

**United States
Coast Guard**

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NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 17-91

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Subj: Guidelines for Conducting Stability Tests

1. **PURPOSE.** The purpose of this Circular is to inform the marine industry and Coast Guard personnel of an industry standard that will provide a basic understanding of the various aspects of a stability test in order to ensure that valid stability test results are obtained at minimal cost to both industry and government.
2. **DIRECTIVES AFFECTED.** This Circular cancels and supersedes NVIC 15-81.
3. **BACKGROUND.**
 - a. On 17 March 1967, the Coast Guard published NVIC 1-67, "Stability Test - Preparations and Procedures." On 16 December 1981, the Coast Guard updated and expanded NVIC 1-67, with the publication of NVIC 15-81, "Guidelines for Conducting Stability Tests." These circulars received wide dissemination throughout the marine industry and proved to be a valuable guide to shipyards and naval architects in their preparations for and conduct of stability tests.
 - b. Stability tests have historically been witnessed by personnel assigned to Coast Guard technical offices. However, that policy was changed to reduce travel expenses and eliminate the costly travel time of technical personnel. Instead, marine inspectors are utilized to witness stability tests in their zones. This permits more flexibility in scheduling tests and arranging for postponements, due to weather or construction delays, since the Coast Guard personnel will be local and will not require extensive travel arrangements. Accurate results from a stability test may, in some cases, determine the future survival of the vessel and its crew, so the accuracy with which the test is conducted cannot be overemphasized. Guidelines for stability tests are necessary so that these Coast Guard witnesses, as well as industry personnel, will have a good understanding of what factors influence the results of a stability test and help them recognize unacceptable conditions or procedures when they occur.
4. **DISCUSSION.**
 - a. The American Society for Testing and Materials (ASTM) standard guide for conducting stability tests was developed by the Coast Guard, in cooperation with an industry task group, to ensure that the procedures followed during stability tests will produce an accurate determination of a vessel's light ship characteristics. This standard is the culmination of a twenty-plus year effort by the Coast Guard and the naval architecture community to get a national standard on stability tests published. This standard is ASTM Standard Guide F 1321-90 and is formally titled "Standard Guide for Conducting a Stability Test (Inclining and Lightweight Survey) to Determine the Light Ship Displacement and Centers of Gravity of a Vessel."

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- b. A stability test is required for most vessels upon their completion and after major conversions. This guide provides the marine industry with a basic understanding of inclining theory and contains procedures to be followed when preparing for and conducting a stability test to ensure that accurate results are obtained at minimal cost. A complete understanding of the correct procedures is imperative to ensure stability tests are conducted properly and so that results can be examined for accuracy as the inclining is conducted.
 - c. The ASTM standard refines the procedures contained in NVIC 15-81. Some of the details of the guidelines have been updated to reflect current practices and techniques. The ASTM standard should assist the naval architect or shipyard representative conducting the stability test to more fully understand what the Coast Guard witness expects in terms of preparedness, vessel condition, and inclining procedures.
 - d. A major goal of the Coast Guard is the development of industry consensus standards because these standards have many advantages for both the Coast Guard and the industry over Coast Guard generated publications. For the industry, these standards are more widely disseminated and have direct industry input in both their development and their revision. For the Coast Guard, the costs of printing and distribution are removed and the industry accepts the standards more readily. As an ASTM standard guide, procedures for conducting a stability test are more readily available to the public than if contained in a Coast Guard NVIC, ultimately resulting in fewer problems during the test and more accurate stability information.
 - e. The standard can be obtained from ASTM at the following address:
American Society for Testing and Materials Headquarters
1916 Race Street
Philadelphia, PA .19103
(215) 299-5452
5. IMPLEMENTATION. The guidelines contained in ASTM F 1321-90 are not intended as additional regulations. This information is provided with the sole purpose of assuring that stability tests provide results which accurately depict a vessel's stability characteristics. Alternate procedures may be followed but should have prior approval of the Marine Safety Center.



A. E. HENN
Rear Admiral, U.S. Coast Guard
Chief, Office of Marine Safety,
Security and Environmental Protection