3.6.2	4.7.3
Leakage	3.6.3 through 3.6.3.2	4.7.4
Visual examination	-	4.7.1.1
Dimensional check	-	4.7.1.1
Packaging	-	4.7.1.2
Strength of attachments	3.6.5	4.7.7
Seam breaking strength	3.6.6.1	4.7.9.1
Seam separation	3.6.6.2	4.7.9.2

TABLE III. Sample size, acceptance criteria, tests and examinations of the components and the life rafts.
(see 4.5.1.2, 4.5.1.3, 4.7.2 and 6.2.1e)

Inspection	Paragraph		Sample size	Acceptance criteria
	Requirement	Method		
Visual examination	-	4.7.1.1	Every life raft for critical defects. Inspection level II for minor defects	Reject all units with any critical defects and an acceptable quality level of 15 defects per hundred units for minor defects
Dimensional check	-	4.7.1.1	Inspection level S-3	Total acceptable quality level of 100 defects per hundred units
Operation (carbon dioxide) 1/	3.6.1	4.7.2	Every life raft 3/	Reject all defective units
Pressure 1/, 2/	3.6.2	4.7.3	Every life raft	Reject all defective units
Leakage 1/	3.6.3 through 3.6.3.2	4.7.4	Every life raft	Reject all defective units
Weight	3.6.4	4.7.6	Inspection level III 4/	Acceptance number zero, rejection number one
Cylinder weight	3.5.1	4.7.5	Every life raft	Reject all defective units
Packaging	-	4.7.1.2	Inspection level S-2	Total acceptable quality level of 4.0 percent defective

1/ These inspections shall be performed in sequence when tested as a completely assembled life raft. The operation (carbon dioxide) inspection shall be performed first, the pressure inspection second and the leakage inspection last. If the pressure test is performed prior to final assembly (see footnote 2/), this test shall be removed from the sequence. The results of the inspections shall be identifiable by the assigned serial number (see 6.2.1e), which shall be marked on the life raft as specified in 3.5.

2/ Pressure inspection may be performed at any time prior to, or after final assembly of the life raft. If performed after final assembly, the sequence outlined in footnote 1/ shall be adhered to.

TABLE III. Sample size, acceptance criteria, tests and examinations of the components and the life rafts. - Continued (see 4.5.1.2, 4.5.1.3, 4.7.2 and 6.2.1e)

3/ One life raft out of ten or fraction thereof shall be inspected with the life raft in its carrying case (unless the carrying case is not a required component), complete with the required accessories and survival equipment specified.

4/ The sample size shall be based only on the applicable sample size code letter corresponding to the specified inspection level of MIL-STD-105.

TABLE IV. Classification of defects for visual examination of the life rafts. (see 4.7.1.1)

Critical	Minor
1. Any hole, scissors or knife cut, tear, mend, patch or burn 1/.	201. Gage or stitching irregular.
2. Any cloth damaged, bruised, contains imperfections or is otherwise defective 1/.	202. One or more spots or stains 2/
3. Raft floor or floor support missing, not reinforced or attached as specified.	203. Overlap for cemented seams in excess of requirements.
4. Overlap for the cemented seams less than 5/8 inch.	204. Cement on the cloth surface around patches, attachments, and seam tapes not visible or in excess of one inch.
5. Any stitching in any inflatable tube, raft floor or inflatable floor support.	205. One life line patch missing.
6. Any inflatable tube, floor or floor support seam not taped as required.	206. Any identification or instruction marking missing, incorrect, illegible, incomplete or improperly located.
7. Any seam separating in a pressure retaining section or point of attachment of the floor to the inflatable tubes.	207. Thong omitted or not securely attached to the slide fastener pull.
8. Carbon dioxide inflation assembly damaged 3/, not properly installed, any part missing, not specified type or otherwise defective.	208. Inflation equipment not safety wired or not safety wired as specified.
	209. Any metal component surface rough, misaligned or contains any nick, burr or other flaw which will cut, tear or damage the life raft or the components.

TABLE IV. Classification of defects for visual examination of the life rafts. (see 4.7.1.1) - Continued

Critical	Minor
9. Not specified manifold; damaged, improperly located or otherwise defective; air vent, as applicable, missing, defective or in the closed position; manifold cannot be attached due to spread of the inlet valves.	210. Any snap fastener missing, mismatched, improperly clinched resulting in cutting of the cloth, or otherwise defective 4/.
10. Any topping-off valve damaged 3/; missing or installed in any inflatable tube in an open position.	211. Any grommet, missing or improperly clinched resulting in the cutting of the cloth, or otherwise defective.
11. Any hand pump missing, inoperative or does not fit the topping-off valve 5/.	212. Raft not properly folded or not placed in the carrying case as specified.
12. Inner life line missing or does not encircle the entire periphery of the raft.	213. Retaining strap, when applicable, missing; any part of the assembly missing, damaged, not properly installed or otherwise defective 5/.
13. Sea anchor assembly missing.	214. Any accessory container not securely tied or closed.
14. Carrying case assembly missing.	215. Any cut edge of the uncoated nylon fibrous material not seared or contains sharp edges.
15. Any accessory container not securely attached as specified.	216. Faulty stitching 6/.
16. Any specified component or item of survival equipment missing.	217. Any row of stitching omitted.
17. Any abrasion patch or topping-off valve outer patch missing.	218. Number of stitches plus or minus two or more per inch outside the specified limits 7/.
18. Two or more adjoining inner life line cover patches missing.	219. Loose stitching tension resulting in a loose seam.
19. Sea anchor not attached as specified.	220. Tight stitching tension resulting in the breaking of the stitches when normal pull is applied 8/.
20. Any boarding handle damaged 3/; missing or otherwise defective.	221. Any needle chew 2/.
21. Equalizer tube clamped shut or equalizer clamp missing.	222. Inner life line damaged, not properly installed or not one continuous length.
22. Any required construction operation (i.e., sewing, cementing, etc.) improperly performed, not herein classified 3/.	

TABLE IV. Classification of defects for visual examination of the life rafts. (see 4.7.1.1) - Continued

Critical	Minor
23. Any component or assembly not as specified, or any defect of a component or assembly, not herein classified 3/.	223. Any inner life line patch assembly not properly constructed, installed or located. 224. Two or more inner life line cover patches missing. 225. Any slide fastener missing, not specified type, size, style, any part of the assembly omitted, bent, broken; movement of the slider interfered with or otherwise defective 9/. 226. Any line or cord missing, damaged or otherwise defective. 227. Life raft not orange in color. 228. Sea anchor or heaving line pocket damaged, not properly constructed or not properly attached to the raft. 229. Sea anchor line, sea anchor or heaving line damaged or otherwise defective. 230. Any carrying case assembly component missing or damaged. 231. Any specified component or item of survival equipment defective. 232. Any patch, seam tape or attachment separating. 233. Metal components of the life raft assembly not covered with cellulosic cushioning material or pressure sensitive tape as required. 234. Seam tape installations, not within specified requirements. 235. Any inflatable floor support topping-off valve installed in the open position.

TABLE IV. Classification of defects for visual examinations of the life rafts. (see 4.7.1.1) - Continued

1/ The defect shall be classified as critical if it is in the inflatable tube, raft floor or inflatable floor support; otherwise, it shall be classified as a minor defect.

2/ The defect shall be classified as a minor defect when it does not affect function or integrity; otherwise, it shall be classified as a critical defect.

3/ The defect shall be classified as critical when it affects function or integrity; otherwise, it shall be classified as a minor defect.

4/ The snap fasteners shall be checked for proper function and attachment by snapping closed and unsnapping each of the snap fasteners at least three times.

5/ These defects are only applicable to the LRU-15/A life raft.

6/ Not specified stitch type, backstitching missing, skipped or broken stitches or runoffs.

7/ Stitches per inch defects are to be scored only when the condition exists on the major portion of the seam.

8/ Puckering is evidence of tight tension. When puckering is evident, the seam shall be tested by exerting normal pull in the lengthwise direction of the seam or stitching.

9/ The slide fasteners shall be checked for proper function by opening and closing each slide fastener at least three times along its entire length.

TABLE V. List of defects for finished dimensions.
(see 4.7.1.1)

Examine	Defect
Measure the life raft, carrying case, accessories, survival equipment and all the visible components.	Any measurement deviating from the dimensions and tolerances as specified in the specification and applicable drawings shall be enumerated as a dimensional defect.

TABLE VI. List of defects for packaging.
(see 4.7.1.2)

Item	Defects
Exterior and interior markings	Missing, incorrect, incomplete, illegible, of improper size, location, sequence or method of application; markings not the same on the interior and exterior containers.
Packaging and packing materials	Any non-conforming component; any component missing, damaged or otherwise defective.
Workmanship	Inadequate application of the components such as incomplete closure of the unit-package, container flaps, loose strappings, etc.; bulging or distortion of the containers.
Exterior and interior weight or content	Number per container is more or less than required; gross or net weight exceeds the requirements; more than one type in the same container.

TABLE VII. List of survival items for LRU-15/A life rafts.
(see 3.4.10.1)

Item	Applicable document	Type, class or size	Quantity of item required
Signal mirror	MIL-M-18371	Type I	1
Dye marker	MIL-S-17980	-	6
Whistle	MIL-W-1053	Type II	1
Flashlight, hand generated	MIL-F-8209	-	1
Code card	NAVAIR 00-25-513	-	1
Space blanket	MIL-B-36964	Type I	3
Sunburn ointment	MIL-S-11262	-	3
Rations	MIL-F-15381	-	20
Water storage bag	MIL-B-8571	-	7
Opener, can, hand (disposable, combination opener and punch)	FF-O-605	-	1
Canned water	MIL-W-15117	10 oz	20
Compass, wrist	Waltham Clock Corp. part number WCC-100, or equal	-	1
Pocket knife	MIL-K-818	-	1
Hand pump	MIL-P-8258	Type IV	2
Nylon cord	MIL-C-5040	Type I	50 feet
Bailing sponge	L-S-00-626	-	2
Light, marker, distress, SDU-5/E	MIL-L-38217	Type I, class 3	1 1
Light, marker, distress, aircrew, SDU-30	MIL-L-23614	-	1
Battery, dry	MIL-B-18/224	Type BA-1328/U	2

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DOCUMENT IDENTIFIER *(Number)* AND TITLE

MIL-L-9131H LIFE RAFTS, INFLATABLE, TWENTY MAN

NAME OF ORGANIZATION AND ADDRESS OF SUBMITTER

☐ VENDOR ☐ USER ☐ MANUFACTURER

1. ☐ HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? ☐ IS ANY PART OF IT TOO RIGID, RESTRICTIVE, LOOSE OR AMBIGUOUS? PLEASE EXPLAIN BELOW.

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