Requests for further information concerning the meeting may be directed to Mr. Robert E. Feldman, Deputy Executive Secretary of the Corporation, at (202) 898–3811.

Dated: September 8, 1992.

Federal Deposit Insurance Corporation.

Robert E. Feldman,

Deputy Executive Secretary.

[FR Doc. 92–22059 Filed 9–9–92; 9:14 am]

BILLING CODE 6714–0–M

FEDERAL HOUSING FINANCE BOARD

"FEDERAL REGISTER" CITATION OF PREVIOUS ANNOUNCEMENT: 57 FR, 37590, August 19, 1992.

PREVIOUSLY ANNOUNCED TIME AND DATE OF THE MEETING: 10:30 a.m., Wednesday, August 26, 1992.

CHANGES IN THE MEETING: The following topic was deleted from the agenda during the open portion of the meeting.

Leverage Ratio—Final Rule.

CHANGES IN THE MEETING: The following Report was deleted from the agenda during the closed portion of the meeting.

Office of Strategic Planning
Leverage Ratio: Transitional and Operational Issues

The above matter is exempt under Section 552b(c)(9)(A)(B) of title 5 of the United States Code.

CONTACT PERSON FOR MORE INFORMATION: Elaine L. Baker, Executive Secretary to the Board, (202) 408–2837.

Philip L. Conover,

Deputy Executive Director.

[FR Doc. 92–22126 Filed 9–9–92; 2:20 pm]

BILLING CODE 6725–01–M

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

TIME AND DATE: 10:00 a.m., Wednesday, September 16, 1992.

PLACE: Marriner S. Eccles Federal Reserve Board Building, C Street entrance between 20th and 21st Streets, NW., Washington, D.C. 20551.

STATUS: Closed.

MATTERS TO BE CONSIDERED:

1. Personnel actions (appointments, promotions, assignments, reassignments, and salary actions) involving individual Federal Reserve System employees.
2. Any items carried forward from a previously announced meeting.

CONTACT PERSON FOR MORE INFORMATION: Mr. Joseph R. Coyne, Assistant to the Board; (202) 452–3204. You may call (202) 452–3207, beginning at approximately 5 p.m. two business days before this meeting, for a recorded announcement of bank and bank holding company applications scheduled for the meeting.

Dated: September 8, 1992.

Jennifer J. Johnson,

Associate Secretary of the Board.

[FR Doc. 92–22051 Filed 9–9–92; 9:13 am]

BILLING CODE 6210–01–M

FEDERAL TRADE COMMISSION

"FEDERAL REGISTER" CITATION OF PREVIOUS ANNOUNCEMENT: 57 F.R., Friday, August 21, 1992, Page No. 38094.

PREVIOUSLY ANNOUNCED TIME AND DATE OF THE MEETING: 10:00 a.m., Wednesday, September 16, 1992.

CHANGES IN THE AGENDA: The Federal Trade Commission has deleted the following item from its agenda and cancelled the open meeting previously scheduled for September 16, 1992:

Consideration of possible amendments to the Mail-Order Merchandise TRR.

Donald S. Clark,

Secretary.

[FR Doc. 92–22154 Filed 9–9–92; 3:02 pm]

BILLING CODE 6750–01–M

TENNESSEE VALLEY AUTHORITY

[Meeting No. 1452]

TIME AND DATE: 10 a.m. (EDT), September 15, 1992.

PLACE: Sequoyah Nuclear Plant, Soddy Daisy, Tennessee.

STATUS: Open.

AGENDA: Approval of minutes of meeting held on August 19, 1992.

ACTION ITEMS:

New Business

A—Budget and Financing

A1. Short-Term Borrowing from the Treasury.
A2. Tax Equivalent Payments to States and Counties for the Fiscal Year Ending September 30, 1992.

B—Purchase Awards

B1. Contract with General Electric Company for Steam Turbine Strategic Spares for Bull Run, Paradise, and Widows Creek Fossil Plants.
B2. Contract with ASEA Brown Boveri for Steam Turbine Strategic Spares for Cumberland Fossil Plant.
B3. Requisition YH–93383E—Corporate Network Strategies Procurement—Information Services.

E—Real Property Transactions

E1. Sale of Permanent Easement Affecting Approximately 0.30 Acre of the Knoxville Power Service Center Property.
E2. Abandonment of Flowage Easement Rights Affecting Approximately 0.44 Acre of Land in Washington County, Virginia.
E3. Grant of Easements Affecting Approximately 10.26 Acres of Land in Washington County, Virginia.
E4. Lease of a 12.8 Acre Tract of TVA Property in Hamilton County, Tennessee.
E5. Sale of Noncommercial, Nonexclusive Permanent Easements Affecting Approximately 0.96 Acre of Land on Tellico Lake in Loudon and Monroe Counties, Tennessee.
E6. Grant of 30-Year Recreation Easement Affecting 5.45 Acres of Wheeler Reservoir Land in Madison County, Alabama.
E7. Grant of Permanent Easement Affecting 0.22 Acre of Chickamauga Lake Land in Bradley and McMinn Counties, Tennessee.

F—Unclassified

F1. Filing of Condemnation Cases.
F2. Recommendations Resulting from Negotiations with the Salary Policy Employee Panel.
F3. TVA Contribution to the TVA Retirement System for Fiscal Year 1993 and System Annual Report.
F4. Personal Services Contract with Gilbert/Commonwealth, Inc.
F5. Partners in Performance Contract with General Electric Company.
F6. Delegation of Authority to Vice President, Fossil Fuels, to Award a Contract to Norfolk Southern Corporation—Rail Coal Transportation to Kingston Fossil Plant.

INFORMATION ITEMS:

1. Letter of Intent with General Electric Company for Work to be Performed by GE for Fall 1992 Bull Run Fossil Plant, Paradise Fossil Plant Unit 1, and John Sevier Unit 4 Outages.
2. Implementation of Revised Salary Structure and Pay Rates for Salary Schedule SG—Public Safety Schedule.

CONTACT PERSON FOR MORE INFORMATION: Alan Carmichael, Vice President, Governmental Relations, or a member of his staff can respond to requests for information about this meeting. Call (615) 632–6000, Knoxville, Tennessee. Information is also available at TVA's Washington Office (202) 479–4412.

Dated: September 8, 1992.

Edward S. Christenbury,

General Counsel and Secretary.

[FR Doc. 92–22066 Filed 9–9–92; 2:19 pm]

BILLING CODE 8120–08–M

Corrections

Federal Register
Vol. 57, No. 177
Friday, September 11, 1992

This section of the FEDERAL REGISTER contains editorial corrections of previously published Presidential, Rule, Proposed Rule, and Notice documents. These corrections are prepared by the Office of the Federal Register. Agency prepared corrections are issued as signed documents and appear in the appropriate document categories elsewhere in the issue.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

42 CFR Part 100

RIN 0905-AD64

National Vaccine Injury Compensation Program; Revision of the Vaccine Injury Table

Correction

In proposed rule document 92-18873 beginning on page 36877 in the issue of Friday, August 14, 1992, make the following corrections:

1. On page 36879, in the first column, in the last paragraph, in the eighth line, "Vaccine" should read "Vaccines".

2. On the same page, in the second column, under **FINDINGS**, in paragraph 3., in the 6th line, "Guilliam" should read "Guillain".

3. On the same page, in the 3d column:

a. In the 4th line of the note, "given a" should read "given as".

b. In the 14th line of the note, "TD and" should read "Td, and".

c. In the 2d line of heading *A.*, "*Arrow*" should read "*Narrow*".

4. On page 36880, in the 3d column, in the 1st complete paragraph, in the 12th line, "STP" should read "DPT".

5. On the same page, in the same column, in the third line from the bottom, "vaccines." should read "vaccinees.".

6. On page 36881, in the first column, in the seventh line of the note, "vaccines." should read "vaccinees.".

7. On the same page, in the second column, in the second complete parapgraph, in the fourth line, "rubella" was misspelled.

8. On the same page, in the third column:

a. In the seventh line, "*First*" should be capitalized.

b. In the ninth line, "*p. 100-1010*" should read "*p. 1009-1010*".

§ 100.3 [Corrected]

9. On page 36883, in § 100.3(a), the Vaccine Injury Table contained numerous errors. It also should have appeared on a separate page. The complete table is reprinted below:

VACCINE INJURY TABLE

Illness, disability, injury or condition covered	Time period for first symptom or manifestation of onset or of significant aggravation after vaccine administration
I. DTP; P; DT; Td; or Tetanus Toxoid; or in any combination with Polio; or any Other Vaccine Containing Whole Cell Pertussis Bacteria, Extracted or Partial Cell Pertussis Bacteria, or Specific Pertussis Antigen(s)	
A. Anaphylaxis or anapyhlactic shock	4 hours.
B. Encephalopathy (or encephalitis)	72 hours.
C. Any sequela (including death) of an illness, disability, injury, or condition referred to above which illness, disability, injury, or condition arose within the time period prescribed.	Not applicable.
II(a). Measles, mumps, rubella, or any vaccine containing any of the foregoing as a component;	
A. Anaphylaxis or anaphylactic shock	4 hours.
B. Encephalopathy (or encephalitis)	5-15 days (not less than 5 days and not more than 15 days) (for measles, mumps, rubella, or any vaccine containing any of the foregoing as a component).
C. Residual seizure disorder in accordance with subsection (b)(3)	5-15 days (not less than 5 days and not more than 15 days) (for measles, mumps, rubella, or any vaccine containing any of the foregoing as a component).
D. Any sequela (including death) of an illness, disability, injury, or condition referred to above which illness, disability, injury, or condition arose within the time period prescribed.	Not applicable.
II(b). In the case of measles, mumps, rubella (MMR), measles, rubella (MR) or rubella vaccines only	
A. Chronic arthritis	42 days.
B. Any sequela (including death) of an illness, disability, injury, or condition referred to above which illness, disability, injury or condition arose within the time period prescribed.	Not applicable.
III. Polio Vaccines (other than Inactivated Polio Vaccine)	
A. Paralytic Polio	
_____in a non-immunodeficient recipient	30 days.
_____in an immunodeficient recipient	6 months.
_____in a vaccine associated communty case	Not applicable.
B. Any acute complication or sequela (including death) of an illness, disability, injury, or condition referred to above which illness, disability, injury, or condition arose within the time period prescribed.	Not applicable.
IV. Inactivated Polio Vaccine	
A. Anaphylaxis or anaphylactic shock	4 hours.

VACCINE INJURY TABLE—Continued

Illness, disability, injury or condition covered	Time period for first symptom or manifestation of onset or of significant aggravation after vaccine administration
B. Any acute complication or sequila (including death) of an illness, disability, injury, or condition referred to above which illness, disability, injury, or condition arose within the time period prescribed.	Not applicable.

10. On the same page, in the second column, in § 100.3(b)(1), in the next to the last line, "[a]" should read "(a)".

11. On page 36884, in the first column, in § 100.3(b)(2)(i)(B), in the first line, "*or age*" should read "*of age*"; in the second line, insert a comma following "*older*".

12. On the same page, in the first column, in § 100.3(b)(2)(iii), in the second line, "Infantile" should be capitalized.

13. On the same page, in the 2d column, in § 100.3(b)(3)(ii), in the 11th line, "administrative" should read "administration".

14. On the same page, in the third column, in § 100.3(b)(6)(ii), in the 4th line, "disorder" should read "disorders"; in the 16th line, "disease," should read "diseases,".

BILLING CODE 1505-01-D

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Health Care Financing Administration

[OPHC-025-N]

Health Maintenance Organizations; HMO Qualification Determinations and Compliance Actions

Correction

In notice document 92-17637 beginning on page 33202 in the issue of Monday, July 27, 1992, make the following corrections:

1. On page 33203, in the second column, in the first column of the table "**BRISTOL COUNTY**", "02" should appear preceding all of the three digit zip codes.

2. On the same page, in the same column, in the third line from the bottom, insert "Suite" after "Park,".

3. On page 33204, in the first column, under "a. Kaiser Foundation", in the first line, "November 27, 1992" should read "November 27, 1991".

BILLING CODE 1505-01-D

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[CA-020-4212-13; CACA 26721]

Issuance of Land Exchange Conveyance Document and Order Providing for Opening of Public Lands in Modoc County, CA

Correction

In notice document 92-16936 appearing on page 32025 in the issue of Monday, July 20, 1992, make the following correction:

In the first column, under **FOR FURTHER INFORMATION CONTACT:**, in the third line, "516" should read "916".

BILLING CODE 1505-01-D

DEPARTMENT OF THE TREASURY

Customs Service

Country of Origin Marking Trade Forums

Correction

In notice document 92-20391 appearing on page 38712 in the issue of Wednesday, August 26, 1992, make the following correction:

In the first column, in the fourth line from the bottom, "927-1669" should read "927-1969".

BILLING CODE 1505-01-D

federal register

Friday
September 11, 1992

Part II

Department of Transportation

Coast Guard

46 CFR Part 30, et al.
Stability Design and Operational Regulations; Final Rule

DEPARTMENT OF TRANSPORTATION

Coast Guard

46 CFR Parts 30, 32, 35, 70, 78, 90, 97, 107, 108, 109, 167, 169, 170, 171, 184, 185, 188, 196

[CGD 89-037]

RIN 2115-AD33

Stability Design and Operational Regulations

AGENCY: Coast Guard, DOT.

ACTION: Final rule.

SUMMARY: The Coast Guard is amending the stability design and operational regulations for inspected vessels to incorporate requirements of recently adopted amendments to the International Convention for the Safety of Life at Sea, 1974, as amended (SOLAS). With certain exceptions, the requirements in this final rule will apply to all new and existing vessels. These regulations are intended to minimize the potential for vessel capsizing caused by inadequate damage stability and related operational considerations.

EFFECTIVE DATE: December 10, 1992.

FOR FURTHER INFORMATION CONTACT: Ms. P.L. Carrigan, Marine Technical and Hazardous Materials Division, (202) 267-2988.

SUPPLEMENTARY INFORMATION:

Drafting Information

The principal persons involved in the drafting of this final rule are Ms. Patricia L. Carrigan, Project Manager, Office of Marine Safety, Security and Environmental Protection and LT Ralph L. Hetzel, Project Counsel, Office of Chief Counsel.

Regulatory History

On February 13, 1990, the Coast Guard published a notice of proposed rulemaking entitled Stability Design and Operational Regulations in the **Federal Register** (55 FR 5120). The Coast Guard received twenty-eight letters commenting on the proposal. A public hearing was requested in one of the comment letters but the Coast Guard decided that a public hearing was not necessary because the concerns addressed in this letter were resolved in this final rule.

Background and Purpose

The United States is a member of the International Maritime Organization (IMO) and is signatory to SOLAS. As such, the U.S. has adopted the requirements of SOLAS and its amendments. In October 1988, the Maritime Safety Committee of the IMO, adopted a series of stability related amendments to SOLAS. These amendments relate to the stability of passenger ships after damage, the use of draft marks and indicators, optional use of stability computers, periodic determination of lightship characteristics, the use of stability information, and the closing of loading doors before going to sea. These amendments came into force on April 29, 1990 for vessels requiring a SOLAS safety certificate.

All of the amendments to SOLAS, except the amendment concerning the stability of passenger vessels after damage, were initiated by the United Kingdom following the tragic capsizing of the English Channel ferry, HERALD OF FREE ENTERPRISE, in the spring of 1987. Nearly 200 people lost their lives. Prior to the HERALD capsizing, the amendment on residual stability of passenger vessels after damage had been under consideration by the IMO Subcommittee on Stability and Load Lines and on Fishing Vessels Safety (SLF). However, international concern after the HERALD OF FREE ENTERPRISE disaster provided the impetus to promote rapid adoption of all these amendments at IMO.

Discussion of Comments and Changes

Of the twenty-eight letters received commenting on the proposed regulations, four were from mobile offshore drilling unit (MODU) owners/operators, one from a MODU operator association, one from a tankship owner/operator, one from a tank barge owner/operator, one from an offshore, supply vessel (OSV) owner/operator, seven from Great Lakes and/or oceangoing cargo ship owners/operators, two from cargo ship associations, one from a cargo ship captain, one from a shipyard, one from a naval architecture firm, one from a river passenger vessel owner/operator, one from a passenger vessel owners' association, one from the Military Sealift Command, one from the Naval Sea Systems Command, one from the State of Texas Transportation Department, and three from Coast Guard field offices. The comments have been grouped by subject and are discussed below. A summary statement of any change is included when appropriate.

General Comments

(1) Several of the comments questioned the overall application of these rules to other than passenger vessels, stating that the rules were developed specifically for passenger vessels.

All of the regulations, except the regulation concerning the stability of passenger vessels after damage, were developed by the IMO in response to the tragic capsizing of the English Channel roll-on/roll-off passenger/cargo ferry, *HERALD OF FREE ENTERPRISE.* These IMO amendments were developed to remove some of the hazards identified during the investigation of this casualty.

The particular hazards these amendments were designed to remove include the following:

(a) The casualty investigation uncovered that the vessel was significantly overweight. Some documented modifications were responsible for a portion of the added weight, but a significant amount of the change was the result of weight growth from undocumented sources such as paint, stores, and dunnage. As a result, the stability information provided in the vessel's stability book could not be used to evaluate the stability in this different lightweight condition.

(b) An accurate accounting of weight and distribution of cargo and passengers was not completed.

(c) The draft of the vessel was not checked prior to departure; instead, false entries were made in the log book.

(d) The stability of the vessel was not verified prior to departure.

(e) The vessel's loading doors were not closed before departure.

(f) The master used negative reporting to determine the vessel was seaworthy. As an example of negative reporting, the master assumed that the loading doors were closed because he was not told that the loading doors were open.

These hazards were contributing causes of this casualty, but these kinds of hazards are not unique to passenger vessels, cargo ferries, or any other specific vessel type. To reason that all safety standards, especially operational regulations, are applicable only to one vessel type merely because the standard was generated in response to a casualty involving that type of vessel is not acceptable. Any operational safety standard which may prove successful on one type of vessel is worth consideration for application to other vessel types.

(2) One comment noted that some of the proposed rules exceeded the requirements of some foreign governments. Two of the comments advocated the IMO's new Code of Safety for the Equipment and Construction of Mobile Offshore Drilling Units (MODU Code) as the only source for all MODU standards.

The Coast Guard has a long term goal to incorporate and apply the various minimum international standards set by the IMO to U.S. vessels thereby ensuring that foreign vessels do not have an unfair economic advantage. At the same time, the Coast Guard must continue to ensure that the needs of domestic marine safety are met. There are many difficulties in fully achieving the implementation of IMO standards. Some U.S. regulations, such as those covering vessel stability, predate international standards and are more comprehensive in many areas than the current IMO standards. Where safety is not reduced, the Coast Guard is implementing IMO standards as equivalent and as an acceptable alternative to existing U.S. standards. Where equivalency of standards is not possible or where a safety concern is demonstrated, U.S. regulations continue to exceed IMO standards. International standards are minimum standards that have been adopted on a global scale. If enforcement of these international standards is not sufficient to fulfill the Coast Guard's responsibilities, they must be supplemented, as has been done here, to ensure that an adequate level of safety is maintained.

Door Closing and Logging Requirements

(3) Two comments objected to this provision because not all of their vessels have this type of loading door.

The intention of this provision is to require the closing and logging of the loading doors only on those specific vessels that have the type of loading door described in the regulations. All other vessels are exempt from this provision. The wording in § 78.17–33, § 97.15–17, § 167.65–38, § 185.20–17, and § 196.15–18 has been clarified to reflect this intent.

Stability Verification and Logging Requirements

(4) One comment objected to the provision requiring verification of stability because the stability letter already outlines the master's duties with regard to stability. Two other comments stated that this provision is superfluous as the master of a vessel is already always responsible for the stability of the vessel. Another comment objected to the provision because "at all other times necessary for the safety of the vessel" was too broad in meaning and could be interpreted to make the master negligent for any mishap while underway.

The conflicting views presented in these comments as to the specific responsibilities of the master regarding the verification of the stability of the vessel exemplifies the need for this provision. The responsibility for the stability of a vessel rests at all times with the master of that vessel. In the past, this policy has been promulgated only by the placement of a generic statement in the vessel's stability documentation. Sections 35.20–7, 78.17–22, 97.15–7, 109.227, 167.65–42, 169.840, 185.20–5, 196.15–7 now clearly delineate this long-standing policy.

(5) One comment objected to the stability verification provision because at no time does the person in charge of their company's vessels ever operate without being in compliance with the operating manual, stability letter, and certification requirements. Two comments stated that this provision was superfluous because their vessels are always operated in compliance with the regulations. Three comments stated that too much detail needs to be verified for every occurrence requiring stability verification of a MODU. Furthermore, the master has more important things to do than verify something already confirmed.

The purpose of the provision is to state clearly the master's responsibilities with regard to the stability of the vessel, not to impose additional duties which would go beyond those expected of a prudent master or operator. If, as the comments state, their company's vessels are only operated in compliance with all stability requirements, then they are essentially stating that they already verify each vessel's stability. Therefore, this provision would not require anything more of the master. However, if the master thinks verifying the vessel's stability is unnecessary and merely assumes the vessel is in compliance with its stability limitations, then the Coast Guard does not agree that the requirement is superfluous. The master must actually verify the vessel complies with all applicable stability requirements in the vessel's trim and stability book, stability letter, Certificate of Inspection, and Load Line Certificate, as applicable, and then so attest in the vessel's logbook, as required. The Coast Guard agrees that the master has many other important things to do; however, ensuring the stability of the vessel is equally important as other duties with respect to the safety and seaworthiness of the vessel.

(6) Two comments objected to specific log entries for stability verification as it would establish a hierarchy and would reduce the importance of a master's job down to responsibility for a log entry. One comment objected to the logging of the stability verification because logging duties do not enhance the safety of a vessel. Another comment objected to the stability logging because the superfluous paperwork will distract the attention of operators and will denigrate safety. Four other comments stated that this logging requirement would become a check mark or rubber stamp entry, especially on small passenger vessels and ferries on short runs over dedicated routes.

A very important part of a master's job is making the log entries required by the regulations. Log entries required of a vessel master serve much like the checklist used by an airline pilot and function as a reminder of important duties that must be performed to ensure safety. The Coast Guard agrees that all log entries, from fire drills to stability verifications, may achieve a higher importance in the mind of a master than other duties not required to be logged. This is as it should be. A log entry, even if it is a rubber stamp or a check mark, requires that a master consider the action or condition being confirmed. It is the Coast Guard's position that the safety of a vessel is enhanced if the vessel's master considers and confirms significant actions by the use of log entries. The masters of ferries and small passenger vessels on short runs over dedicated routes are equally responsible as masters of larger vessels on longer and more varied routes. All masters must ensure the safety of their vessel on each and every voyage even if the voyage is of short duration and over a familiar route.

(7) One comment stated that all log book entries for MODUs should be together in § 109.433.

The requirement for a log book entry is already located in § 109.433. The detailed description of the requirement is in a separate section similar to all other log book entries required of MODUs and other vessel types. A reference to § 109.227 has been added to § 109.433.

(8) One comment stated that in his duty as master of a containership in the U.S.-South America trade, he could not always comply with the stability verification requirement. Containers are not weighed in many ports. The container weights are often estimated by shippers and since freight is paid by weight, shippers often underestimate the weight of their containers. In general, the comment stated that the inability of the master to accurately know the loading of the vessel is a dangerous reality without a mechanism to verify container weights. The comment concluded that this situation could lead to a stability related casualty.

The Coast Guard agrees that there is a problem with underestimated container weights at foreign ports. The problem of underestimated container weights is indeed a serious international problem and it has been broached in the IMO. This practice has not been a major problem in U.S. ports as most containers are weighed at the port or their weight is documented at weigh stations along a truck's route to a port. This problem is an international one and a viable solution to this problem must be pursued through an international venue such as the IMO. A solution to this problem is beyond the scope of this particular regulatory project. Current IMO work on development of an intact stability code for all ships might help raise the importance of this issue on the IMO agenda and ultimately lead to a solution to the problem. While awaiting a definitive solution to this problem, a prudent master who doubts the information provided on the loading of a vessel should ensure that a margin of safety is included in the evaluation of the stability of the vessel.

(9) Two comments stated that stability reports are required as a company policy from their MODUs on a more frequent basis than every 6 months. Also, one comment said stability records are kept on board until they are deemed no longer useful. One comment suggested that records for MODUs be retained only until a major change takes place (such as a new location). The comment noted that six month's worth of records is a major amount and this requirement will cause duplicative paperwork to be manufactured for a company's shore office.

Because MODUs do not make voyages similar to other marine vessels, the Coast Guard decided that a definite period of time for retaining records was more meaningful. Six months was arbitrarily chosen. There are two specific purposes for retaining these records:

(a) The records are useful in monitoring the changing stability condition during a voyage or on a location; and

(b) The records are useful during an investigation of a casualty. In response to these comments, the length of time for retaining the stability records on board MODUs has been reduced to one month or until the MODU changes location, if shorter.

(10) One comment noted that it is difficult to maintain any type of records for unmanned barges.

The Coast Guard agrees with the comment that there are some problems maintaining records on unmanned barges especially where a log book is not required. In consideration of this comment, unmanned barges not now required to have a log book, will be exempt from the logging requirement of § 35.20–7 and § 97.15–7. However, all unmanned barges are still required to comply with the stability verification and with the logging of the verification where the unmanned barge already carries a log book. Appropriate changes have been made.

(11) Two comments noted that responsibility for the logging of stability verification of unmanned barges must be placed with a specific individual-tankerman, operator of the towing vessel, or person in charge, because there is no "master" of a barge.

The Coast Guard agrees and has clarified § 35.20–7 and § 97.15–7 by placing responsibility for this provision with the person in charge.

(12) One comment stated that while the stability verification could be easily achieved by offshore tank vessels required to have load lines, in order for inland tank barges to comply, changes will be needed in the stability information listed on the Certificate Of Inspection (COI). For example, current Coast Guard policy requires that the COI for Liquified Flammable Gas barges itemize each separate cargo by draft restrictions. The limitations are usually dependent on cargo weight rather than meeting the Type II damage stability criteria and are, therefore, listed in fraction of inches. The comment suggested only one draft be put on the COI based solely on Type II damage stability approval.

The purpose of this regulatory project is not to change the manner in which a cargo is carried or to change the allowed amount of any type of cargo carried. The Coast Guard has determined that those tank barges which have draft restrictions on their COI for purposes other than stability will be exempt from the requirements of § 35.20–7.

Draft Marks

(13) Five comments stated that the terms "bow draft" and "stern draft" are useless for most mobile offshore drilling units (MODUs), since many MODUs do not have a "bow and stern" draft.

The Coast Guard agrees that for some MODUs bow and stern drafts are meaningless terms. An appropriate allowance for non-surface type MODUs has been made to § 108.661(e).

(14) One comment noted that a provision should be made to exempt vessels, such as ferries on short runs not loaded near their operating capacity, from the requirements for draft indicators.

The reasoning behind this comment is not well understood. No assurance be given that a ferry on short runs will always operate with a load below its allowed capacity. Also, even assuming some type of assurance is given that all operations will be kept below operating capacity, no assurance can be given that these vessels are not improperly loaded or not overloaded, or both, if no attempt is ever made to verify the true draft.

(15) Two comments questioned where the requirements for draft markings on small passenger vessels were published.

Proposed requirements for draft marks on small passenger vessels were published in a Notice of Proposed Rulemaking on January 30, 1989 entitled Small Passenger Vessel Inspection and Certification (54 FR 4412) in proposed § 185.602. This publication location was noted in the NPRM for this rulemaking.

(16) One comment noted that the wording requiring that each vessel "be marked with its draft" was unclear and suggested rather that each vessel "be marked with draft marks."

The Coast Guard agrees with this comment. The wording has been clarified in § 32.05–1, § 78.50–10, § 97.40–10, § 167.55–1, § 169.755, and § 196.40–10.

(17) One comment recommended a requirement that the trim and stability book be drafted in units (metric or English) consistent with draft marks.

The Coast Guard agrees with the comment that the trim and stability book and all other stability information provided must agree in units with the draft marks. Section 170.110(d) has been revised to reflect this.

(18) One comment asked for clarification of wording "where draft marks are obscured." The comment asked from where should the draft marks be able to be viewed, from on board or on the dock. One comment stated that draft sensors are not the optimum method for determining unsafe stability conditions on MODUs. The comment added that draft marks are usually visible from some point on every rig and that visual observation is better than remote indicators. Another comment stated that on every type of MODU design a situation may exist where the draft marks are obscured by operational constraints or by protrusions. Therefore, exactly when a draft indicating system is to be required must be clarified. Two other comments stated that while draft indicating systems are okay, reliance on remote systems should be avoided and that draft marks should be the primary indicator of a MODU's draft. The comment stated that MODU level indicators serve better as a warning of something amiss rather than as a reading of the draft.

The draft marks must be readable when viewed from a reasonably convenient position. If the draft marks cannot accurately be read from the dock or on board the vessel, then the draft marks are "obscured" and another method for determining the draft of the vessel must be provided. Draft indicators are to be required only on those vessels that cannot read their draft visually and therefore, the crew must guess the vessel's draft. If the master cannot calculate the stability of the vessel because the draft cannot be read, then it follows that compliance with the applicable regulations is indeterminable. The Coast Guard is holding the master responsible for showing compliance with the applicable regulations, which is integral to the safe operation of the vessel.

Stability Books

(19) Two comments requested confirmation that § 170.110 does not apply to MODUs.

The comments are correct. The format and requirements for MODU operating manuals, which include stability data, are covered by § 109.121.

(20) One comment noted that previously approved (pre-computer age) vessel stability booklets did not encompass the entire range of a vessel's operating trims. The comment requested clarification of the applicability of this provision to existing vessels.

Vessel stability booklets should agree with the current condition of the vessel. Existing vessels built after 1984, which is the effective date of this subchapter, should already have stability books that take into consideration the entire range of a vessel's operating conditions. Existing vessels built prior to 1984, whose stability information is revised due to the requirements of § 170.210, should at that time update the stability information, in accordance with § 170.110, to encompass the entire range of operating trims.

(21) One comment recommended that the word "intact" be added to the phrase "stability of any condition" since damage stability calculations are too numerous for the stability book and are better evaluated by computer.

The Coast Guard agrees with this comment and the clarification has been added to § 170.110.

Periodic Lightweight Verification

(22) Two comments objected to the lightweight verification, reasoning that the Coast Guard could not definitely specify that adherence to the requirement for lightweight verification would have avoided casualties. One comment objected to this provision as ineffective and costly. One comment stated that while the rest of the proposed regulations will be effective in promoting vessel safety, a 5-year deadweight survey was not warranted. One comment stated that owner certification at 5-year intervals showing that no changes have been made should be sufficient. The comment elaborated that a deadweight survey on a shallow draft vessel, like Great Lakes vessels, requires perfect weather and precise draft measurements, and is a costly and unnecessary procedure.

The Coast Guard does not concur with these comments. The cost and effectiveness of this rulemaking is examined in the economic analysis of the regulation, which includes data from recent stability related casualties. It is rare that a single identifiable hazard is the sole cause of a stability casualty; however weight growth has been identified as a contributing factor. The owner of a vessel can certify that no modifications have taken place, but cannot certify without a survey that no weight growth has occurred on the vessel due to other causes. Weight growth is due not only to minor modifications, which are not required to be reported by § 170.005, but also by the untracked addition, deletion, and relocation of weight aboard the vessel. Without the 5-year deadweight survey, the owner may not be aware of the extent of the weight growth aboard the vessel.

(23) Several comments questioned the applicability of a periodic deadweight survey to MODUs because—

(a) They do not know of any widespread problems, and

(b) MODUs are not like passenger vessels because few are self-propelled. Two comments stated that MODU operating manuals closely monitor weight changes. One comment suggested that the operating manual should serve as the triggering device for a deadweight survey as calculated lightweight additions are more accurate than a periodic deadweight survey. One comment stated that changes to a MODU's lightship are required to be documented. The comment further suggested that rather than arbitrary deadweight surveys, inspectors should pay more attention to the records kept (stability calculations and lightweight adjustments) and a deadweight or incline should then be required when deemed necessary. In this fashion, operators who maintain good records and strive for safety are rewarded by this provision. Another comment stated that jack-ups are stable during operations and when floating no significant amount of weight is put on or off the unit. One comment proposed dispensing with the deadweight survey when a single discrete item, which causes a greater than 2 percent change in lightweight, is added as long as its weight and centers of gravity are well-established. One comment stated that when the Coast Guard conducts on-site inspections, they allow a 3 percent change in lightship before requiring a re-incline.

The Coast Guard agrees that the hull form of some MODUs is very dissimilar to that of passenger vessels. However, hull-form is unrelated to weight growth. As required by § 109.121(c)(5), a MODU operating manual must include the lightweight data along with a listing of inclusions and exclusions of semipermanent equipment. This section also requires that the operating manual contain guidance for the routine recording of lightweight alterations. However, no specific requirements on the actual recording of lightweight alterations are given. Therefore, the type and amount of records maintained on lightweight changes will vary among operating companies. While some operators will try to be diligent and track all known weight changes, other operators will track only those changes they think will effect their lightweight. Even for prudent operators, some weight growth will go unrecorded because of the nature of the problem itself. Weight growth does not result from recordable

modifications to a vessel. Weight growth is the unnoticed accumulation, deletion, or relocation of small amounts of weight, such as dunnage, waste, paint, redecoration, disused but not discarded equipment and spare parts, sludge, and similar materials. These changes can, over a period of time, effect the lightweight displacement and the centers of gravity of a vessel. Although good records will not exempt a vessel from doing a deadweight survey, they may prevent the necessity of an incline. Only where the survey shows that the change exceeds the documented modifications by more than the tolerance allowed in § 170.210, will an incline be required.

The MODU Code recognizes the importance of periodic lightweight verifications in section 3.15, which requires a 5-year periodic deadweight survey for all column stabilized units. The Coast Guard acknowledges that column stabilized units are much more vulnerable to unknown weight changes than self-elevating units. Therefore, the Coast Guard will only require owners of self-elevating units to re-incline after a major modification. Although, data from re-inclinings of jack-up rigs shows a large discrepancy in the vertical center of gravity (KG) from one incline to the next, no cause has been singled out for the variation in KG. Some operators believe inaccuracies during the incline test cause the different results. However, the Coast Guard's position is that the change in KG is in some part attributable to weight changes which have not been recorded. One of the major unrecorded weight changes made on a jack-up rig is leg-lengthening. The Coast Guard considers changes such as leg-lengthening to be a major modification, which must be reported as required by § 170.005. Since the Coast Guard has decided that self-elevating MODUs, such as jack-ups, will not at this time be required to comply with § 170.210, an appropriate exemption has been added to § 170.210(b).

(24) One comment stated that all inspected vessels have load lines and load lines prevent overloading. The comment concluded this rule serves no purpose.

Not all inspected vessels have a load line. Only specific vessel types as defined by 46 CFR subchapter E, part 42, subpart 42.03 are required to have a load line. Many inspected vessels are not required to have a load line due to their size, route, type of service, or other factors. In addition, load lines do not compensate for weight growth of lightship or a change in KG.

(25) One comment stated that use of the draft marks to determine weight growth should be examined. Another comment recommended the use of a formal weight tracking system in conjunction with observed drafts to determine the necessity for deadweight surveys. Another comment stated that the updating of weight and centers of gravity is reasonable to prove continued adequate stability and is more accurate than a periodic lightship check for Great Lakes vessels. One comment stated that a more reasonable approach is needed for reporting and certifying centers of gravity and weights due to minor modifications occurring over a 5-year period. Consistent with current regulations, significant weight changes due to modification should and must be identified by deadweight surveys and inclines. One comment stated that their company already adjusts trim and stability books for minor modifications and conducts stability tests for major modifications.

Monitoring the location of the draft is not a solution to tracking weight growth because the deadweight constantly changes. Draft marks and load lines are a good indicator of overall overloading of a vessel but a poor indicator of weight growth. While the addition, deletion, or relocation of unknown weights may or may not cause a noticeable change in the draft or the submergence of the load line, the stability of the vessel could be greatly reduced by the changes. As already stated, pursuant to § 170.005, significant alterations to a vessel are required to be reported and stability information updated in accordance with the regulations in 46 CFR subchapter S. Those operators and owners who track other known weight variations on their vessels and consistently update their stability information are in the minority and are to be commended. However, even the most diligent are likely to miss some of the weight growth occurring on their vessel.

(26) Two comments objected to the proposed regulations applying to Great Lakes vessels because:

(a) SOLAS does not apply to the Great Lakes;

(b) Great Lakes vessels have a substantial excess of metacentric height (GM);

(c) No initial stability test is required; and

(d) Great Lakes vessels do not have a stability book. Another comment also stated that Great Lakes dry bulk vessels are designed such that no inclining tests are required. Another comment stated that Great Lakes bulk carriers should be exempt from this provision because their operation requires GM in excess of Coast Guard requirements and significant alterations are completed only with Coast Guard approval. One comment stated that Great Lakes vessels are limited by shallow drafts (river transits) and narrow locks which result in vessels with excess GM. Because of this excess in stability, these vessels have always dispensed with stability tests as permitted by § 170.175(d). Another comment stated that all of the following vessels should be excluded from this requirement:

(a) Vessels that could use (not just those that did use) the estimated center of gravity;

(b) Vessels that are considered inherently stable (where no stability calculations were performed); or

(c) Vessels that have a large margin between the operating conditions and the stability criteria (some vessels may have undergone significant changes and still meet the criteria by a wide margin). One comment recommended that for a vessel that is "bare bones" (not lavishly outfitted, built for a specific function, such as a tank ship, tank barge, bulk cargo barge, or deck cargo barge), some latitude be included to allow the Officer in Charge, Marine Inspection (OCMI) or the Commanding Officer, Marine Safety Center to make a judgment when determining whether a vessel needs a periodic survey.

The Coast Guard does not intend that vessels which are not now required to do a stability test, do one periodically. Vessels exempt from stability tests by § 170.175(d) are either inherently stable or have a wide margin between their operating conditions and the stability criteria. Vessels exempt from stability tests by § 170.175(d), are also exempt from § 170.210. An appropriate change has been made to § 170.210(b) to make this clear. The Coast Guard also agrees that some "bare bones" vessels are constructed or operated such that a significant amount of weight growth cannot occur. However, the Coast Guard does not consider it appropriate for this regulation to allow latitude to the OCMI or Commanding Officer, Marine Safety Center in determining whether or not a vessel needs a periodic survey. However, those vessel types that can clearly be defined as "bare bones" vessels will be exempted from the lightweight verification provision. An appropriate change has been made to § 170.210 to permit this exemption.

(27) One comment stated that § 170.210(b)(1) is redundant since lightweight displacement and centers of gravity are not required to be determined for these vessels by § 170.174.

The Coast Guard concurs with this comment, however, for clarity, all exceptions will be listed in § 170.210, including small passenger vessels using the simplified stability test.

(28) One comment noted that § 170.210 would apply to new and existing vessels but § 170.001 limits application of 46 CFR subchapter S to vessels contracted for after January 3, 1984.

As stated in the NPRM, application of § 170.210 is for all existing inspected vessels. Sections 170.001 and 170.210(a) have been changed to clarify that application of § 170.210 is for all existing inspected vessels. The Coast Guard intends to phase-in the requirement for periodic lightweight verification over a five year period. For each affected vessel, the date by which its initial periodic lightweight verification must be carried out will be determined by a number of factors, including the date of the vessel's last lightweight verification, the date of the vessel's next credit drydocking, and the expiration date of the vessel's Loan Line Certificate. The Coast Guard intends that this verification be completed in conjunction with other required surveys to try to avoid a vessel being taken from service solely to perform the lightweight verification. The Coast Guard will publish a Navigation and Inspection Circular containing specific guidance on the phase-in process.

(29) Two comments disagreed with the presumption that vessels using the simplified stability test should be excluded from the periodic lightweight requirement as these vessels, especially the older ones, are subject to substantial weight growth.

The Coast Guard cannot currently disagree with these comments. Additional study of small vessels that use the simplified stability test is necessary to determine if their operations result in a significant amount of weight growth. At this time, this rulemaking does not apply the periodic lightweight verification to these vessels.

(30) Two comments noted that vessel owners do not have rights to the stability related plans of their vessels and if redrawn plans are used, differences in vessel characteristics could result from differences between the old and new plans and not from any changes in the vessel. One comment noted that the cost of redoing the plans is $4000–$6000 and is costly for the prevention of weight growth, as compared to a major modification, such as a conversion. Another comment stated that no costs were estimated for reconstructing the data for vessels where such data has been lost or destroyed or where the original data is in error. One comment stated that 30 percent of Coast Guard approved lightship data is wrong and trying to use this data for comparison is an unnecessary hardship. One comment asked for clarification of the criteria, original or present, applied in reevaluating a vessel's stability, when a vessel is found to have changed its characteristics. The comment also questioned what criteria would be applied if the original criteria cannot be determined.

Purchase of relevant vessel plans is negotiable with the naval architect at the time of build or purchase of the vessel. Every owner can expect a vessel to undergo some degree of modifications, improvements, or repairs sometime during the vessel's life that would require having a set of the vessel's plans. If the vessel owner does not choose to buy the plans for the vessel at the time of build, the owner can usually return to the same naval architect when further improvements, maintenance, or repairs are done on the vessel. Owners purchasing a vessel sometime after build must also figure into the purchase the costs of the plans for the vessel to carry out improvements, maintenance, or repairs. Therefore, costs for vessel plans are not included as a cost associated with this regulation.

The Coast Guard cannot confirm the comment's statement that 30 percent of Coast Guard approved lightship data is wrong without rechecking the data for all vessels. These periodic checks will ensure that future lightship data is correct which will allow the master to be more certain of the stability of the vessel. If during a survey or incline a vessel is found to have made unreported major modifications, the vessel will be required to follow the policy of major modifications and meet the rules in force at the time of modification. If changes in vessel lightweight are due only to weight growth or minor modifications, the vessel will only have to meet the criteria under which it was originally certificated. Instances where the original criteria cannot be determined are few and will be resolved on a case-by-case basis as is done now.

(31) Several comments objected to the periodic lightweight verification because regulations already preclude an owner from making any modifications without approval and, if needed, stability review. One comment suggested that the OCMI should have the authority to determine whether an inland ferry vessel needs a periodic stability test. Another comment stated that OCMI's already have the authority to require deadweight surveys, revised stability calculations and stability tests. The comment further stated that better guidance as to when new tests should be done is better than wholesale requirements for all vessels to do deadweight surveys.

Currently, there are only regulations concerning updating of stability information after major modifications. Coast Guard policy and procedures which require updated stability calculations and stability tests when minor modifications alter stability condition vary between districts. This requirement will ensure a more uniform application of lightweight verification policy and procedures.

(32) One comment stated that the horizontal centers of gravity (transverse and longitudinal centers of gravity) is more appropriate for some MODUs.

The deadweight survey is only a "litmus test" which indicates changes may have taken place with the vertical center of gravity. An incline would be required only if the lightweight or horizontal centers of gravity are incorrect.

(33) One comment questioned the need for a deadweight survey of cargo ships every 5 years. One comment recommended that all tankships be exempt from this requirement, except when modifications change the lightweight by more than 2 percent. Two comments stated that on passenger ships, lightweight could be as much as 80 percent of the fully loaded displacement, while on oceangoing cargo ships, lightweight was only as much as 35 percent of the fully loaded displacement. Because of this, changes in lightweight have a significantly smaller effect on large cargo ships. One comment objected to the application of this provision to barges because there is no evidence that periodic verification will result in fewer barge casualties. The comment added that lightweight is a minor part of cargo barge stability. Two comments stated that with the exception of pure car carriers, inspected cargo vessels have less superstructure and fewer upper decks than passenger vessels. The comment concluded that the location on most oceangoing cargo ships where spare parts, slops, or minor modifications will reside is generally closer to or below the vertical center of gravity and, therefore, this weight growth will not detrimentally impact overall stability.

After reviewing the arguments and data provided by these comments, the Coast Guard agrees that vessels such as deep draft cargo ships and tankers should not be subject to this provision. Vessels certificated under Subchapter I

and Subchapter D whose lightweight displacement comprises less than 35 percent of the total fully loaded displacement will be exempt from the provisions of § 170.210.

(34) One comment requested a public meeting with operators to discuss the necessity of lightweight verification if it is required for large cargo vessels. Of the twenty-eight comments, only one requested a public meeting.

The Coast Guard decided that a public hearing was not necessary because the concerns addressed in this letter were resolved in this rule. Cargo ships whose lightweight displacement comprises less than 35 percent of the total fully loaded displacement will be exempt from the provisions of § 170.210.

(35) One comment stated that the periodic lightweight verification provision provided no guidance on what stability study is necessary when deviation is greater than the allowable change in § 170.210(a)(3). The comment assumed that new stability information in line with § 170.110 would be established using the new lightship data.

The Coast Guard intends that the stability information used on board a vessel agree with the vessel's lightship data. Section 170.210(a)(3) has been clarified to ensure that when a new stability test is required, updated stability information will be provided on board the vessel for the master's use.

(36) Several comments stated that to perform the proposed surveys everything must be removed from the vessel (ballast, fuel and lube oils, mud and sediment, tools and spare parts, food and perishables, all outfitting such as utensils, linen, and similar items) and as a result, the items removed from the vessel will be subject to theft, contamination, and spillage at an estimated cost of $45,000 to $120,000 for an offshore supply vessel (OSV). Another comment stated that it would cost an oceangoing cargo ship approximately $50,000 dollars to comply with the periodic lightweight requirements. One comment stated that to comply with this provision their ships would have to be stripped of cargo and tankage, and taken out of service. One comment stated that a minimum of 24 hours is required to prepare their oceangoing cargo ships for a deadweight survey. One comment estimated that at least three days are required for an OSV to perform the lightweight verification.

It is not always necessary for all the items stated by the comment to be removed to complete a deadweight survey. It is necessary, however, to record the weight and location of each item not part of the lightweight. The time and dollar amounts quoted by two of the comments are inconsistent. The average of $85,000 and 3 days for an OSV as compared with $50,000 and at least 1 day for an oceangoing cargo ship is incongruous. However, where appropriate, cost analysis estimates in the regulatory evaluation associated with this rulemaking were increased in response to these comments.

(37) One comment stated that the 2 percent margin is:

(a) Inconsistent with other margins of error intrinsic to calculating stability and is therefore unreasonable;

(b) An insignificant number in terms of an OSV's stability because OSV's are so small;

(c) Not necessary because there are safety factors built into a vessel's stability letter; and

(d) Insignificant because over a vessel's life, the vessel is allowed a 20 to 30 percent change due to wastage, paint, coatings, damage repairs, equipment replacement, scale, and sediment.

Another comment stated that initial inclines are done with dry tanks and therefore, after tanks are used, initial conditions are hard to repeat. The comment concluded that stability rules take this into consideration by applying safety factors and margins for error, and therefore, 2 percent is a close tolerance to meet. One comment stated that the margin of safety is greater than 2 percent because of the application of safety factors during the calculation of an OSV's stability from an incline and in preparation of the stability letter. This comment further stated that the margin of error, calculated or empirical, in a lightship survey is greater than 2 percent and the tolerance between the 2 percent lightweight verification margin and the margin of error of the incline is too tight. One comment agreed that the requirement for periodic deadweight surveys was reasonable, but thought that the 2 percent margin was unreasonable. Another comment stated that the results of the survey would likely exceed the 2 percent tolerance due to inaccuracies in the survey. Another comment recommended that in lieu of the 2 percent lightweight displacement margin, that 1 percent of lightweight displacement plus the maximum tons per inch (TPI) immersion be used. The comment stated that maximum TPI should be the larger of the TPI at the original inclining draft or the later deadweight draft. This method would permit a 1 percent increase in weight plus a 1 inch error in determining the drafts. The comment asserts this is a fairer standard than the 2 percent margin.

Coast Guard regulations set minimum standards for safety. The criteria in the regulations are developed with safety in mind, but a determinable and set factor of safety is not used in the calculations. Conditions placed in a vessel's stability letter are usually those necessary for a vessel to comply with the minimum stability criteria. These conditions are not additional factors of safety. The Coast Guard's position is that the 2 percent tolerance is reasonable and achievable. A 30 percent weight change over a vessel's life without a stability review is unacceptable. The Coast Guard does not agree that the margin of error during an incline is greater than 2 percent and the Coast Guard uses procedures to ensure a credible incline. The comment's suggestion to apply TPI immersion in conjunction with displacement changes could be applied as an alternative on a case-by-case basis.

(38) One comment questioned whether a class of sister ships, certified as having identical modifications and operations, could use a single periodic lightweight verification for the entire class.

Although a class of sister ships can be identical when new, the weight growth experienced by each ship will in all probability be unique. The changes in the amount and location of paint, dunnage, abandoned tools or equipment, increased stores, furnishings, and similar items will vary from ship to ship and only by checking each ship can the true lightweight be verified.

Residual Stability for New Passenger Vessels

(39) Two comments stated that for government contracted ships, the contract award date is so far in advance of the keel laying date that for ships already contracted a new costly redesign will be needed. The comment asked whether the effective date of 29 April 1990 could be a contract date rather than keel laying date.

The effective date of the provisions of § 171.080 for domestic vessels will be keel laying dates after December 10, 1992. Over 2 years will have passed from the effective date of the SOLAS Convention amendments to the publication of this Final Rule. This has allowed more than enough design lead time, even for government vessels. The effective date for vessels requiring a SOLAS safety certificate is set by the IMO. Under SOLAS, all vessels subject to the SOLAS requirements whose keels were laid after 29 April 1990, must comply with the residual stability amendments.

(40) One comment said that the proposed residual stability standards

were too stringent for vessels engaged in river service. The comment specifically objected to the 15 degree range of stability and the assumption that all persons will move to the low side in the case of asymmetrical flooding.

The range of stability after damage is a minimum acceptable for all vessel services, including vessels engaged in river service. Coast Guard regulations set minimum standards for safety, and in determining compliance with these regulations, a worst case scenario is assumed. It is unreasonable to assume passengers will move in a manner beneficial to the stability of a vessel.

(41) One comment requested that this section specifically exempt Great Lakes dry cargo vessels since these vessels are already subject to the damage stability regulations in 46 CFR part 172, subpart H.

This section is applicable to new passenger vessels and other vessels required to comply with § 171.080. Since this section does not apply to Great Lakes dry cargo vessels, an exemption is not required.

(42) One comment questioned the origin and basis of the 7 degrees of heel in the final stage of flooding.

A limitation on heel for unsymmetrical flooding was first used in the International Convention for the Safety of Life at Sea, 1948. The 7 degree limitation on heel for one compartment flooding and twelve degrees for two-compartment flooding is contained in IMO Resolution A.265, Equivalent Regulations to part B of chapter II of SOLAS on Subdivision and Damage Stability of Passenger Ships (adopted by IMO in November 1973). The 7 degree limitation is located in Chapter II–1, Regulation 8.6.2 of SOLAS and in 46 CFR 171.080(d).

(43) One comment questioned why oceanographic research vessels (ORV) are required to meet passenger vessel regulations. The comment questioned whether ORVs should have separate damage stability regulations.

ORVs include a number of non-seaman on board during each voyage. These non-seamen are usually scientists and technical personnel and are more closely related to the definition of passengers than the definition of crew. While these non-seamen are necessary to accomplish the vessel's mission, they do not have the familiarity with the vessel or the training in emergency procedures that members of the crew have. Therefore, the Coast Guard requires in 46 CFR part 173, subpart D that all ORVs, except barges under 300 gross tons, comply with the passenger vessel damage stability regulations.

(44) In § 171.080(e)(2), the word "accessible" replaced the word "frequented" as a more definite term.

(45) The existing provision in § 171.080(d)(3) regarding the submergence of the margin line was inadvertently left out for new vessels. For equivalency with the current SOLAS passenger ship damage stability requirements, the margin line must not be submerged at any point in the final stage of flooding. An appropriate change has been made to § 171.080(e)(6).

Regulatory Evaluation

This rulemaking is not major under Executive Order 12291 on Federal Regulation and non-significant under the Department of Transportation Regulatory Policies and Procedures (DOT Order 2100.5 of May 22, 1980). A Regulatory Evaluation is available in the docket for inspection or copying where indicated under **ADDRESSES.**

The marine industry will incur an estimated first year cost of $5 million and a subsequent annual cost of $4.8 million as a result of this rulemaking. Although this cost may be sizable for some segments of the industry, the need for and potential benefits of the regulations are considered to outweigh the anticipated costs involved.

As discussed in "Discussion of Comments", in response to the few specific comments given on costs of the periodic lightweight verification, the costs have been adjusted. Also, in response to some comments, the costs has been lowered due to the decrease in the number of vessels affected by some of the provisions; for example, the periodic lightweight verification.

The primary benefits of the regulations relate to increasing the accuracy of the available stability information and vessel survivability after damage thereby producing a safer vessel and reducing the number of stability related casualties and resulting lives lost, associated injuries, and property damage. The minimum potential benefits of these regulations are estimated to be $8.4 million annually based on the generally accepted value of human life of $1.5 million. However, this estimate does not take into account the potential substantial additional benefits derived from averting a catastrophic casualty, such as occurred with the HERALD OF FREE ENTERPRISE. When taking into account major casualties such as the HERALD OF FREE ENTERPRISE, the potential benefits of these regulations, in terms of lives saved, far outweigh associated costs.

Small Entities

One comment objected to the conclusion that the rules would not have a significant impact on a number of small entities as a large part of the U.S. small passenger fleet are owned by small and family businesses. The comment stated that small passenger vessels would reap little of the benefit as small passenger vessel losses are few and not multi-million dollar cases.

The small entities addressed in this rulemaking are primarily small passenger vessels. The small passenger vessel fleet, which is regulated under 46 CFR subchapter T, can be roughly subdivided into large vessels (generally greater than 65-feet in length and authorized to carry more than 150 passengers per voyage) and small vessels (generally less than 65-feet in length and authorized to carry fewer than 150 passengers per voyage). There are currently about 4000 small and 1200 large vessels in the small passenger vessel fleet. A large percentage of the small vessels in the small passenger vessel fleet are owned or managed by small entities. A lesser percentage of the large vessels in the small passenger vessel fleet are owned or managed by small entities.

This rulemaking can be subdivided into five major categories, each having a different impact upon small entities:

(a) Draft marks;

(b) Closing of loading doors;

(c) Verification of stability;

(d) Residual stability; and

(e) Periodic lightweight verification.

With regard to the draft requirement for small passenger vessels, § 185.30–3 (proposed § 185.602(b)) limits the requirement to those vessels described by § 185.30–3(a) (proposed § 178.310(b)(1) through (5)). This section limits the applicability of the draft marks requirement to vessels greater than 65-feet in length, sailing vessels, vessels authorized to carry more than 150 passengers, vessels authorized to carry more than 12 passengers on an international voyage, or a vessel with more than one deck above the bulkhead deck exclusive of a pilot house. The requirement in § 185.30–3(e) is limited to those vessels whose draft marks, required by § 185.30–3(a) (proposed as § 185.602(b)), are obscured from view. The various exemptions from the requirement for draft marks greatly reduces the number of vessels affected. Most large vessels and many small vessels in the small passenger fleet already have the draft marks required here. Of those vessels required to have draft marks, very few do not already

have them. The Coast Guard estimates that only about 75 small passenger vessels will need to add draft marks.

With regard to the closing and logging of loading doors, very few small passenger vessels are equipped with these types of loading doors. At most, the Coast Guard estimates that 150 small passenger vessels will have to comply with this provision. Additionally, the logging provision is dropped for those vessels not already required to carry a log book. It is estimated that at least half of the small vessels in the small passenger vessel fleet are not required to carry a log book.

With regard to the stability verification and logging, the majority of small passenger vessels carry a simple stability letter, which allows quick and easy verification of their vessel's loading and stability. Also, as mentioned previously, the logging provision is dropped for those vessels not already required to carry a log book and it is estimated that at least half of the small vessels in the small passenger vessel fleet are not required to carry a log book.

With regard to the new design requirements for residual stability, this provision affects new passenger vessels only and as such, only affects about 25 new small passenger vessels that are built each year.

With regard to the lightweight verification provisions, most small vessels in the small passenger vessel fleet will be exempt from this provision through their use of the simplified stability test. Many of the large vessels in the small passenger vessel fleet affected by this provision will be able to conduct their survey dockside during normal off-working hours.

The Coast Guard's position is that while the overall safety record of the U.S. small passenger fleet is laudable, considering the number of passengers carried each year, the true economic benefit of these regulations is in removing a hazard and thereby preventing the severe loss of life which could result from a single catastrophic casualty. Although property damage resulting from a small vessel casualty may not be substantial, the loss of passengers' lives can easily result in a multi-million dollar casualty. The two most expensive provisions of this rulemaking are the periodic lightweight verification and the stability verification and logging. For small passenger vessels, the periodic lightweight verification is estimated to cost $450 a year per affected vessel and the stability verification, $268 a year per affected vessel. These costs can be recovered by a very minimal increase in cost in passengers. The potential benefits of the provisions, in terms of lives saved and in preventing a major casualty, for outweigh the associated costs.

Because of the numerous exemptions, exceptions and limits of applicability to small passenger vessels in these regulations and the true economic benefit of preventing a catastrophic casualty, the Coast Guard has determined that this rulemaking does not have a significant economic impact on a substantial number of small entities. Therefore, the Coast Guard certifies under section 605(b) of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) that this final rule will not have a significant economic impact on a substantial number of small entities.

Collection of Information

Under the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*), the Office of Management and Budget (OMB) reviews each proposed rule which contains a collection of information requirement to determine whether the practical value of the information is worth the burden imposed by its collection. Collection of information requirements include reporting, recordkeeping, notification, and other similar requirements.

This rule contains collection of information requirements in the following sections: 35.20–7, 78.17–22, 78.17–33, 97.15–7, 97.15–17, 109.227, 167.65–38, 167.65–43, 169.840, 170.210, 185.20–5, 185.20–17, 196.15–7, 196.15–18.

The reporting and recordkeeping requirements associated with this rule have been approved by OMB in accordance with 44 U.S.C. chapter 35 under OMB Control Number 2115–0589.

Federalism

This action has been analyzed in accordance with the principles and criteria contained in Executive Order 12612, and it has been determined that the regulations do not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

This rulemaking establishes stability design and operating standards for commercial vessels. The authority to regulate concerning these standards for commercial vessels in all navigable waters of the United States is committed to the Coast Guard by Federal statutes. Furthermore, since commercial vessels tend to move from port to port in the national and international marketplace, safety standards for commercial vessels should be of national scope to avoid unreasonably burdensome variances. Therefore, the Coast Guard intends this rule to preempt state action addressing the same subject matter.

Environment

This rulemaking has been reviewed by the Coast Guard and it has been determined that it will not have a significant impact on the environment. This rulemaking has no effect upon the manner in which potential pollutants or hazardous materials are carried on board vessels. Improved vessel stability should reduce the number of uncontrolled releases of pollutants or hazardous materials into the environment resulting from vessel casualties. However, based on a review of historical data, the Coast Guard considers the benefit to the aquatic environment to be insignificant. An environmental impact statement is not necessary. A finding of no significant impact has been placed in the public docket for this rulemaking.

List of Subjects

46 CFR Part 30

Cargo Vessels, Foreign relations, Hazardous materials transportation, Penalties, Reporting and recordkeeping requirements, Seamen.

46 CFR Part 32

Cargo vessels, Fire prevention, Marine safety, Navigation (water), Occupational safety and health, Reporting and recordkeeping requirements, Seamen.

46 CFR Part 35

Cargo vessels, Marine safety, Navigation (water), Occupational safety and health, Reporting and recordkeeping requirements, Seamen.

46 CFR Part 70

Marine safety, Passenger vessels, Reporting and recordkeeping requirements.

46 CFR Part 78

Marine safety, Navigation (water), Passenger vessels, Penalties, Reporting and recordkeeping requirements.

46 CFR Part 90

Cargo vessels, Marine safety.

46 CFR Part 97

Cargo vessels, Marine safety, Navigation (water), Reporting and recordkeeping requirements.

46 CFR Part 107

Marine safety, Oil and gas exploration, Reporting and recordkeeping requirements, Vessels

46 CFR Part 108

Fire prevention, Marine safety, Occupational safety and health, Oil and gas exploration, Vessels.

46 CFR Part 109

Marine safety, Occupational safety and health, Oil and gas exploration, Reporting and recordkeeping requirements, Vessels.

46 CFR Part 167

Fire prevention, Marine safety, Reporting and recordkeeping requirements, Schools, Seamen, Vessels

46 CFR Part 169

Fire prevention, Marine safety, Reporting and recordkeeping requirements, Schools, Vessels.

46 CFR Part 170

Marine safety, Reporting and recordkeeping requirements, Vessels.

46 CFR Part 171

Marine safety, Passenger vessels.

46 CFR Part 184

Communications equipment, Marine safety, Navigation (water), Passenger vessels, Reporting and recordkeeping requirements.

46 CFR Part 185

Marine safety, Passenger vessels, Reporting and recordkeeping requirements.

46 CFR Part 188

Marine safety, Oceanographic research vessels.

46 CFR Part 196

Marine safety, Oceanographic research vessels, Reporting and recordkeeping requirements.

For reasons set out in this preamble, the Coast Guard is amending title 46, chapter I, Code of Federal Regulations as follows:

SUBCHAPTER D—TANK VESSELS

PART 30—GENERAL PROVISIONS

1. The authority citation for part 30 continues to read as follows:

Authority: 46 U.S.C. 3306, 3703; 49 U.S.C. App. 1804; 49 CFR 1.45, 1.46; Section 30.01–2 also issued under the authority of 44 U.S.C. 3507.

2. Section 30.01–2 is amended by revising paragraph (b) to read as follows:

§ 30.01–2 OMB control numbers assigned pursuant to the Paperwork Reduction Act.

* * * * * * *

(b) *Display.*

46 CFR part or section where identified or described	Current OMB control No.
§ 31.10–5(a)	2115–0131
§ 31.10–21	2115–0554
§ 31.10–22	2115–0554
§ 31.10–32	2115–0131
§ 31.10–33	2115–0131
§ 31.37–15	2115–0131
§ 31.40–35	2115–0131
§ 32.53–85	2115–0505
§ 35.20–7	2115–0589
§ 35.35–30	2115–0506
§ 39.10–13	2115–0505

PART 32—SPECIAL EQUIPMENT, MACHINERY, AND HULL REQUIREMENTS

3. The authority citation for part 32 continues to read as follows:

Authority: 46 U.S.C. 3306, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; 49 CFR 1.46.

4. Section 32.05–1 is amended by revising the section heading and paragraph (a); by redesignating paragraphs (b) and (c) as paragraphs (c) and (d), respectively; and by adding new paragraphs (b), (e), (f), and (g) to read as follows:

§ 32.05–1 Draft marks and draft indicating systems—TB/ALL.

(a) All vessels must have draft marks plainly and legibly visible upon the stem and upon the sternpost or rudderpost or at any place at the stern of the vessel as may be necessary for easy observance. The bottom of each mark must indicate the draft.

(b) The draft must be taken from the bottom of the keel to the surface of the water at the location of the marks.

* * * * *

(e) Draft marks must be separated so that the projections of the marks onto a vertical plane are of uniform height equal to the vertical spacing between consecutive marks.

(f) Draft marks must be painted in contrasting color to the hull.

(g) In cases where draft marks are obscured due to operational constraints or by protrusions, the vessel must be fitted with a reliable draft indicating system from which the bow and stern drafts can be determined.

PART 35—OPERATIONS

5. The authority citation for part 35 continues to read as follows:

Authority: 33 U.S.C. 1321(j); 46 U.S.C. 3306, 3703, 6101; 49 U.S.C. App. 1804; E.O. 11735, 38 FR 21243, 3 CFR, 1971–1975 Comp., p. 793; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; 49 CFR 1.46.

6. Section 35.07–10 is amended by redesignating paragraphs (b)(4) through (b)(9) as paragraphs (b)(5) through (b)(10), respectively, and by adding new paragraphs (b)(4) and (c)(4) to read as follows:

§ 35.07–10 Actions required to be logged—TB/ALL.

* * * * *

(b) * * *

(4) Verification of vessel compliance with applicable stability requirements. After loading and prior to departure and at all other times necessary to assure the safety of the vessel. See § 35.20–7.

* * * * *

(c) * * *

(4) Verification of vessel compliance with applicable stability requirements. After loading and prior to departure and at all other times necessary to assure the safety of the vessel. See § 35.20–7.

7. Section 35.20–7 is added to read as follows:

§ 35.20–7 Verification of vessel compliance with applicable stability requirements—TB/ALL.

(a) Except as provided in paragraph (d) of this section, after loading and prior to departure and at all other times necessary to assure the safety of the vessel, the master or person in charge shall determine that the vessel complies with all applicable stability requirements in the vessels's trim and stability book, stability letter, Certificate of Inspection, and Load Line Certificate, as the case may be. The vessel may not depart until it is in compliance with these requirements..

(b) When determining compliance with applicable stability requirements the vessel's draft, trim, and stability must be determined as necessary.

(c) If a log book is required by § 35.07–5, then the master or person in charge must enter an attestation statement verifying that the vessel complies with the applicable stability requirements at the times specified in paragraph (a) and any stability calculations made in support of the determination must be retained on board the vessel for the duration of the voyage.

(d) Stability verification is not required for tank barges whose Certificate of Inspection carries draft restrictions for purposes other than stability.

SUBCHAPTER H—PASSENGER VESSELS

PART 70—GENERAL PROVISIONS

8. The authority citation for part 70 continues to read as follows:

Authority: 46 U.S.C. 3306, 3703; 49 U.S.C. App. 1804; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; 49 CFR 1.45, 1.46; section 70.01–15 also issued under the authority of 44 U.S.C. 3507.

9. Section 70.01–15 is amended by revising paragraph (b) to read as follows:

§ 70.01–15 OMB control numbers assigned pursuant to the Paperwork Reduction Act.

* * * * *

(b) *Display.*

46 CFR part or section where identified or described	Current OMB control No.
§ 71.10	2115–0136
§ 71.50–5	2115–0554
§ 78.17–22	2115–0589
§ 78.17–33	2115–0589

PART 78—OPERATIONS

10. The authority citation for part 78 continues to read as follows:

Authority: 33 U.S.C. 1321(j); 46 U.S.C. 3306, 6101, 8105; 49 U.S.C. App. 1804; E.O. 11735, 38 FR 21243; 3 CFR 1971–1975 Comp., p. 793; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; 49 CFR 1.46.

11. Section 78.17–22 is added to read as follows:

§ 78.17–22 Verification of vessel compliance with applicable stability requirements.

(a) After loading and prior to departure and at all other times necessary to assure the safety of the vessel, the master shall determine that the vessel complies with all applicable stability requirements in the vessel's trim and stability book, stability letter, Certificate of Inspection, and Load Line Certificate, as the case may be, and then enter an attestation statement of the verification in the log book. The vessel may not depart until it is in compliance with these requirements.

(b) When determining compliance with applicable stability requirements the vessel's draft, trim, and stability must be determined as necessary and any stability calculations made in support of the determination must be retained on board the vessel for the duration of the voyage.

12. Section 78.17–33 is added to read as follows:

§ 78.17–33 Loading doors.

(a) The master of a vessel fitted with loading doors shall assure that all loading doors are closed watertight and secured during the entire voyage except that—

(1) If a door cannot be opened or closed while the vessel is at a dock, it may be open while the vessel approaches and draws away from the dock, but only as far as necessary to enable the door to be immediately operated.

(2) If needed to operate the vessel, or embark and disembark passengers when the vessel is at anchor in protected waters, loading doors may be open provided that the master determines that the safety of the vessel is not impaired.

(b) For the purposes of this section, "loading doors" include all weathertight ramps, bow visors, and openings used to load personnel, equipment, and stores, located in the collision bulkhead, the side shell, or the boundaries of enclosed superstructures that are continuous with the shell of the vessel.

(c) The master shall enter into the log book the time and door location of every closing of the loading doors.

(d) The master shall enter into the log book any opening of the doors in accordance with paragraph (a)(2) of this section setting forth the time of the opening of the doors and the circumstances warranting this action.

13. Section 78.37–5 is amended by redesignating paragraphs (a)(7) through (a)(13) as paragraphs (a)(9) through (a)(15), respectively, and by adding new paragraphs (a)(7) and (a)(8) to read as follows:

§ 78.37–5 Actions required to be logged.

(a) * * *

(7) Verification of vessel compliance with applicable stability requirements. After loading and prior to departure and at all other time necessary to assure the safety of the vessel. See § 78.17–22.

(8) Loading doors. Where applicable, every closing and any opening when not docked. See § 78.17–33.

* * * * *

14. Section 78.50–10 is amended by revising the section heading and paragraph (a); by redesignating paragraphs (b) and (c) as paragraphs (c) and (d), respectively; and by adding new paragraphs (b), (e), (f), and (g) to read as follows:

§ 78.50–10 Draft marks and draft indicating systems.

(a) All vessels must have draft marks plainly and legibly visible upon the stem and upon the sternpost or rudderpost or any place at the stern of the vessel as may be necessary for easy observance. The bottom of each mark must indicate the draft.

(b) The draft must be taken from the bottom of the keel to the surface of the water at the location of the marks.

* * * * *

(e) Draft marks must be separated so that the projections of the marks onto a vertical plane are of uniform height equal to the vertical spacing between consecutive marks.

(f) Draft marks must be painted in contrasting color to the hull.

(g) In cases where draft marks are obscured due to operational constraints or by protrusions, the vessel must be fitted with a reliable draft indicating system from which the bow and stern drafts can be determined.

SUBCHAPTER I—CARGO AND MISCELLANEOUS VESSELS

PART 90—GENERAL PROVISIONS

15. The authority citation for part 90 continues to read as follows:

Authority: 46 U.S.C. 3306, 3703; 49 U.S.C. App. 1804; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; 49 CFR 1.46.

16. Section 90.01–15 is amended by revising paragraph (b) to read as follows:

§ 90.01–15 OMB control numbers assigned pursuant to the Paperwork Reduction Act.

* * * * *

(b) *Display.*

46 CFR part or section where identified or described	Current OMB control No.
§ 91.27–13	2115–0517
§ 91.40–3	2115–0554
§ 91.40–5	2115–0554
§ 97.15–7	2115–0589
§ 97.15–17	2115–0589

PART 97—OPERATIONS

17. The authority citation for part 97 continues to read as follows:

Authority: 33 U.S.C. 1321(j); 46 U.S.C. 3306, 6101; 49 U.S.C. App. 1804; E.O. 11735, 38 FR 21243, 3 CFR 1971–1975 Comp., p. 793; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; 49 CFR 1.46.

18. Section 97.15–7 is added to read as follows:

§ 97.15–7 Verification of vessel compliance with applicable stability requirements.

(a) Except as provided in paragraph (d) of this section, after loading and prior to departure and at all other times necessary to assure the safety of the vessel, the master or person in charge shall determine that the vessel complies with all applicable stability requirements in the vessel's trim and stability book, stability letter, Certificate of Inspection, and Load Line Certificate, as the case may be. The vessel may not

depart until it is in compliance with these requirements.

(b) When determining compliance with applicable stability requirements the vessel's draft, trim, and stability must be determined as necessary.

(c) If a log book is required by § 97.35, then the master or person in charge must enter an attestation statement verifying that the vessel complies with the applicable stability requirements at the times specified in paragraph (a) and any stability calculations made in support of the determination must be retained on board the vessel for the duration of the voyage.

(d) Stability verification is not required for tank barges whose Certificate of Inspection carries draft restrictions for purposes other than stability.

19. Section 97.15–17 is added to read as follows:

§ 97.15–17 Loading doors.

(a) The master of a vessel fitted with loading doors shall assure that all loading doors are closed watertight and secured during the entire voyage except that—

(1) If a door cannot be opened or closed while the vessel is at a dock, it may be open while the vessel approaches and draws away from the dock, but only as far as necessary to enable the door to be immediately operated;

(2) If needed to operate the vessel, or embark and disembark passengers when the vessel is at anchor in protected waters, loading doors may be open provided that the master determines that the safety of the vessel is not impaired.

(b) For the purposes of this section, "loading doors" include all weathertight ramps, bow visors, and openings used to load personnel, equipment, cargo, and stores, in the collision bulkhead, the side shell, and the boundaries of enclosed superstructures that are continuous with the shell of the vessel.

(c) The master shall enter into the log book the time and door location of every closing of the loading doors.

(d) The master shall enter into the log book any opening of the doors in accordance with paragraph (a)(2) of this section setting forth the time of the opening of the doors and the circumstances warranting this action.

20. Section 97.35–5 is amended by redesignating paragraphs (a)(4) through (a)(10) as paragraphs (a)(6) through (a)(12), respectively, and by adding new paragraphs (a)(4) and (a)(5) to read as follows:

§ 97.35–5 Actions required to be logged.

(a) * * *

(4) Verification of vessel compliance with applicable stability requirements. After loading and prior to departure and at all other times necessary to assure the safety of the vessel. See § 97.15–7.

(5) Loading doors. Where applicable, every closing and any opening when not docked. See § 97.15–17.

* * * * *

21. Section 97.40–10 is amended by revising the section heading and paragraph (a); by redesignating paragraphs (b) and (c) as paragraphs (c) and (d), respectively; and by adding new paragraphs (b), (e), (f), and (g) to read as follows:

§ 97.40–10 Draft marks and draft indicating systems.

(a) All vessels must have draft marks plainly and legibly visible upon the stem and upon the sternpost or rudderpost or at any place at the stern of the vessel as may be necessary for easy observation. The bottom of each mark must indicate the draft.

(b) The draft must be taken from the bottom of the keel to the surface of the water at the location of the marks.

* * * * *

(e) Draft marks must be separated so that the projections of the marks onto a vertical plane are of uniform height equal to the vertical spacing between consecutive marks.

(f) Draft marks must be painted in contrasting color to the hull.

(g) In cases where draft marks are obscured due to operational constraints or by protrusions, the vessel must be fitted with a reliable draft indicating system from which the bow and stern drafts can be determined.

SUBCHAPTER I–A—MOBILE OFFSHORE DRILLING UNITS

PART 107—INSPECTION AND CERTIFICATION

22. The authority citation for part 107 continues to read as follows:

Authority: 43 U.S.C. 1333; 46 U.S.C. 3306, 5115; 49 CFR 1.45, 1.46; Section 107.05 also issued under the authority of 44 U.S.C. 3507.

23. Section 107.05 is amended by revising paragraph (b) to read as follows:

§ 107.05 OMB control numbers assigned pursuant to the Paperwork Reduction Act.

* * * * *

(b) *Display.*

46 CFR part or section where identified or described	Current OMB control No.
§ 107.305	2115–0505
§ 107.309	2115–0505
§ 109.227	2115–0589

PART 108—DESIGN AND EQUIPMENT

24. The authority citation for part 108 continues to read as follows:

Authority: 43 U.S.C. 1333; 46 U.S.C. 3102, 3306, 5115; 49 CFR 1.46.

25. Section 108.661 is amended by adding new paragraph (e) to read as follows:

§ 108.661 Unit markings: Draft marks.

* * * * *

(e) In cases where draft marks are obscured due to operational constraints or by protrusions, the vessel must be fitted with a reliable draft indicating system from which the draft can be determined.

PART 109—OPERATIONS

26. The authority citation for part 109 continues to read as follows:

Authority: 43 U.S.C. 1333; 46 U.S.C. 3306, 5115, 6101, 10104; 49 CFR 1.46.

27. Section 109.227 is added to read as follows:

§ 109.227 Verification of vessel compliance with applicable stability requirements.

(a) The master or person-in-charge shall determine that the vessel complies with all applicable stability requirements in the vessel's trim and stability book, operating manual, stability letter, Certificate of Inspection, and Load Line Certificate, as the case may be, and then enter an attestation statement of the verification in the log book, at the following times:

(1) Prior to transitioning from the transit condition to the operating condition;

(2) Prior to transitioning from the operating condition to the transit condition;

(3) Prior to significant changes in deck load or ballast;

(4) At other times as required by the vessel's trim and stability book or operating manual; and

(5) At all other times necessary to assure the safety of the vessel.

(b) When determining compliance with applicable stability requirements the vessel's draft, trim, and stability must be determined as necessary and any stability calculations made in support of the determination must be

retained on board the vessel for a one month period or until a change of location, if shorter.

28. Section 109.433 is amended by redesignating paragraphs (k) through (m) as paragraphs (l) through (n), respectively, and by adding new paragraph (k) to read as follows:

§ 109.433 Log book entries.[1]

* * * * *

(k) After loading and prior to getting underway and at all other times necessary to assure the safety of the vessel, a statement verifying vessel compliance with applicable stability requirements as required by § 109.227.

* * * * *

SUBCHAPTER R—NAUTICAL SCHOOLS

PART 167—PUBLIC NAUTICAL SCHOOL SHIPS

29. The authority citation for part 167 continues to read as follows:

Authority: 46 U.S.C. 3306, 6101, 8105; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; 49 CFR 1.46.

30. Section 167.01–20 is amended by revising paragraph (b) to read as follows:

§ 167.01–20 OMB control numbers assigned pursuant to the Paperwork Reduction Act.

* * * * *

(b) *Display.*

46 CFR part or section where identified or described	Current OMB control No
§ 167.15–35	2115–0554
§ 167.65–38	2115–0589
§ 167.65–43	2115–0589

31. Section 167.55–1 is revised to read as follows:

§ 167.55–1 Draft marks and draft indicating systems.

(a) All vessels must have draft marks plainly and legibly visible upon the stem and upon the sternpost or rudderpost or at any place at the stern of the vessel as may be necessary for easy observance. The bottom of each mark must indicate the draft.

(b) The draft must be taken from the bottom of the keel to the surface of the water at the location of the marks.

(c) In cases where the keel does not extend forward or aft to the location of the draft marks, due to a raked stem or cut away skeg, the draft must be measured from a line projected from the bottom of the keel forward or aft, as the case may be, to the location of the draft marks.

(d) In cases where a vessel may have a skeg or other appendage extending locally below the line of the keel, the draft at the end of the vessel adjacent to such appendage must be measured to a line tangent to the lowest part of such appendage and parallel to the line of the bottom of the keel.

(e) Draft marks must be separated so that the projections of the marks onto a vertical plane are of uniform height equal to the vertical spacing between consecutive marks.

(f) Draft marks must be painted in contrasting color to the hull.

(g) In cases where draft marks are obscured due to operational constraints or by protrusions, the vessel must be fitted with a reliable draft indicating system from which the bow and stern drafts can be determined.

32. Section 167.65–38 is added to read as follows:

§ 167.65–38 Loading doors.

(a) The master of a vessel fitted with loading doors shall assure that all loading doors are closed watertight and secured during the entire voyage except that—

(1) If a door cannot be opened or closed while the vessel is at a dock, it may be open while the vessel approaches and draws away from the dock, but only as far as necessary to enable the door to be immediately operated.

(2) If needed to operate the vessel, or embark and disembark passengers when the vessel is at anchor in protected waters, loading doors may be open provided that the master determines that the safety of the vessel is not impaired.

(b) For the purposes of this section, "loading doors" include all weathertight ramps, bow visors, and openings used to load personnel, equipment, and stores, in the collision bulkhead, the side shell, and the boundaries of enclosed superstructures that are continuous with the shell of the vessel.

(c) The master shall enter into the log book the time and door location of every closing of the loading doors.

(d) The master shall enter into the log book any opening of the doors in accordance with paragraph (a)(2) of this section setting forth the time of the opening of the doors and the circumstances warranting this action.

33. Section 167.65–42 is added to read as follows:

§ 167.65–42 Verification of vessel compliance with applicable stability requirements.

(a) After loading and prior to departure and at all other times necessary to assure the safety of the vessel, the master shall determine that the vessel complies with all applicable stability requirements in the vessel's trim and stability book, stability letter, Certificate of Inspection, and Load Line Certificate, as the case may be, and then enter an attestation statement of the verification in the log book. The vessel may not depart until it is in compliance with these requirements.

(b) When determining compliance with applicable stability requirements the vessel's draft, trim, and stability must be determined as necessary and any stability calculations made in support of the determination must be retained on board the vessel for the duration of the voyage.

PART 169—SAILING SCHOOL VESSELS

34. The authority citation for part 169 continues to read as follows:

Authority: 33 U.S.C. 1321(J); 46 U.S.C. 3306, 5115, 6101; E.O. 11735, 38 FR 21243, 3 CFR, 1971–1975 Comp., p. 793; 49 CFR 1.45, 1.46; Section 169.117 also issued under the authority of 44 U.S.C. 3507.

35. Section 169.117 is amended by revising paragraph (b) to read as follows:

§ 169.117 OMB control numbers.

* * * * *

(b) *Display.*

46 CFR part—	OMB control No.
§ 169.111	2115–0517
§ 169.201	2115–0517
§ 169.205	2115–0007, 2115–0517 2115–0546
§ 169.211	2115–0517
§ 169.213	2115–0517
§ 169.215	2115–0517
§ 169.217	2115–0517
§ 169.218	2115–0546
§ 169.219	2115–0546
§ 169.233	2115–0554
§ 169.235	2115–0517
§ 169.305	2115–0095
§ 169.509	2115–0132
§ 169.807	2115–0003
§ 169.813	2115–0546
§ 169.840	2115–0589
§ 169.841	2115–0546, 2115–0071
§ 169.857	2115–0546.

36. Section 169.755 is added to read as follows:

§ 169.755 Draft marks and draft indicating systems.

(a) All vessels must have draft marks plainly and legibly visible upon the stem

[1] **Note:** 46 U.S.C. 11301 requires that certain entries be made in an official logbook, in addition to the entries required by this section; and 46 U.S.C. 11302 prescribes the manner of making those entries.

and upon the sternpost or rudderpost or at any place at the stern of the vessel as may be necessary for easy observance. The bottom of each mark must indicate the draft.

(b) The draft must be taken from the bottom of the keel to the surface of the water at the location of the marks.

(c) In cases where the keel does not extend forward or aft to the location of the draft marks, due to a raked stem or cut away skeg, the draft must be measured from a line projected from the bottom of the keel forward or aft, as the case may be, to the location of the draft marks.

(d) In cases where a vessel may have a skeg or other appendage extending locally below the line of the keel, the draft at the end of the vessel adjacent to such appendage must be measured to a line tangent to the lowest part of such appendage and parallel to the line of the bottom of the keel.

(e) Draft marks must be separated so that the projections of the marks onto a vertical plane are of uniform height equal to the vertical spacing between consecutive marks.

(f) Draft marks must be painted in contrasting color to the hull.

(g) In cases where draft marks are obscured due to operational constraints or by protrusions, the vessel must be fitted with a reliable draft indicating system from which the bow and stern drafts can be determined.

37. Section 169.840 is added to read as follows:

§ 169.840 Verification of vessel compliance with applicable stability requirements.

(a) After loading and prior to departure and at all other times necessary to assure the safety of the vessel, the master shall determine that the vessel complies with all applicable stability requirements in the vessel's trim and stability book, stability letter, Certificate of Inspection, and Load Line Certificate, as the case may be, and then enter an attestation statement of the verification in the log book. The vessel may not depart until it is in compliance with these requirements.

(b) When determining compliance with applicable stability requirements the vessel's draft, trim, and stability must be determined as necessary and any stability calculations made in support of the determination must be retained on board the vessel for the duration of the voyage.

SUBCHAPTER S—SUBDIVISION AND STABILITY

PART 170—STABILITY REQUIREMENTS FOR ALL INSPECTED VESSELS

38. The authority citation for part 170 continues to read as follows:

Authority: 43 U.S.C. 1333; 46 U.S.C. 3306, 3703, 5115; E.O. 12234, 45 FR 58801; 3 CFR, 1980 Comp., p. 277; 49 CFR 1.46.

39. Section 170.001 is amended by revising the introductory text of paragraph (a) to read as follows:

§ 170.001 Applicability.

(a) This subchapter, except where specifically stated otherwise, applies to each vessel contracted for on or after January 3, 1984, that is—

* * * * *

40. Section 170.020 is added to read as follows and all other OMB control number citations in part 170 are removed:

§ 170.020 OMB control numbers assigned pursuant to the Paperwork Reduction Act.

(a) *Purpose.* This section collects and displays the control numbers assigned to information collection and recordkeeping requirements in this subchapter by the Office of Management and Budget (OMB) pursuant to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*). The Coast Guard intends that this section comply with the requirements of 44 U.S.C. 3507(f), which requires that agencies display a current control number assigned by the OMB for each approved agency information collection requirement.

(b) *Display.*

46 CFR part—	Current OMB control No.
§ 170.075	2115-0095, 2115-0114, 2115-0130, 2115-0131
§ 170.080	2115-0095, 2115-0114, 2115-0130, 2115-0131
§ 170.085	2115-0095, 2115-0114, 2115-0130, 2115-0131
§ 170.090	2115-0095, 2115-0114, 2115-0130, 2115-0131
§ 170.095	2115-0095, 2115-0114, 2115-0130, 2115-0131
§ 170.100	2115-0095, 2115-0114, 2115-0130, 2115-0131
§ 170.110	2115-0095, 2115-0114, 2115-0130, 2115-0131
§ 170.120	2115-0095, 2115-0114, 2115-0130, 2115-0131
§ 170.125	2115-0095, 2115-0114, 2115-0130, 2115-0131
§ 170.135	2115-0095, 2115-0114, 2115-0130, 2115-0131
§ 170.180	2115-0095, 2115-0114, 2115-0130, 2115-0131
§ 170.210	2115-0589

41. Section 170.055 is amended by redesignating paragraphs (f) through (u) as paragraphs (g) through (v), respectively, and by adding new paragraph (f) to read as follows:

§ 170.055 Definitions concerning a vessel.

* * * * *

(f) *Documented alterations* means changes to the vessel which are reflected in the approved stability information carried on board the vessel.

* * * * *

42. Section 170.110 is amended by revising paragraph (c) and the introductory text of paragraph (d), and adding a new paragraph (f) to read as follows:

§ 170.110 Stability booklet.

* * * * *

(c) Each stability book must contain sufficient information to enable the master to operate the vessel in compliance with applicable regulations in this subchapter. Information on loading restrictions used to determine compliance with applicable intact and damage stability criteria must encompass the entire range of operating drafts and the entire range of the operating trims. Information must include an effective procedure for supervision and reporting of the opening and closing of all loading doors, where applicable.

(d) The format of the stability booklet and the information included will vary dependent on the vessel type and operation. Units of measure used in the stability booklet must agree with the units of measure of the draft markings. In developing the stability booklet, consideration must be given to including the following information:

* * * * *

(f) On board electronic stability computers may be used as an adjunct to the required booklet, but the required booklet must contain all necessary information to allow for the evaluation of the stability of any intact condition that can be evaluated by use of the computer.

43. Section 170.210 is added to read as follows:

§ 170.210 Lightweight verification.

(a) Except as provided in paragraph (e) of this section, verification of a vessel's lightweight displacement and longitudinal center of gravity is required for all vessels, including vessels built prior to January 3, 1984, as follows:

(1) The owner must conduct a deadweight survey at intervals not exceeding 5 years to determine the lightweight displacement and longitudinal center of gravity, unless

otherwise authorized by the Commandant.

(2) For each vessel, the date by which its initial periodic lightweight verification must be carried out will be determined by the OCMI by consideration of a number of factors. These factors include the history and condition of the vessel, the date of the vessel's last lightweight verification, the date of the vessel's next credit drydocking, and the expiration date of the vessel's Load Line Certificate.

(3) An authorized Coast Guard representative must be present at each deadweight survey conducted under this section.

(4) If the deviation from the lightweight displacement and longitudinal center of gravity does not exceed the values in paragraph (b) of this section, the owner must certify to the Commanding Officer, Marine Safety Center that the lightweight characteristics have not changed. The Commanding Officer, Marine Safety Center may accept the certification or require the owner to provide supporting calculations for review and approval.

(b) The owner must conduct a stability test in accordance with subpart F of this part, if—

(1) The deviation of the lightweight displacement calculated from the last stability test exceeds 3 percent of the lightweight displacement;

(2) The deviation of the longitudinal center of gravity calculated from the last stability test exceeds 1 percent of LBP (length between perpendiculars);

(3) The deviation from the previously approved lightweight displacement, updated by documented alterations, exceeds 2 percent of the lightweight displacement; or

(4) The deviation from the previously approved longitudinal center of gravity, updated by documented alterations, exceeds 1 percent of LBP.

(c) If a stability test is required by paragraph (b) of this section, the stability booklet must be updated in accordance with § 170.110 to reflect the current stability condition of the vessel.

(d) The deadweight survey required in paragraph (a)(1) of this section must be repeated as part of the stability test required in paragraph (b) of this section, unless the entire stability test including the deadweight survey is completed at the same time.

(e) Periodic lightweight verification is not required for the following:

(1) Vessels to which the simplified stability test of § 171.030 of this chapter was applied;

(2) Vessels with an estimated lightweight center of gravity determined in accordance with § 170.200;

(3) Vessels to which § 170.175(d) applies;

(4) Self-elevating mobile offshore drilling units;

(5) Vessels regulated under subchapter D or subchapter I of this Chapter whose lightweight displacement comprises less than 35 percent of their total fully loaded displacement; or

(6) Vessels exempted by the Commandant.

PART 171—SPECIAL RULES PERTAINING TO VESSELS CARRYING PASSENGERS

44. The authority citation for part 171 continues to read as follows:

Authority: 43 U.S.C. 3306, 5115; E.O. 12234, 45 FR 58801; 3 CFR, 1980 Comp., p. 277; 49 CFR 1.46.

45. Section 171.080 is amended by revising the introductory text of paragraph (d), by redesignating paragraph (e) as paragraph (f), and by adding new paragraph (e) to read as follows:

§ 171.080 Damage stability standards for vessels with Type I or Type II subdivision.

* * * * *

(d) *Damage survival for vessels constructed prior to December 10, 1992.* A vessel is presumed to survive assumed damage if it meets the following conditions in the final stage of flooding:

* * * * *

(e) *Damage survival for vessels constructed on or after December 10, 1992.* A vessel is presumed to survive assumed damage if it is shown by calculations to meet the conditions set forth in paragraphs (e)(1) through (e)(6) of this section in the final stage of flooding and the conditions set forth in paragraphs (e)(7) and (e)(8) of this section in each earlier stage of flooding as specified:

(1) Each vessel must have positive righting arms for at least 15 degrees beyond the final angle of equilibrium.

(2) Each vessel must not have any opening through which progressive flooding can occur within 15 degrees of the angle of equilibrium unless the vessel can meet all survival criteria prescribed in this section after progressive flooding. Openings fitted with effective weathertight closures must be considered as progressive flooding locations if the openings lead to spaces accessible to passengers or the crew.

(3) Each vessel must have an area under each righting arm curve of at least 2.82 foot-degrees (0.015 meter-radians), measured from the angle of equilibrium to the smaller of the following angles:

(i) The angle at which progressive flooding occurs; or

(ii) 22 degrees from the upright in the case of one compartment flooding or 27 degrees from the upright in the case of two compartment flooding.

(4) Each vessel must have a maximum righting arm within 15 degrees of the angle of equilibrium of at least 0.13 feet (0.04 meters) greater than each of the following heeling arms, but in no case less than 0.33 feet (0.10 meters):

(i) Passenger heeling moment divided by vessel displacement where the heeling moment is calculated assuming:

(A) Each passenger weighs 165 pounds (75 kilograms);

(B) Each passenger occupies 2.69 square feet (0.25 square meters) of deck area; and

(C) All passengers are distributed on available deck areas towards one side of the vessel on the decks where muster stations are located and in such a way that they produce the most adverse heeling moment.

(ii) Asymmetric passenger escape routes heeling moment divided by vessel displacement if the vessel has asymmetric passenger escape routes where the heeling moment is calculated assuming:

(A) Each passenger weighs 165 pounds (75 kilograms);

(B) Each passenger occupies 2.69 square feet (0.25 square meters) of deck area; and

(C) All passengers are distributed on available deck areas in a manner that accounts for the use of any asymmetric passenger escape routes to get to the decks where muster or embarkation stations are located and in such a way that they produce the most adverse heeling moment.

(iii) Launching of survival craft heeling moment divided by vessel displacement where the heeling moment is calculated assuming:

(A) All survival craft, including davit-launched liferafts and rescue boats, fitted on the side to which the vessel heels after sustained damage are swung out if necessary, fully loaded and ready for lowering;

(B) Persons not in the survival craft that are swung out and ready for lowering are centered about the center line so that they do not provide additional heeling or righting moments; and

(C) Survival craft on the side of the vessel opposite to which the vessel heels remain stowed.

(iv) Wind pressure heeling moment divided by vessel displacement where the heeling moment is calculated assuming:

(A) A wind pressure of 2.51 pounds per square foot (120 Newtons per square meter);

(B) The wind acts on an area equal to the projected lateral area of the vessel above the waterline corresponding to the intact condition; and

(C) The wind lever arm is the vertical distance from a point at one-half the mean draft, or the center of area below the waterline, to the center of the lateral area.

(5) Each vessel must have an angle of equilibrium that does not exceed the following:

(i) 7 degrees for one compartment flooding; or

(ii) 12 degrees for two compartment flooding.

(6) The margin line of the vessel must not be submerged in the equilibrium condition.

(7) Each vessel must have a maximum angle of equilibrium that does not exceed 15 degrees during each earlier stage of flooding.

(8) Each vessel must have a maximum righting arm of at least 0.16 feet (0.05 meters) and positive righting arms for a range of at least 7 degrees during each earlier stage of flooding. Only one breach in the hull and only one free surface need be assumed when meeting the requirements of this paragraph.

* * * * *

SUBCHAPTER T—SMALL PASSENGER VESSELS (UNDER 100 GROSS TONS)

PART 175—GENERAL PROVISIONS

46. The authority citation for part 175 continues to read as follows:

Authority: 46 U.S.C. 3306, 3703, 5115, 8105; 49 U.S.C. App. 1804; 49 CFR 1.45, 1.46; Section 175.01–3 also issued under the authority of 44 U.S.C. 3507.

47. Section 175.01–3 is amended by revising paragraph (b) to read as follows:

§ 175.01–3 OMB control numbers assigned pursuant to the Paperwork Reduction Act.

* * * * *

(b) *Display.*

46 CFR part or section where identified or described	Current OMB control No.
§ 177.05	2115–0095
§ 179.01–30	2115–0136
§ 179.10–3	2115–0095
§ 179.20–1	2115–0095
§ 185.20–5	2115–0589
§ 185.20–17	2115–0589
§ 186.10	2115–0514

PART 185—OPERATIONS

48. The authority citation for part 185 continues to read as follows:

Authority: 46 U.S.C. 3306, 6101, 8105; 49 CFR 1.46.

49. Section 185.20–5 is added to read as follows:

§ 185.20–5 Verification of vessel compliance with applicable stability requirements.

(a) After loading and prior to departure and at all other times necessary to assure the safety of the vessel, the master shall determine that the vessel complies with all applicable stability requirements in the vessel's trim and stability book, stability letter, Certificate of Inspection, and Load Line Certificate, as the case may be. The vessel may not depart until it is in compliance with these requirements.

(b) When determining compliance with applicable stability requirements the vessel's draft, trim, and stability must be determined as necessary and any stability calculations made in support of the determination must be retained on board the vessel for the duration of the voyage.

(c) If a log book is required, then the master must enter an attestation statement verifying that the vessel complies with the applicable stability requirements at the times specified in paragraph (a) of this section.

50. Section 185.20–17 is added to read as follows:

§ 185.20–17 Loading doors.

(a) The master of a vessel fitted with loading doors shall assure that all loading doors are closed watertight and secured during the entire voyage except that—

(1) If a door cannot be opened or closed while the vessel is at a dock, it may be open while the vessel approaches and draws away from the dock, but only as far as necessary to enable the door to be immediately operated.

(2) If needed to operate the vessel, or embark and disembark passengers when the vessel is at anchor in protected waters, loading doors may be open provided that the master determines that the safety of the vessel is not impaired.

(b) For the purposes of this section, "loading doors" include all weathertight ramps, bow visors, and openings used to load personnel, equipment, and stores, in the collision bulkhead, the side shell, and the boundaries of enclosed superstructures that are continuous with the shell of the vessel.

(c) If a log book is required, then the master shall make the following entries:

(1) The time and door location of every closing of the loading doors; and

(2) Any opening of the doors in accordance with paragraph (a)(2) of this section setting forth the time of the opening of the doors and the circumstances warranting this action.

51. Section 185.30–3 is added to read as follows:

§ 185.30–3 Hull markings.

(a) This section applies to each vessel that fits into any one of the following categories:

(1) A vessel of more than 65 feet (19.8 meters) in length.

(2) A sailing vessel of more than 65 feet (19.8 meters) in length.

(3) A vessel authorized to carry more than 150 passengers.

(4) A vessel authorized to carry more than 12 passengers on an international voyage.

(5) A vessel with more than 1 deck above the bulkhead deck exclusive of a pilot house.

(b) All vessels must:

(1) Have permanent draft marks at each end of the vessel; or

(2) Have permanent loading marks placed on each side of the vessel forward, amidships, and aft to indicate the maximum allowable draft and trim.

(c) A loading mark required by paragraph (b)(2) of this section must be a horizontal line of at least 8 inches in length and 1 inch in height, with its upper edge passing through the point of maximum draft. The loading mark must be painted in contrasting color to the sideshell paint.

(d) In cases where draft marks are obscured due to operational constraints or by protrusions, the vessel must be fitted with a reliable draft indicating system from which the bow and stern drafts can be determined.

(e) On a vessel on which the number of passengers permitted on the upper decks is limited by stability criteria, as indicated by the vessel's stability letter, the maximum number of passengers allowed on the upper decks must be indicated by a durable marking of numbers and letters at least one inch in height at the entranceway to each such deck.

SUBCHAPTER U—OCEANOGRAPHIC RESEARCH VESSELS

PART 188—GENERAL PROVISIONS

52. The authority citation for part 188 continues to read as follows:

Authority: 46 U.S.C. 2113, 3306, 5115; 49 U.S.C. App. 1804; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; 49 CFR 1.46.

53. Section 188.01–15 is amended by revising paragraph (b) to read as follows:

§ 188.01–15 OMB control numbers assigned pursuant to the Paperwork Reduction Act.

* * * * *

(b) *Display.*

46 CFR part or section where identified or described	Current OMB control No.
§ 189.40–3	2115—0554
§ 189.40–5	2115—0554
§ 196.15–7	2115—0589
§ 196.15–18	2115—0589

PART 196—OPERATIONS

54. The authority citation for part 196 continues to read as follows:

Authority: 33 U.S.C. 1321(j); 46 U.S.C. 2113, 3306, 5115, 6101; E.O. 11735, 38 FR 21243, 3 CFR, 1971–1975 Comp., p. 793; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; 49 CFR 1.46.

55. Section 196.15–7 is added to read as follows:

§ 196.15–7 Verification of vessel compliance with applicable stability requirements.

(a) After loading and prior to departure and at all other times necessary to assure the safety of the vessel, the master shall determine that the vessel complies with all applicable stability requirements in the vessel's trim and stability book, stability letter, Certificate of Inspection, and Load Line Certificate, as the case may be, and then enter an attestation statement of the verification in the log book. The vessel may not depart until it is in compliance with these requirements.

(b) When determining compliance with applicable stability requirements the vessel's draft, trim, and stability must be determined as necessary and any stability calculations made in support of the determination must be retained on board the vessel for the duration of the voyage.

56. Section 196.15–18 is added to read as follows:

§ 196.15–18 Loading doors.

(a) The master of a vessel fitted with loading doors shall assure that all loading doors are closed watertight and secured during the entire voyage except that—

(1) If a door cannot be opened or closed while the vessel is at a dock, it may be open while the vessel approaches and draws away from the dock, but only as far as necessary to enable the door to be immediately operated.

(2) If needed to operate the vessel, or embark and disembark passengers when the vessel is at anchor in protected waters, loading doors may be open provided that the master determines that the safety of the vessel is not impaired.

(b) For the purposes of this section, "loading doors" include all weathertight ramps, bow visors, and openings used to load personnel, equipment, cargo, and stores, in the collision bulkhead, the side shell, and the boundaries of enclosed superstructures that are continuous with the shell of the vessel.

(c) The master shall enter into the log book the time and door location of every closing of the loading doors.

(d) The master shall enter into the log book any opening of the doors in accordance with paragraph (a)(2) of this section setting forth the time of the opening of the doors and the circumstances warranting this action.

57. Section 196.35–5 is amended by redesignating paragraphs (a)(4) through (a)(11) as paragraphs (a)(6) through (a)(13), respectively, and by adding new paragraphs (a)(4) and (a)(5) to read as follows:

§ 196.35–5 Actions required to be logged.

(a) * * *

(4) Verification of vessel compliance with applicable stability requirements. After loading and prior to departure and at all other times necessary to assure the safety of the vessel. See § 196.15–7.

(5) Loading doors. Where applicable, every closing and any opening when not docked. See § 196.15–18.

* * * * *

58. Section 196.40–10 is amended by revising the section heading and paragraph (a); by redesignating paragraphs (b) and (c) as paragraphs (c) and (d), respectively; and by adding new paragraphs (b), (e), (f), and (g) to read as follows:

§ 196.40–10 Draft marks and draft indicating systems.

(a) All vessels must have draft marks plainly and legibly visible upon the stem and upon the sternpost or rudderpost or at any place at the stern of the vessel as may be necessary for easy observance. The bottom of each mark must indicate the draft.

(b) The draft must be taken from the bottom of the keel to the surface of the water at the location of the marks.

* * * * *

(e) Draft marks must be separated so that the projections of the marks onto a vertical plane are of uniform height equal to the vertical spacing between consecutive marks.

(f) Draft marks must be painted in contrasting color to the hull.

(g) In cases where draft marks are obscured due to operational constraints or by protrusions, the vessel must be fitted with a reliable draft indicating system from which the bow and stern drafts can be determined.

Dated: May 8, 1992.

A.E. Henn,

Chief, Office of Marine Safety, Security and Environmental Protection.

[FR Doc. 92–21651 Filed 9–10–92; 8:45 am]

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Part III

Environmental Protection Agency

40 CFR Part 136

Guidelines Establishing Test Procedures for the Analysis of Pollutants; Microwave Digestion; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 136

[FRL 4125-6]

Guidelines Establishing Test Procedures for the Analysis of Pollutants; Microwave Digestion

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule; technical amendments.

SUMMARY: This amendment approves the use of an additional procedure, microwave heating, for digestion of samples prior to quantitative determination for 13 inorganic chemicals. The precision and recovery of analyses using this technique are not substantially different from those obtained using digestion techniques already approved. Use of approved analytical techniques is required whenever the waste constituent specified is required to be measured for: an NPDES permit application; discharge monitoring reports; state certification; and other requests from the permitting authority for quantitative or qualitative effluent data. Use of approved test procedures is also required for the expression of pollutant amounts, characteristics, or properties in effluent limitations guidelines and standards of performance and pretreatment standards, unless otherwise specifically noted or defined.

DATES: This rule shall be effective on October 13, 1992. In accordance with 40 CFR 23.2 (45 FR 26048), these amendments to the regulation shall be considered issued for purposes of judicial review at 1 p.m. eastern time, September 28, 1992.

Under section 509(b)(1) of the Clean Water Act, judicial review of these amendments can be obtained only by filing a petition for review in the United States Court of Appeals within 120 days after they are considered issued for purposes of judicial review. Under section 509(b)(2) of the Clean Water Act, these amendments may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

The incorporation by reference of certain publications listed in the regulation is approved by the Office of the Federal Register as of October 13, 1992.

FOR FURTHER INFORMATION CONTACT: Mr. James J. Lichtenberg, Environmental Monitoring Systems Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268. Telephone number: (513) 569-7306.

SUPPLEMENTARY INFORMATION:

I. Authority

This regulation is promulgated under authority of sections 301, 304(h) and 501(a) of the Clean Water Act, 33 U.S.C. 1251 *et seq.* (the Federal Water Pollution Control Act Amendments of 1972 as amended) (the "Act"). Section 304(h) of the Act requires the Administrator of the EPA to "promulgate guidelines establishing test procedures for the analysis of pollutants that shall include the factors which must be provided in any certification pursuant to section 401 of this Act or permit application pursuant to section 402 of this Act". Section 501(a) of the Act authorizes the Administrator to "prescribe such regulations as are necessary to carry out his functions under this Act".

II. Regulatory Background

The CWA establishes two principal bases for effluent limitations. First, existing discharges are required to meet technology-based effluent limitations. New source discharges must meet new source performance standards based on the best demonstrated technology-based controls. Second, where necessary, additional requirements are imposed to assure attainment and maintenance of water quality standards established by the States under section 303 of the CWA. In establishing or reviewing NPDES permit limits, EPA must ensure that permitted discharges will not cause or contribute to a violation of water quality standards, including designated water uses.

For use in permit applications, discharge monitoring reports, and state certification and to ensure compliance with effluent limitations, standards of performance, and pretreatment standards, EPA has promulgated regulations providing nationally-approved testing procedures at 40 CFR part 136. Test procedures have previously been approved for 262 different parameters. Those procedures apply to the analysis of inorganic (metal, non-metal, mineral) and organic chemical, radiological, bacteriological, nutrient, demand, residue, and physical parameters.

Additionally, some particular industries may discharge pollutants for which test procedures have not been proposed and approved under 40 CFR part 136. Under 40 CFR 122.41 permit writers may impose monitoring requirements and establish test methods for pollutants for which no approved part 136 method exists 40 CFR 122.41(j)(4). EPA may also approve additional test procedures when establishing industry-wide technology-based effluent limitations guidelines and standards as described at 40 CFR 401.13.

The procedures for approval of alternate test procedures (ATPs) are described at 40 CFR 136.4 and 136.5. Under these procedures the Administrator may approve alternate test procedures for nationwide use which are developed and proposed by any person. 40 CFR 136.4(a). Persons wishing to use such alternate procedures, must apply to the State or Regional EPA permitting office (for limited approval under § 136.4(b) and to the Director of the Environmental Monitoring Systems Laboratory in Cincinnati (for nationwide approval under § 136.4(d)). As specified below, today's rule approves an optional nationwide alternate procedure for digestion of certain metals in the preparation of wastewater test samples.

III. The Microwave Digestion Procedure

The CEM Corporation, in accordance with the regulations published at 40 CFR 136.5, applied for nationwide approval of their "Closed Vessel Microwave Digestion of Wastewater Samples for Metals Determination". Digestion is a sample preparation step that is required prior to the measurement of total metals in wastewaters. Specifically, as described below, microwave digestion may be applicable for the preparation of wastewater samples when testing using one or more of the following determinative techniques: Flame atomic absorption spectroscopy (AAS), inductively-coupled plasma (ICP) atomic emission spectroscopy (AES), or direct current plasma (DCP) AES. This rule approves the microwave digestion procedure for the following metals: Aluminum, antimony, arsenic, barium, cadmium, chormium, copper, iron, lead, manganese, nickel, selenium, and zinc.

A. Scope of the Procedure

This procedure utilizes closed-vessel microwave heating of samples as an alternative to the conventional open-beaker hot plate digestion. This procedure is specifically limited to the preparation of domestic and industrial wastewater samples for elemental determinations, as follows:

i. Thirteen elements: Aluminum, antimony, arsenic, barium, cadmium, chromium, cooper, iron, lead, manganese, nickel, selenium, and zinc by ICP/AES.

ii. Eleven elements: Aluminum, antimony, barium, cadmium, chromium, copper, iron, lead,

manganese, nickel, and zinc for determination by direct aspiration AAS.

iii. Ten elements: Aluminum, barium, cadmium, chromium, cooper, iron, lead, manganese, nickel, and zinc by DCP/AES.

This procedure is also specifically limited to the preparation of domestic and industrial wastewater samples for the determination of the 13 specified elements when present at concentrations less than or equal to those listed below:

Element	Maximum applicable concentration * (mg/L)
Aluminum	50.0
Antimony	50.0
Arsenic	50.0
Barium	0.5
Cadmium	0.5
Chromium	10.0
Copper	6.0
Iron	50.0
Lead	0.4
Manganese	5.0
Nickel	40.0
Selenium	80.0
Zinc	10.0

* Samples may be diluted, before digestion, to bring the concentration below the maximum concentration.

B. Summary of the Method

A 50-mL aliquot of a wastewater sample is acid-digested in closed Teflon ™PFA (perfluoro alkoxy) vessel using microwave heating. The closed vessel configuration allows the samples to be digested at a temperature and pressure that are significantly higher than those used for open-beaker digestions. The filtrate or supernatant of each digestate can be analyzed by direct aspiration AAS, by ICP/AES, or by DCP/AES, as specified above.

C. Technical Justification for Approved Procedure

Approval of this procedure is based on a data package submitted by the applicant, CEM Corporation. EPA is approving the method based on the method description, comparative analyses using the proposed and approved procedures, and EPA's comparability review.

The CEM Corporation provided test data comparing this procedure (microwave digestion) to the approved procedure (open beaker hot plate digestion) for preparation of test samples analyzed with ICP. EPA statisticians and chemists conducted an independent review of the data. The recovery and precision of all the submitted data (for both methods) was also compared to the recovery and precision acceptance criteria derived from an interlaboratory study of the ICP method for these elements.

The Agency judged the open beaker hot plate digestion procedure, utilized as the approved preparation method to be applicable for comparison against the microwave procedure for the preparation of samples to be analyzed for the 13 specified metals as follows: 13 by ICP/AES, 11 by direct aspiration AAS, and 10 by DCP/AES.

EPA's Environmental Monitoring Systems Laboratory in Cincinnati, Ohio (EMSL-Cincinnati) thoroughly reviewed and evaluated the supporting data submitted by the CEM Corporation. The comparability reviews indicated that the analyses afforded comparable recovery and precision in the evaluated concentration ranges for aluminum, antimony, arsenic, chromium, copper, iron, manganese, nickel, selenium, and zinc. The reviews, however, revealed that this microwave procedure only afforded comparable recovery and precision observations in the lower levels of the evaluated concentration ranges for barium (Ba), cadmium (Ca), and lead (Pb). Approval of this procedure for these three elements is, therefore, limited to the following concentrations: $\leq$0.5 mg Ba/L, $\leq$0.5 mg Cd/L, and $\leq$0.4 mg Pb/L. Additionally, one of the metals, silver, for which CEM sought method approval, was deemed inapplicable by EPA based on the applicants comparability data. EPA proposed approval of the microwave digestion procedure and sought public comment on the suitability of this microwave digestion technique as an alternate procedure for use in the determination of the thirteen metals in 56 FR 55410 (October 25, 1991). The administrative record is on file at EMSL-Cincinnati, 26 West Martin Luther King Dr., Cincinnati, Ohio 45268. The record is available for public inspection. The approved procedure description is also available from CEM Corporation, P.O. Box 200, Matthews, North Carolina 28106.

Based on EMSL-Cincinnati's review, and pursuant to 40 CFR 136.5, EPA approved the CEM microwave digestion procedure as an acceptable procedure for nationwide use. Specifically, the procedure exhibits sufficient precision and recovery to establish (1) its acceptability under part 136 and (2) its comparability to other approved procedures for analysis of the 13 listed metals. As an approved alternate test procedure, this procedure is acceptable for use by any person required to test for the 13 listed metals when using ICP/MS, for the 11 listed metals when using direct aspiration AAS, and for 10 listed metals when using DCP/AES. The procedure, however, is limited to the applicable metals, determinative techniques and concentrations described above.

IV. Public Comments and Response to Most Significant Comments

The Agency requested comments on the proposal to approve the CEM microwave digestion procedure for applicability to 13 metals in wastewater samples. Comments were received from 10 individuals/organizations. All commenters favored the approval of microwave digestion as an acceptable alternate procedure (ATP). The most significant comments were as follows:

Comment: Approval of microwave digestion should not be specific to the CEM procedure.

Response: Under the conditions set forth in 40 CFR 136.4, any person may apply for approval of an alternate test procedure for nationwide use. Usually, as in the case of an instrument manufacturer such as CEM, the application is by its very nature proprietary. While this rule is specific to the CEM procedure, other microwave system manufacturers may apply for approval of their systems pursuant to 40 CFR 136.4. EPA will consider proposing a more generic microwave digestion procedure when validation data becomes available to support a broader scope procedure. EPA's Environmental Monitoring Management Council has a ongoing project to consolidate EPA's regulatory methods for metals. Included in the scope of this project is a microwave digestion procedure.

Comment: Three commenters expressed concern about the variability of microwave heating systems over their applicable ranges. Commenters were concerned that samples would not meet the required temperature for a long enough period of time. They recommended that multipoint power calibration be required consistent with that prescribed in Methods 3015 and 3051. Office of Solid Waste Method Manual, SW–846.

Response: EPA disagrees with the commenter's recommendation because this CEM microwave digestion procedure involves a slow heating rate and a single power setting. Further, this procedure is approved only for wastewaters and the temperature achieved for a minimum of 10 minutes is significantly higher than that achieved using the approved hot plate procedure. The acid concentration used with this CEM procedure is greater than that used with the approved hot plate procedure.

These conditions provide a more vigorous digestion than the approved hot plate procedure. The CEM procedure employed to generate the comparability data used a single point power calibration of the microwave system at 75% or 100% of power rating of the system depending on the number of samples to be digested. This procedure, for use with effluent samples involves a slow (30 or 50 minutes) heating rate at a fixed power setting. The comparability study demonstrated the adequacy of these conditions for digestion of 6 to 12 effluent samples containing the 13 applicable metals. The comparability study report, "Equivalency Study for Closed Vessel Microwave Digestion of National Pollutant Discharge Elimination System Waste Streams as an Alternate Test Procedure", was available in the rule making docket during the comment period. For this system, CEM has demonstrated that adequate digestion occurs because of a fixed rate of power increase and a long digestion period. The procedure demonstrates performance comparable to the approved procedure and any remaining variability does not affect test results. Therefore, EPA is not requiring a multipoint calibration when apply this CEM procedure. Multipoint power calibration may be important in the SW-846 methods to assure that a specific temperature is achieved in a short time and that the temperature is held for a predetermined time, because these methods employ a faster heating rate and variable power settings.

Comment: Evaluation of an alternate test procedure should not rely, exclusively, on a commercial vendor's data.

Response: EPA agrees. The internal ATP comparability review protocol requires that comparability data be generated by an independent, disinterested third party. The data submitted to EPA by CEM was, in fact, generated by Enseco Incorporated, Arvada, Colorado. Tables 1 and 2 of the procedure, listing recovery and precision data, were prepared by EPA during the course of its evaluation of the study results.

Comment: Several commenters objected to limiting the microwave digestion procedure to the 13 specified metals and limiting the applicable concentration ranges, especially those for barium, cadmium, and lead. This limitation will require the use of a second digestion procedure to cover all of the regulated metals and/or redigestion of samples after dilution, thus minimizing the advantage of microwave digestion.

Response: EPA agrees that, for greatest advantage, broad application of microwave digestion is preferred. However, ATP applicants have the option to limit their application. In this case, CEM chose to apply for approval for 14 metals. After evaluation of the data, EPA determined that comparability to the existing approved procedure was demonstrated only for the 13 specified metals and for the concentration ranges identified in the preamble and in the method. The method is not approved for the digestion of silver. EPA will consider extending the ranges, if acceptable comparability data become available. Microwave digestion is being approved as an option to the analyst. The analyst may choose to use it or not depending on the needs of the permittee.

Comment: One commenter recommended that EPA reconsider approving microwave digestion for samples to be analyzed for silver.

Response: The concentration levels of silver employed in the comparability study for the approved and the proposed procedures exceeded the EPA recommended levels. The observed recoveries in the applicable data were unacceptable for both the proposed and the approved procedures when compared to a previous interlaboratory study of the approved procedure. Therefore, EPA is not approving the use of microwave digestion for silver.

Comment: The proposal does not mention the use of microwave digestion for samples to be analyzed by either the graphite furnace atomic absorption (GFAA) or the inductively coupled plasma-mass spectrometry (ICP–MS).

Response: Microwave digestion is not approved for preparation of samples to be analyzed by GFAA or ICP–MS because no comparability data have been generated with either of these instruments, using the acid concentration specified in the CEM procedure. High acid concentration is known to cause interference when using conventional GFAA, as well as deterioration of the test instrument. Such deterioration tends to adversely affect precision and recovery and to require frequent maintenance. In addition, the ICP–MS method is not yet approved by EPA for use under 40 CFR part 136. However, EPA is now preparing a proposal to recommend approval of ICP–MS and, in the review process, is considering the applicability of microwave digestion.

Comment: Microwave digestion should be extended to sample matrices other than NPDES effluents.

Response: CEM submitted the ATP application for its microwave digestion procedure under the provisions of 40 CFR part 136 which applies only to testing pursuant to the Clean Water Act. As required, comparability data for this application were obtained from the analysis of appropriate effluent samples. The data are not applicable to other matrices and thus, this rule does not approve this CEM procedure for use with methods to determine compliance with other statutes such as the Resource Conservation and Recovery Act (RCRA). As indicated by foregoing reference to SW–846 Methods 3015 and 3051, the Office of Solid Waste is, independently, considering application of microwave digestion under RCRA.

Comment: One commenter expressed concern over whether the procedure has been adequately tested on samples containing suspended solids and whether there is a limit to the solids concentration that can be digested.

Response: The comparability study applied the currently approved hot plate digestion and the CEM microwave digestion procedures to 29 different industrial effluents that collectively represent the five most frequently monitored industrial categories for each of the 13 elements. The variety of samples studied more than adequately represents the range of physical characteristics, including suspended solids and chemical characteristics typically associated with industrial effluents. The question of a limit to the amount of solids that can be digested when using microwave or hot plate digestion has not been fully studied. However, the CEM comparability data does not indicate that settleable solid limitations are necessary for approval because the samples used in the comparability studies achieved comparable results. EPA, in preparing new methods for metals, is considering a limit of one percent undissolved solids in an aqueous sample. Currently, the approved hot plate procedure to which the microwave digestion is compared does not contain such limits.

Comment: One commenter expressed concern about safety in the use of microwave digestion equipment.

Response: When deciding to use the option of microwave digestion, the analyst must recognize potential safety hazards in using microwave equipment. CEM addressed safety issues in the procedure under Section 5. Apparatus and Equipment (5.3) and Section 7. Safety. Operator manuals supplied with the equipment also address safety issues.

V. Regulatory Requirements

A. Executive Order 12291

Under Executive Order 12291, EPA must judge whether a regulation is "major" and, therefore, requires a regulatory impact analysis. EPA has determined that this regulation is not major as it will not result in an effect on the economy of $100 million or more, a significant increase in cost or prices, or any of the effects described in the Executive Order. This final rule simply specifies an analytical technique which may be used by laboratories in measuring concentrations of certain metals and, therefore, has no adverse economic impacts. This action was submitted to OMB for review under the Executive Order.

B. Regulatory Flexibility Act

This amendment is consistent with the objectives of the Regulatory Flexibility Act (5 U.S.C. 602 et seq.) because it will not have a significant economic impact on a substantial number of small entities. The procedure included in this rule gives all laboratories the flexibility to use this alternate method or not to use it.

C. Paperwork Reduction Act

This rule contains no requests for information activities and, therefore, no information collection request (ICR) was submitted to the Office of Management and Budget (OMB) for review in compliance with the Paperwork Reduction Act, 44 U.S.C. 3501 et seq.

List of Subjects in 40 CFR Part 136

Incorporation by reference, Water pollution control.

Dated: September 2, 1992.

F. Henry Habicht II,

Acting Administrator.

In consideration of the preceding, EPA amends part 136 of title 40 of the Code of Federal Regulations as follows:

1. The authority citation for part 136 continues to read as follows:

Authority: Secs. 301, 304(h), 307, and 501(a) Public Law 95–217, Stat. 1566, *et seq.* (33 U.S.C. 1251 *et seq.* (the Federal Water Pollution Control Act Amendments of 1972 as amended by the Clean Water Act of 1977).

2. Section 136.3 is amended by revising in Table IB of paragraph (a): the column headings, footnote 4, and footnote 34; by adding footnote 35; and by adding a new footnote number 36 for the following entries and by revising these entries: 3, Aluminum; 5, Antimony; 6, Arsenic; 7, Barium; 12, Cadmium; 19, Chromium; 22, Copper; 30, Iron; 32, Lead; 34, Manganese; 37, Nickel; 60, Selenium, and 75, Zinc; and paragraph (b) is amended by revising the reference (32) and by adding a new reference (33) to read as follows:

§ 136.3 Identification of test procedures.

* * * * *

TABLE 1B.—LIST OF APPROVED INORGANIC TEST PROCEDURES

Parameter, units and methods	Reference (Method No. or Page)				
	EPA [1, 35]	Std. methods 17th Ed.	ASTM	USGS [2]	Other
* * * * * * *					
3. Aluminum—Total [4], mg/L; digestion [4] followed by:					
AA direct aspiration [36]	202.1	3111D		I–3051–85	
AA furnace	202.2	3113B			
Inductively coupled plasma (ICP) [36]	[5] 200.7	3120B			
Direct current plasma (DCP) [36], or			D4190–88		Note 34.
Colorimetric (Eriochrome cyanine R)		3500–A1 D			
* * * * * * *					
5. Antimony—Total [4], mg/L; digestion [4] followed by:					
AA direct aspiration [36]	204.1	3111 B			
AA furnace, or	204.2	3111 B			
ICP [36]	[5] 200.7	3120 B			
6. Arsenic-Total [4], mg/L; digestion [4] followed by	206.5				
AA gaseous hydride	206.3	3114 B 4.d	D2972–84(B)	I–3062–85	
AA furnace	206.2	3113 B			
ICP [36], or	[5] 200.7	3120 B			
Colorimetric (SDDC)	206.4	3500–As C	D2972–84(A)	I–3060–85	
7. Barium—Total [4], mg/L; digestion [4] followed by:					
AA direct aspiration [36]	208.1	3111 D		I–3084–85	
AA furnace	208.2	3113 B			
ICP [36], or	[5] 200.7	3120 B			
DCP [36]					Note 34.
* * * * * * *					
12. Cadmium—Total [4], mg/L; digestion [4] followed by:					
AA direct aspiration [36]	213.1	3111 B or C	D3557–90 (A or B)	I–3135–85 or I–3136–85.	C [3] 974.27 D [9] p.37.
AA furnace	213.2	3113 B			
ICP [36]	[5] 200.7	3120 B		I–1472–85	
DCP [36]			D4190–88		Note 34.
Voltometry [11], or			D 3557–90 C		
Colorimetric (Dithizone)		3500–Cd D			
* * * * * * *					
19. Chromium—Total [4], mg/L; digestion [4] followed by:					
AA direct aspiration [36]	218.1	3111 B	D1687–86(D)	I–3236–85	[3] 974.27
AA chelation-extraction	218.3	3111 C			
AA furnace	218.2	3113 B			
ICP [36]	[5] 200.7	3120 B			
DCP [36], or			D4190–88		Note 34.
Voltametry [11], or			D3557–90C		
Colorimetric (Diphenylcarbazide)		3500–Cr D	D1687–84(A)		
* * * * * * *					
22. Copper—Total [4], mg/L; digestion [4] followed by:					
AA direct aspiration [36]	220.1	3111 B or C	D1688–90 (A or B)	I–3270–85 or I–3271–85.	[3] 974.27 [9] p. 37.
AA furnace	220.2	3113 B			
ICP [36]	[5] 200.7	3120 B			
DCP [36], or			D4190–88		Note 34.
Colorimetric (Neocupnoine), or		3500–Cu D	1688–84		
(Bicinchoninate)		or E	(88)(A)		Note 19.
* * * * * * *					

TABLE 1B.—LIST OF APPROVED INORGANIC TEST PROCEDURES—Continued

Parameter, units and methods	Reference (Method No. or Page)				
	EPA [1, 35]	Std. methods 17th Ed.	ASTM	USGS [2]	Other
30. Iron—Total [4], mg/L; digestion [4] followed by:					
AA direct aspiration [36]	236.1	3111 B or C	D1068-90 (A or B)	I-3381-85	[3] 74.27.
AA furnace	236.2	3113 B			
ICP [36]	[5] 200.7	3120 B			
DCP [36], or					Note 34.
Colorimetric (Phenanthroline)		3500-Fe D	D1068-90(D)		Note 22.
32. Lead—Total [4], mg/L; digestion [4] followed by:					
AA direct aspiration [36]	239.1	3111B or C	D3559-90 (A or B)	I-3399-85	[3] 974.27.
AA furnace	239.2	3113 B			
ICP [36]	[5] 200.7	3120 B			
DCP [36]			D4190-88		Note 34.
Voltametry [11], or			D3559-90(C)		
Colorimetric (Dithizone)		3500-Pb D			
34. Manganese—Total [4], mg/L; digestion [4] followed by:					
AA direct aspiration [36]	243.1	3111 B or C	D858-90 (A or B)	I-3454-85	[3] 974.27.
AA furnace	243.2	3113 B			
ICP [36]	[5] 200.7	3120 B			
DCP [36], or			D4190-88		Note 34.
Colorimetric (Persulfate), or		3500-Mn D	D858-84(A) (1988)		[3] 920.203.
(Periodate)					Note 23.
37 Nickel—Total [4], mg/L; digestion [4] followed by:					
AA direct aspiration [36]	249.1	3111B or C	D1886-90 (A or B)	I-3499-85	
AA furnace	249.2	3111 B			
ICP [36]	[5] 200.7	3120 B			
DCP [36], or			D4190-88		Note 34.
Colorimetric (Heptoxime)		3500-Ni D			
60. Selenium—Total [4], mg/L; digestion [4] followed by:					
AA furnace	270.2	3113 B			
ICP [36], or	[5] 200.7	3120 B			
AA gaseous hydride	270.3	3114 B	D3859-88(A)	I-3667-85	
75. Zinc—Total [4], mg/L; digestion [4] followed by:					
AA direct aspiration [36]	289.1	3111 (B or C)	D1691-90 (A or B)	I-3900-85	[3] 974.27. [9] p. 37.
AA furnace	289.2				
ICP [36]	[5] 200.7	3120 b			
DCP [36], or			D4190-88		Note 34.
Colorimetric (Dithizone) or		3500-Zn E			
(Zincon)		3500-Zn F			Note 33.

[4] For the determination of total metals the sample is not filtered before processing. A digestion procedure is required to solubilize suspended material and to destroy possible organic-metal complexes. Two digestion procedures are given in "Methods for Chemical Analysis of Water and Wastes, 1979 and 1983." One (section 4.1.3), is a vigorous digestion using nitric acid. A less vigorous digestion using nitric and hydrochloric acids (section 4.1.4) is preferred; however, the analyst should be cautioned that this mild digestion may not suffice for all samples types. Particularly, if a colorimetric procedure is to be employed, it is necessary to ensure that all organo-metallic bonds be broken so that the metal is in a reactive state. In those situations, the vigorous digestion is to be preferred making certain that at no time does the sample go to dryness. Samples containing large amounts of organic materials would also benefit by this vigorous digestion. Use of the graphite furnace technique, inductively coupled plasma, as well as determinations for certain elements such as arsenic, the noble metals, mercury, selenium, and titanium require a modified digestion and in all cases the method write-up should be consulted for specific instruction and/or cautions. **Note:** If the digestion included in one of the other approved references is different than the above, the EPA procedure must be used.

Note: If the digestion included in one of the other approved references is different than the above, the EPA procedure must be used.

Dissolved metals are defined as those constituents which will pass through a 0.45 micron membrane filter. Following filtration of the sample, the referenced procedure for total metals must be followed. Sample digestion of the filtrate for dissolved metals, (or digestion of the original sample solution for total metals) may be omitted for AA (direct aspiration or graphite furnace) and ICP analyses provided the sample solution to be analyzed meets the following criteria:

a. has a low COD (<20)
b. is visibly transparent with a turbidity measurement of 1 NTU or less
c. is colorless with no perceptible odor, and
d. is of one liquid phase and free of particulate or suspended matter following acidification.

[34] "Direct Current Plasma (DCP) Optical Emission Spectrometric Method for Trace Elemental Analysis of Water and Wastes, Method AES0029," 1986-Revised 1991, Fison Instruments, Inc., 32 Commerce Center, Cherry Hill Drive, Danvers, MA 01923.

[35] Precision and recovery statements for the atomic absorption direct aspiration and graphite furnace methods, and for the spectrophotomertic SDDC method for arsenic are provided in appendix D of this part titled, "Precision and Recovery Statements for Methods for Measuring Metals".

[36] "Closed Vessel Microwave Digestion of Wastewater Samples for Determination of Metals", CEM Corporation, P.O. Box 200, Matthews, North Carolina 28106-0200, April 16, 1992. Available from the CEM Corporation.

(b)

References, Sources, Costs, and Table citations:

(32) "Direct Current Plasma (DCP) Optical Emission Spectrometric Method for Trace Elemental Analysis of Water and Wastes", Method AES 0029, 1986-Revised 1991, Fison Instruments, Inc., 32 Commerce Center, Cherry Hill Drive, Danvers, MA 01923. Table B, Note 34.

(33) "Closed Vessel Microwave Digestion of Wastewater Samples for Determination of Metals, CEM Corporation, P.O. Box 200, Matthews, North Carolina 28106-0200, April 16, 1992. Available from the CEM Corporation. Table IB, Note 36.

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