

U.S. Department  
of Transportation

United States  
Coast Guard



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BARRY NELSON  
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Given 10/15*

Dear Mr. Nelson:

This is in response to your letter of June 20, 1999, concerning the necessity and expense of annual servicing of inflatable liferafts.

A recent notice to fishermen from the Women's Coalition for Pacific Fisheries generated a lot of letters raising very similar issues to yours. In order to efficiently answer all that wrote us, we prepared a summary of "Frequently Asked Questions (FAQ) about Liferaft Servicing," a copy of which is attached as enclosure (1). We believe this FAQ thoroughly answers your questions about why the current liferaft servicing system is as it is, and addresses your concerns about what can be done to improve it.

Please feel free to contact me or Mr. Kurt Heinz of my staff if you have any additional questions.

Sincerely,

R. L. MARKLE

Chief, Lifesaving and Fire Safety Standards Division  
Office of Design and Engineering Standards  
By direction of the Commandant

Encl: (1) Liferaft Servicing FAQ

Copy: Ginny Goblirsch, WCPF

## **FREQUENTLY ASKED QUESTIONS ABOUT LIFERAFT SERVICING**

### **Why are liferafts required to be serviced every year?**

When inflatable liferafts were first approved in the 1960's, an annual servicing requirement was established in order to ensure that the rafts had fully charged cylinders, the fabric remained in good condition, and that equipment packed inside them was not damaged or outdated. Since then, liferaft manufacturers have designed and built their rafts with the understanding that they would be serviced annually. We have extensive experience over decades which demonstrates that annual servicing generally ensures that liferafts remain in an acceptable condition of operational readiness. Annual servicing as a basic requirement for liferafts is the norm internationally, and for commercial ships on international voyages, is required by international treaty.

### **The Coast Guard and Navy don't service their rafts every year. Why isn't what's good enough for them good enough for me?**

This is not always true. In the case of the Coast Guard, when we use standard commercial liferafts (as on most of our smaller ships), they are serviced annually. On larger ships, both the Navy and the Coast Guard make use of Navy Mk VI liferafts, which are serviced on a 4-year schedule. However, it is important to note the significant differences between these Navy rafts and commercial rafts. Navy rafts use compressed air at very high pressure rather than CO<sub>2</sub> as the inflation medium. While more reliable at low temperatures, and less stressful on the liferaft fabric, this system is also considerably more expensive: the purchase cost of a Navy Mk VI raft is approximately \$16,000, vs. \$5-6,000 for a similar size commercial liferaft. This difference is not made up in servicing costs. In fact, a 4-year service costs approximately \$3,200, vs. \$600-750 per year for annual servicing of similar commercial liferafts. In addition to routine servicing at the 4-year interval, random samples are periodically pulled from in-service liferafts to inflate and inspect them. Finally, Navy rafts must be shipped for servicing to one of only four locations worldwide, which are staffed by Navy employees.

### **Doesn't servicing just cause unnecessary wear and tear on the liferaft? Won't it last longer if you just leave it alone?**

Actually, it is generally considered beneficial to the liferaft fabric to unfold and refold it periodically, so as to relocate the creases in the fabric, and to prevent continual chafing against the container and other fabric at the same points during long-term movement and vibration at sea. Liferafts also often need to be cleaned and dried of moisture due to condensation or entry of seawater. There is one aspect of servicing which can harm the liferaft fabric in some

circumstances, and that is the requirement to inflate the liferaft using its installed inflation cylinder at 5-year intervals. This test is scheduled to coincide with the DOT requirement to empty and test the cylinder, and is the only effective means of testing the operation of the entire inflation system. However, a liferaft which does not have effective design features to protect the fabric from the cold inflation gas can experience localized fabric damage from this procedure. Fortunately, all approved liferafts have such features.

### **What can be done to extend the servicing interval for commercial liferafts?**

Liferaft manufacturers would need to make some adjustments to their liferaft designs to take the potential for extended servicing into account. For example, means would need to be provided to check cylinder filling status without removing the liferaft from its container, and consideration would have to be given to management of emergency equipment stowed in the liferaft to ensure that specified service lives are not exceeded. Consideration would have to be given to means to protect the liferaft fabric from the longer period of exposure to the elements (see next question below). Finally, the manufacturer would need to demonstrate through operational trials that the extension of servicing does not adversely affect the performance of the liferaft compared to existing rafts under normal annual servicing. These trials would need to reflect the wide variety of climatic conditions to which liferafts are subjected in normal service.

It is often suggested that liferafts be vacuum packed in plastic to protect them. This concept does have some promise. However, the situation is by no means simple. Very small amounts of moisture which normally would drain away from a liferaft could potentially cause severe damage in an anaerobic, vacuum-packed environment. Such an environment could also promote fungal problems which could deteriorate the liferaft fabric. Another consideration is that vacuum packing produces much sharper creases in liferaft fabric than does normal packing, which again could damage the fabric. Vacuum packing also considerably complicates checking the liferaft cylinder without completely unpacking the liferaft.

At least one manufacturer has developed liferafts specifically designed for extended service intervals, and is currently testing those liferafts in actual service on ships in a variety of climates. We are cooperating in this effort.

### **Exposure to the elements? Aren't liferafts sealed inside watertight containers?**

This is a common misperception. In fact, most liferafts have holes at the bottom of the container to allow moisture to drain from the container. This moisture can

come from condensation, or from sea water making its way through the rubber seals at the container junction. Other potential avenues for water infiltration are the hole where the painter line enters the container, and the hole for the lifting ring for a davit-launched liferaft.

### **Why is servicing so expensive?**

We often recommend that liferaft owners ask to see their raft being serviced, both to learn what is involved in the servicing procedure, and also to generally familiarize themselves with their raft. This is the best way to find out just what you're paying for. Proper liferaft servicing is a time and space-intensive procedure. The liferaft must be transported to and from the servicing facility, opened, inventoried, inflated, cleaned, dried, inspected, left inflated for leakage tests, deflated, folded, and repacked. Any leaks identified must be repaired and retested. The Navy estimates 17 man-hours to complete one of their 4-year servicings! Servicing costs can include refilling and testing of cylinders at some servicings (often by an outside sub-contractor), and replacement of expired equipment. Some costs are indirect: Servicing facilities must be properly certified to handle a variety of hazardous materials in accordance with DOT regulations, which is expensive; and to comply with Coast Guard regulations, servicing facilities must pay manufacturers to periodically train their servicing technicians. Not to mention liability insurance!

### **Why can't I service my own liferaft? Don't I have the most interest in making sure it's done right?**

Liferaft servicing is a specialized activity, requiring both general knowledge in the design and operation of liferafts, and specialized training in particular brands. Servicing technicians generally require several days of hands-on training with each manufacturer they service in order to be certified.

In addition to knowledge and training, you would need a current servicing manual, all current servicing bulletins, a suitable climate-controlled servicing space, a wide variety of specialized tools, an appropriate stock of spare parts and supplies, inflation and deflation pumps, calibrated scales, calibrated manometers or electronic pressure gauges, and probably certification to handle and store hazardous materials.

Would you feel comfortable packing your own parachute?

**Why are the service lives of (flares, batteries, food, etc.) so short? I know they last longer than that!**

Generally, the service lives of these items are prescribed in our regulations, based on testing and practical experience in a variety of climates. The expiration dates are designed such that items used within those dates will provide the full performance required by the regulations. Although some items may indeed seem to operate after much longer periods, they will generally not provide the same performance as "fresh" items.