

by reference, see §160.135-5 of this subpart). If an accepted MIL-R-21607E(SH) (incorporated by reference, see §160.135-5 of this subpart) Grade B resin is used for the prototype lifeboat, additives for fire retardancy must not be used so that the laminate is translucent for inspection purposes. Any prototype test lifeboat with Grade B resins will not be marked in accordance with §160.135-17 of this subpart for use as a production lifeboat regardless of the outcome of the performance tests. Whichever accepted resin the manufacturer decides to use for the prototype lifeboat, the same resin must be used in the production lifeboats.

(B) The hull, canopy, and major structural laminates of each prototype FRP lifeboat must be tested for resin content, ultimate flexural strength, and tensile strength. The test samples must be cut out from the prototype lifeboat, or be laid up at the same time, using the same procedures and by the same operators as the laminate used in the lifeboat. The number of samples used for each test, and the conditions and test methods used, must be as per the applicable test specified in this paragraph. The resin content must be determined as per ASTM D 2584 or ISO 1172 (incorporated by reference, see §160.135-5 of this subpart). The flexural ultimate strength must be determined by ASTM D 790 method I (test condition "A", flatwise, dry) or the corresponding ISO 14125 test method (incorporated by reference, see §160.135-5 of this subpart). The tensile strength, lengthwise, must be determined as per ASTM D 638 or ISO 527 (incorporated by reference, see §160.135-5 of this subpart).

(C) Each major FRP component, such as the hull, canopy, and inner liner(s), of each prototype FRP lifeboat must be examined and weighed after it is completed but before it is assembled. If the lifeboat is constructed by the spray lay-up technique, the hull and canopy thicknesses must be measured using ultrasonic or equivalent techniques;

(ii) *Steel construction.* Steel sheet and plate used for the hull, floors, and other structural components of a prototype steel lifeboat must meet the bend tests requirement specified under ASTM A 653 (incorporated by reference,

see §160.135-5 of this subpart) after galvanizing or other anti-corrosion treatment has been applied. This may be demonstrated through a supplier's certification papers or through witnessing actual tests;

(iii) *Coated cloth for partially enclosed lifeboats.* Cloth material used in the construction of each prototype lifeboat must be confirmed to have met the requirements specified under §160.135-7(b)(28) of this subpart. This may be demonstrated through a supplier's certification papers or through witnessing actual tests;

(iv) *Welding.* Structural components of each prototype lifeboat joined by welding must be welded by the welding procedures and materials as per the plans reviewed under §160.135-9 of this subpart and by welders appropriately qualified;

(v) *Buoyancy foam.* Each major sub-assembly of a prototype lifeboat, such as the hull with liner and canopy with liner, must be weighed after the buoyancy foam is installed and before it is further assembled;

(vi) Installation of the propulsion system;

(vii) Installation of the steering system; and

(viii) Installation of the water spray fire-protection and air support system(s), if fitted.

(3) The independent laboratory must submit the inspection report to the Commandant.

§ 160.135-13 Approval inspections and tests for prototype lifeboats.

(a) After the Commandant notifies the manufacturer that the prototype lifeboat is in compliance with the requirements of §160.135-11 of this subpart, the manufacturer may proceed with the prototype approval inspections and tests required under this section. The prototype lifeboat, the construction of which was witnessed under §160.135-11 of this subpart, must be used for the tests in this section.

(b) Except as provided in paragraph (f) of this section, the Coast Guard must conduct the approval inspections and witness the approval tests required under this section.

(c) *Manufacturer requirements.* To proceed with approval inspections and

tests required by this section, the manufacturer must—

(1) Notify the Commandant and cognizant Officer in Charge, Marine Inspection (OCMI) of where the approval inspections and tests required under this section will take place, and such notification must be in sufficient time to allow making travel arrangements;

(2) Arrange a testing schedule that allows for a Coast Guard inspector to travel to the site where the testing is to be performed;

(3) Admit the Coast Guard inspector to any place where work or testing is performed on lifeboats or their component parts and materials for the purpose of—

(i) Conducting inspections as necessary to determine that the prototype is constructed by the methods and with the materials specified in the plans reviewed under §160.135-9 of this subpart and the inspection report under §160.135-11 of this subpart;

(ii) Assuring that the quality assurance program of the manufacturer is satisfactory;

(iii) Witnessing tests; and

(iv) Taking samples of parts or materials for additional inspections or test; and

(4) Make available to the Coast Guard inspector the affidavits or invoices from the suppliers of all essential materials used in the production of lifeboats, together with records identifying the lot or serial numbers of the lifeboats in which such materials were used.

(d) *Tests.* (1) *Prototype lifeboat readiness.* All tests must be conducted on a completely outfitted lifeboat, including fixed equipment such as compass, searchlight, and navigating lights. Loose equipment may be substituted by weights.

(2) *Fiber Reinforced Plastic (FRP) prototype lifeboat lay-up.* For the prototype of each design of an FRP lifeboat, the lay-up must be made of unpigmented resins and clear gel coat.

(3) *Fuel tank.* Each non-portable fuel tank must be tested by a static head above the tank top of 3 m (10 ft) of water without showing any leaks or signs of permanent distortion.

(4) *IMO Revised recommendation on testing.* Each prototype lifeboat of each

design must pass each of the tests for davit-launched or free-fall lifeboats, as applicable, described in the IMO Revised recommendation on testing, part 1, paragraphs 6.1 through 6.17 (incorporated by reference, see §160.135-5 of this subpart). Tests must be conducted in accordance with these paragraphs of IMO Revised recommendation on testing, Part 1, with the following modifications:

(i) *Fire retardancy/release mechanism and engine tests* (Paragraphs 1/6.2, 6.9, 6.10, 6.14). The tests in the following IMO Revised recommendation on testing paragraphs may be accomplished independent of the lifeboat, and may be considered completed and need not be repeated if the tests have been previously shown to meet the necessary requirements—

(A) Paragraph 6.2;

(B) Paragraphs 6.9.3 through 6.9.6;

(C) Paragraph 6.10.2 through 6.10.6; and

(D) Paragraphs 6.14.6 through 6.14.8.

(ii) *Lifeboat overload test* (Paragraph 1/6.3). For a davit launched lifeboat, the overload test must be conducted with the lifeboat suspended from the lifting hooks. During this test, the canopy of a free-fall lifeboat must not deform so as to harm any potential occupants.

(iii) *Impact test* (Paragraph 1/6.4). The rigid vertical surface must not be displaced or deformed as a result of the test.

(iv) *Lifeboat seating space test* (Paragraph 1/6.7). The average mass of persons used to test the lifeboat seating space must be determined by weighing as a group or individually. Each person must wear an inherently buoyant SOLAS lifejacket with at least 150 N of buoyancy or a Coast Guard-approved lifejacket approved under approval series 160.155. For other than a totally enclosed lifeboat, the operator(s) must demonstrate that the lifeboat can be operated while wearing a Coast Guard approved, insulated-buoyant immersion suit approved under approval series 160.171. The Commandant will give consideration to requests to test at, and designate lifeboats for, a heavier occupant weight than that stated in the IMO LSA Code, Chapter IV (incorporated by reference, §160.135-5 of this subpart).

(v) *Flooded stability test* (Paragraph 1/6.8). Any materials used to raise the test weights representing the lifeboat occupants above the seat pan must be at least as dense as fresh water.

(vi) *Lifeboat operational test, Operation of engine* (Paragraph 1/6.10.1). For the 4-hour lifeboat maneuvering period, the lifeboat must not (except for a short period to measure towing force and to demonstrate towing fixture durability) be secured, and must be run through its full range of speeds and full range of all controls throughout the period.

(vii) *Survival recovery test* (Paragraph 1/6.10.8). The recovery demonstration must show that no more than two crewmembers are required to recover a helpless person of ninety-fifth percentile by weight described in ASTM F 1166 (incorporated by reference, see §160.135-5 of this subpart) while the crewmembers and helpless person are each wearing a lifejacket.

(viii) *Flooded capsizing test* (Paragraph 1/6.14.3-5). For any lifeboat also approved as a rescue lifeboat, the lifeboat must return to an upright position and, without undue delay, the crew must be able to use the lifeboat again as a lifeboat.

(ix) *Fire test* (Paragraph 1/6.16.4). The locations where temperatures are measured along with the rationale for the proposed locations must be provided to the Commandant for approval prior to the testing.

(x) *Water spray tests* (Paragraph 1/6.16.9). The delivery rate of water, or the sprayed water film thickness over the lifeboat, must be at least equivalent to that used to achieve passing results for the fire test. Full coverage must be obtained without the need to rock the lifeboat or induce wetting by wiping or applying any agent.

(xi) *Measuring and evaluating acceleration forces* (Paragraph 1/6.17.5). For free-fall lifeboats, the selection, placement, and mounting of the accelerometers along with the rationale for the proposed selection, placement, and mounting must be provided to the Commandant for approval prior to the testing.

(xii) *Evaluation acceleration forces with the dynamic response model* (Paragraph 1/6.17.9). For free-fall lifeboats only, sections 6.17.9 thru 6.17.12 must be

used along with the displacement limits for lifeboats in Table 2 under "Evaluation with the dynamic response model".

(5) *Visual inspection*. Each lifeboat must be visually inspected to confirm—

- (i) Compliance with this subpart;
- (ii) Conformance with plans reviewed under §160.135-9 of this subpart; and
- (iii) Ease of operation and maintenance.

(e) *Test waiver*. The Commandant may waive certain tests for a lifeboat identical in construction to smaller and larger lifeboats that have successfully completed the tests. Tests associated with lifeboat components that have already been approved by the Commandant are not required to be repeated.

(f) At the request of the manufacturer and discretion of the Commandant, an independent laboratory may perform approval inspections and witness approval tests required by this section so long as the inspections and tests are performed and witnessed in accordance with the procedures agreed upon between the independent laboratory and Commandant under 46 CFR part 159, subpart 159.010.

(g) After completion of approval inspections and tests required by this section, the manufacturer must comply with the requirements of 46 CFR 159.005-9(a)(5) by preparing and submitting to the Commandant for review—

(1) The prototype approval test report containing the same information recommended by IMO MSC Circ. 980 (incorporated by reference, see §160.135-5 of this subpart). The report must include a signed statement by the Coast Guard inspector (or independent laboratory as permitted by paragraph (f) of this section) who witnessed the testing, indicating that the report accurately describes the testing and its results; and

(2) The final plans of the lifeboat as built. The plans must include, in triplicate—

- (i) The instructions for training and maintenance described in §§160.135-19 and 160.135-21 of this subpart; and
- (ii) The final version of the plans required under §160.135-9 of this subpart.

(h) The Commandant will review the report and plans submitted under paragraph (g) of this section, and if satisfactory to the Commandant, will approve the plans under 46 CFR 159.005-13.

§ 160.135-15 Production inspections, tests, quality control, and conformance of lifeboats.

(a) Unless the Commandant directs otherwise, an independent laboratory must perform or witness, as appropriate, inspections, tests, and oversight required by this section. Production inspections and tests of lifeboats must be carried out in accordance with the procedures for independent laboratory inspection in 46 CFR part 159, subpart 159.007 and in this section, unless the Commandant authorizes alternative tests and inspections. The Commandant may prescribe additional production tests and inspections necessary to maintain quality control and to monitor compliance with the requirements of this subpart.

(b) *Manufacturer's responsibility.* The manufacturer must—

(1) Institute a quality control procedure to ensure that all production lifeboats are produced to the same standard, and in the same manner, as the prototype lifeboat approved by the Commandant. The manufacturer's quality control personnel must not work directly under the department or person responsible for either production or sales;

(2) Schedule and coordinate with the independent laboratory (or Coast Guard inspector if required under paragraph (a) of this section) to ensure that all tests are performed as described in this section;

(3) Submit to the Commandant, a yearly report that contains the following—

(i) Serial number and date of final assembly of each lifeboat constructed;

(ii) Name of the representative of the independent laboratory (or Coast Guard inspector if required under paragraph (a) of this section); and

(iii) Name of the vessel and company receiving the lifeboat, if known; and

(4) Ensure that the arrangement and materials entering into the construction of the lifeboat are in accordance

with plans approved under §160.135-13(h) of this subpart;

(5) Allow an independent laboratory (or Coast Guard inspector if required under paragraph (a) of this section) access to any place where materials are stored for the lifeboat, work or testing is performed on lifeboats or their component parts and materials, or records are retained to meet the requirements of paragraph (c) of this section, for the purpose of—

(i) Assuring that the quality control program of the manufacturer is satisfactory;

(ii) Witnessing tests; or

(iii) Taking samples of parts or materials for additional inspections or tests; and

(6) Ensure that the independent laboratory (or Coast Guard inspector if required under paragraph (a) of this section) conducts the inspections and witnesses the tests required by paragraph (e)(2) of this section, and further conducts a visual inspection to verify that the lifeboats are being made in accordance with the plans approved under §160.135-13(h) of this subpart and the requirements of this subpart.

(c) *Recordkeeping.* The manufacturer must maintain records in accordance with 46 CFR 159.007-13. The manufacturer must keep records of all items listed in this section for at least 5 years from the date of termination of approval of each lifeboat. The records must include—

(1) A copy of this subpart, other CFR sections referenced in this subpart, and each applicable document listed in §160.135-5 of this subpart;

(2) A copy of approved plans, documentation, and certifications;

(3) A current certificate of approval for each approved lifeboat;

(4) Affidavits, certificates, or invoices from the suppliers identifying all essential materials used in the production of approved lifeboats, together with records identifying the serial numbers of the lifeboats in which such materials were used;

(5) Start and finish date and time of the lay-up of each major Fiber Reinforced Plastic (FRP) component such as the hull, canopy, and inner liner and the names of the operator(s);