

DEPARTMENT OF TRANSPORTATION**Coast Guard****33 CFR Part 157****46 CFR Parts 31 and 35**

[CGD 91-045]

RIN 2115-AE01

Operational Measures To Reduce Oil Spills From Existing Tank Vessels Without Double Hulls

AGENCY: Coast Guard, DOT.

ACTION: Supplemental notice of proposed rulemaking.

SUMMARY: The Coast Guard proposes regulations that would require the owners, masters, or operators of tank vessels of 5,000 gross tons (GT) or more that do not have double hulls and that carry oil in bulk as cargo to comply with certain operational measures. The proposed regulations contain requirements for bridge resource management training, rest hour minimums, enhanced surveys, maneuvering performance capability requirements, and other measures aimed at reducing the likelihood of an oil discharge from these vessels. Additionally, the Coast Guard proposes to amend requirements for the carriage of onboard emergency lightening equipment. These proposed regulations represent the second step in the Coast Guard's three-step effort to establish structural and operational measures for tank vessels without double hulls as required by the Oil Pollution Act of 1990 (OPA 90).

DATES: Comments must be received on or before February 1, 1996.

ADDRESSES: Comments may be mailed to the Executive Secretary, Marine Safety Council (G-LRA/3406) (CGD 91-045), U.S. Coast Guard Headquarters, 2100 Second Street SW., Washington, DC 20593-0001, or may be delivered to room 3406 at the same address between 8 a.m. and 3 p.m., Monday through Friday, except Federal holidays. The telephone number is (202) 267-1477. Comments on collection-of-information requirements must be mailed also to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street NW., Washington DC 20503, ATTN: Desk Officer, U.S. Coast Guard.

The Executive Secretary maintains the public docket for this rulemaking. Comments will become part of this docket and will be available for inspection or copying at room 3406, U.S. Coast Guard Headquarters, between

8 a.m. and 3 p.m., Monday through Friday, except Federal holidays.

A copy of the material listed in "Incorporation by Reference" of this preamble and references for this preamble are available for inspection at room 1312, U.S. Coast Guard Headquarters and have also been included in the public docket.

FOR FURTHER INFORMATION CONTACT: LCDR Suzanne Englebert, Project Manager, Standards Evaluation and Development Division, at (202) 267-6490. This number is equipped to record messages on a 24-hour basis.

SUPPLEMENTARY INFORMATION:**Request for Comments**

The Coast Guard encourages interested persons to participate in this rulemaking by submitting written data, views, or arguments. Persons submitting comments should include their names and addresses, identify this rulemaking (CGD 91-045) and the specific section of this proposal to which each comment applies, and give the reason for each comment. Please submit two copies of all comments and attachments in an unbound format, no larger than 8½ by 11 inches, suitable for copying and electronic filing. Persons wanting acknowledgment of receipt of comments should enclose stamped, self-addressed postcards or envelopes.

The Coast Guard will consider all comments received during the comment period. It may change this proposal in view of the comments.

On January 20, 1994, the Coast Guard held a public meeting on structural and operational measures for tank vessels. The Coast Guard plans no additional public meetings. Persons may request a public meeting by writing to the Marine Safety Council at the address under **ADDRESSES**. The request should include the reasons why a meeting would be beneficial. If it determines that an additional opportunity for oral presentations will aid this rulemaking, the Coast Guard will hold a public meeting at a time and place announced by a later notice in the Federal Register.

Drafting Information. The principal persons involved in drafting this document are LCDR Suzanne Englebert, Project Manager, and Jacqueline Sullivan, Project Counsel, Office of Chief Counsel.

Regulatory History

Section 4115(b) of the Oil Pollution Act of 1990 (OPA 90) (which appears as a statutory note following 46 U.S.C. 3703a) directs the Coast Guard to develop structural or operational requirements for tank vessels of 5,000 gross tons or more without double hulls

to serve as regulations until 2015, when all tank vessels operating in U.S. waters are required to have double hulls under section 4115(a) of OPA 90 (46 U.S.C. 3703a). Regulations issued under the authority of section 4115(b) must provide as substantial protection to the environment as is economically and technologically feasible.

On November 1, 1991, the Coast Guard published an advance notice of proposed rulemaking (ANPRM) (56 FR 56284) which discussed structural and operational measures intended to meet the requirements of section 4115(b) of OPA 90. The ANPRM included a request for data on the technical and economic feasibility of those measures for use on vessels covered by section 4115(b). Eighty-eight comments were received by the close of the extended comment period, which ended on January 30, 1992 (57 FR 1243).

After reviewing the comments, the Coast Guard published a notice of proposed rulemaking (NPRM) entitled "Structural and Operational Measures to Reduce Oil Spills from Existing Tank Vessels Without Double Hulls" (Existing Vessels) on October 22, 1993 (58 FR 54870). The Coast Guard issued two subsequent correction notices on November 19, 1993 (58 FR 61143), and December 14, 1993 (58 FR 65298), which made technical corrections to the NPRM. In response to several comments received on the NPRM, the Coast Guard published on December 16, 1993, a notice of public meeting and extension of comment period (58 FR 65683).

The Coast Guard held a public meeting on January 20, 1994, to obtain information from the public on the proposed regulations. Topics addressed by speakers included applicability, differences between tank barges and tankships, exemptions, and economic and technical feasibility of the proposed regulations. Some of the basic assumptions of the proposed regulations related to certain structural measures were also discussed, particularly their reliance on Regulation 13G of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78). Information on the public meeting is available for public review at the address under **ADDRESSES**.

In light of the comments received at the public meeting and in response to the written comments received on the NPRM, the Coast Guard is reviewing the proposed requirements for structural measures. To expedite the implementation of section 4115(b) of OPA 90, the Coast Guard developed a three-pronged approach which

encompassed three separate rulemaking projects. First, the Coast Guard issued a final rule on August 5, 1994, requiring the carriage of emergency lightening equipment and the inclusion of the vessel's International Maritime Organization (IMO) number in the advance notice of arrival report (59 FR 40186); second, it is issuing this supplemental notice of proposed rulemaking (SNPRM) regarding additional operational measures; and third, it is reviewing comments on the NPRM for major structural measures and revising the Regulatory Assessment (RA) before issuing an SNPRM regarding structural requirements for tank vessels. Structural measures that will be addressed in this third step include hydrostatic loading requirements, structural refit of existing hull areas, emergency cargo off-loading capabilities and other structural adaptations or major cargo carrying adjustments.

Background and Purpose

Section 4115 of the Oil Pollution Act of 1990 (OPA 90) (Pub. L. 101-380) mandates regulations to provide improved protection from oil spills from tank vessels in waters subject to the jurisdiction of the United States due to collisions and groundings. This section applies to tank vessels that are constructed or adapted to carry, or that carry oil in bulk as cargo or cargo residue.

The Coast Guard has determined that the applicability of these proposed regulations would reflect section 4115(a) of OPA 90 which requires certain existing tank vessels without double hulls to be phased out of operation by 2015. The Coast Guard rulemaking implementing section 4115(a) entitled "Double Hull Standards for Vessels Carrying Oil in Bulk" (CGD 90-051) (57 FR 36222) added 33 CFR 157.10(d), which establishes the applicability of the regulations. The regulations also apply to certain tank vessels carrying oil in bulk as cargo operating in U.S. waters, including vessels unloading oil as cargo at deepwater ports, lightening in established lightening zones, or lightening more than 60 miles from the territorial sea baseline; they also apply to non-dedicated oil spill response vessels (OSRVs). The Navigation and Inspection Circular (NVIC) 10-94, "Guidance for Determination and Documentation of the Oil Pollution Act of 1990 (OPA 90) Phaseout Schedule for Existing Single Hull Vessel Carrying Oil in Bulk," provides a detailed explanation of the applicability of section 4115(a).

In the preamble to the Existing Tank Vessels NPRM, the Coast Guard proposed to limit the applicability of the rule to "oil tankers" as defined in 33 CFR 157.03(oo) rather than tank vessels as defined in 33 CFR 157.03(v). The NPRM specifically excluded vessels carrying only animal fats and vegetable oils because the proposed structural requirements were believed to be too costly for vessels carrying only non-petroleum oils. Additionally, the exemption was proposed in an effort to be consistent with the international standards of MARPOL 73/78, which also establishes structural measures for certain existing vessels. The Coast Guard has determined that the operational requirements proposed in this SNPRM would be applied to all existing tank vessels, including vessels which carry only non-petroleum oils. The Coast Guard has long contended that a discharge of non-petroleum oils can be as damaging to the environment as a discharge of petroleum oil, especially if spilled in bulk. In 1992, an IMO study entitled "Harmful Effects on Birds of Floating Lipophilic Substances Discharge from Ships On the Plumage of Birds" was published by the Netherlands Institute for Sea Research. This study gives numerous examples of lethal contamination of seabirds by certain non-petroleum oils spilled from ships. This study is available for public inspection at the address under **ADDRESSES**. The Coast Guard also researched the number of tank vessels potentially affected by this proposal and found no tank vessels which are certificated to carry only non-petroleum oils. The Coast Guard requests comments on the impact of this proposed rulemaking on vessels that carry only non-petroleum oils. Comments on the impact of the proposed rulemaking on areas that could be adversely affected by a non-petroleum spill are also requested.

The Coast Guard proposes to revise the applicability of § 157.400 of the Existing Tank Vessels final rule issued on August 5, 1994 (59 FR 40186), which requires oil tankers to carry emergency lightening equipment and report the vessel's IMO number in the advance notice of arrival report. The SNPRM proposes to apply the lightening equipment requirement to all tank vessels. A separate rulemaking proposes to change the reporting requirements of a vessel's IMO number to include vessels 300 gross tons (GT) or more.

To clarify how each of these regulations, both existing and proposed, apply to foreign flag vessels, the Coast Guard proposes to amend the applicability section of 33 CFR part 157.

The proposed change would ensure that, to be consistent with international law, the regulations do not apply to foreign flag vessels in innocent passage in U.S. navigable waters, including the territorial sea of the United States, or while operating in the Exclusive Economic Zone (EEZ) unless they are engaging in lightening operations or off-loading oil in bulk at a deepwater port.

This proposal would also require a barge owner to assume additional responsibility for the actions of the towing vessel. Barge operations for loading cargo are generally handled by company representatives or facility personnel. However, navigational control of the tank barge has historically been the responsibility of the towing vessel. Although section 4115(b) of OPA 90 did not specifically recognize the towing vessel's shared role in tank barge operations, the towing vessel's role in the navigation and control of the tank barge must be addressed to reduce accident risk from tank barges. The proposed regulations require the tank barge owner or operator to ensure the towing vessel meets certain standards comparable to those proposed for tankships.

This additional level of control should have a minimal effect on tank barge companies because most tank barge owners or operators also own the towing vessels and employ their crews. For those tank barge companies that rely on leased towing vessels to move their tank barges, these proposed requirements could result in some additional contractual arrangements, additional oversight of the towing vessel companies, or hiring criteria that incorporate these requirements. These measures would ensure that tank barge owners exercise direct control over the manner in which their cargo is transported. This direct oversight is prudent for tank barge owners because in most cases, under section 1002 of OPA 90, tank barge owners are held financially responsible for any removal costs and damages for discharged oil. The Coast Guard is soliciting comments on the extension of certain towing vessel requirements to the tank barge industry.

Discussion of Comments and Changes

Background information on proposals for structural measures for existing vessels without double hulls is provided in the preambles to the ANPRM and the NPRM. Operational measures were discussed in both the ANPRM and the NPRM; however, the NPRM focused on measures to reduce oil outflow after collisions and groundings, not on the mishap risk reduction for these vessels.

The Coast Guard has issued many requirements that could be considered operational in nature. Other regulations mandated by OPA 90 affect the marine industry, especially the tank vessel fleet. To address the most common hazardous operational deficiencies on tank vessels today, the Coast Guard has conducted a qualitative evaluation of the tank vessel operating system. Previous studies of this type include (1) "Research Needs to Reduce Maritime Collisions, Rammings, and Groundings" by the Maritime Transportation Research Board (1981); (2) "Development and Assessment of Measures to Reduce Accidental Oil Outflow from Tank Ships" by the Coast Guard (May 1989); and (3) "Human Error in Merchant Marine Safety" by the Maritime Transportation Research Board (1976). These studies along with other risk analysis literature formed the baseline for the "fault trees" depicted in the following figures:

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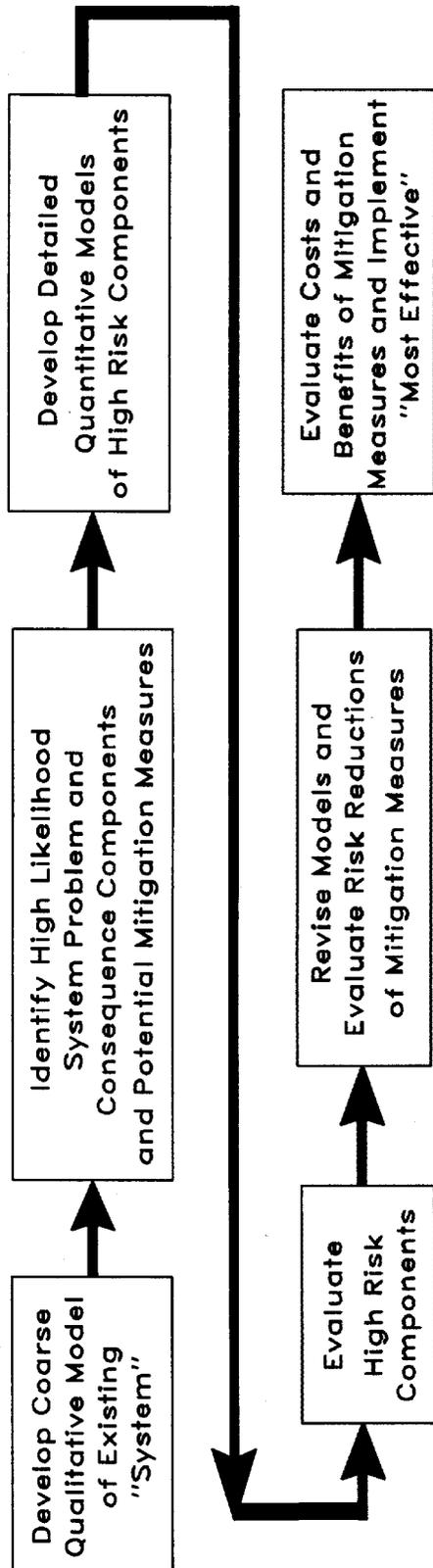


Figure 1: Operational Measures - Overall Analysis Methodology

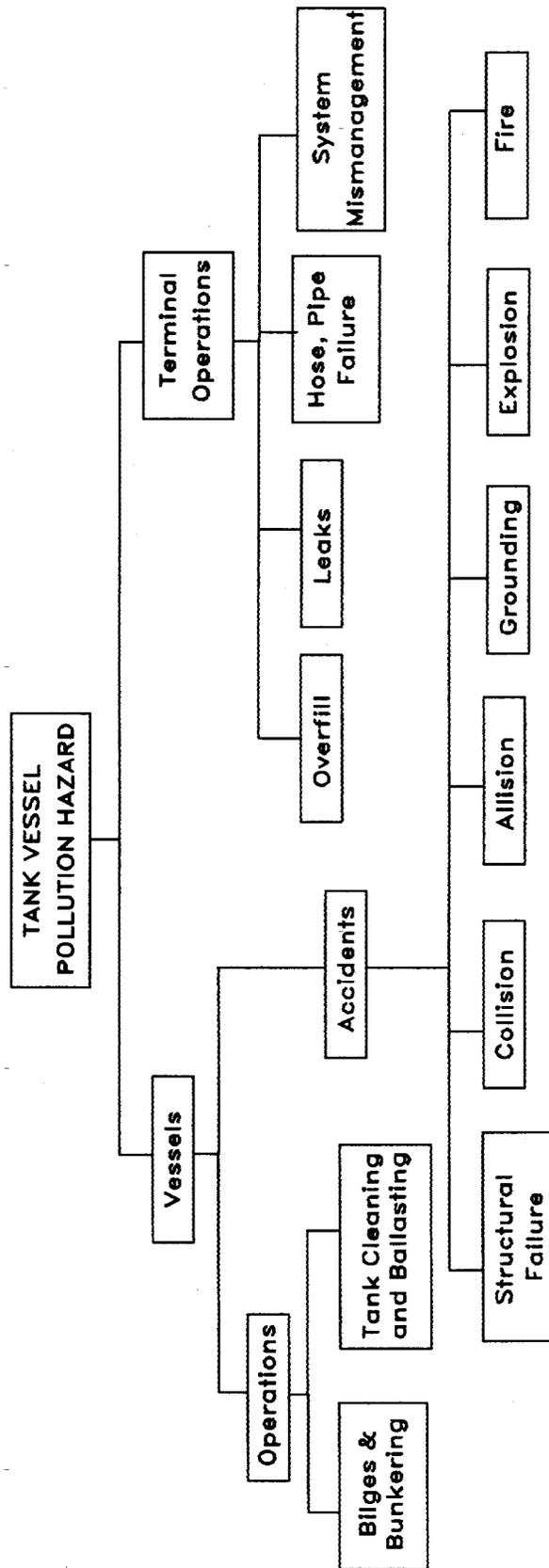


Figure 2: Coarse Qualitative Model of Existing System

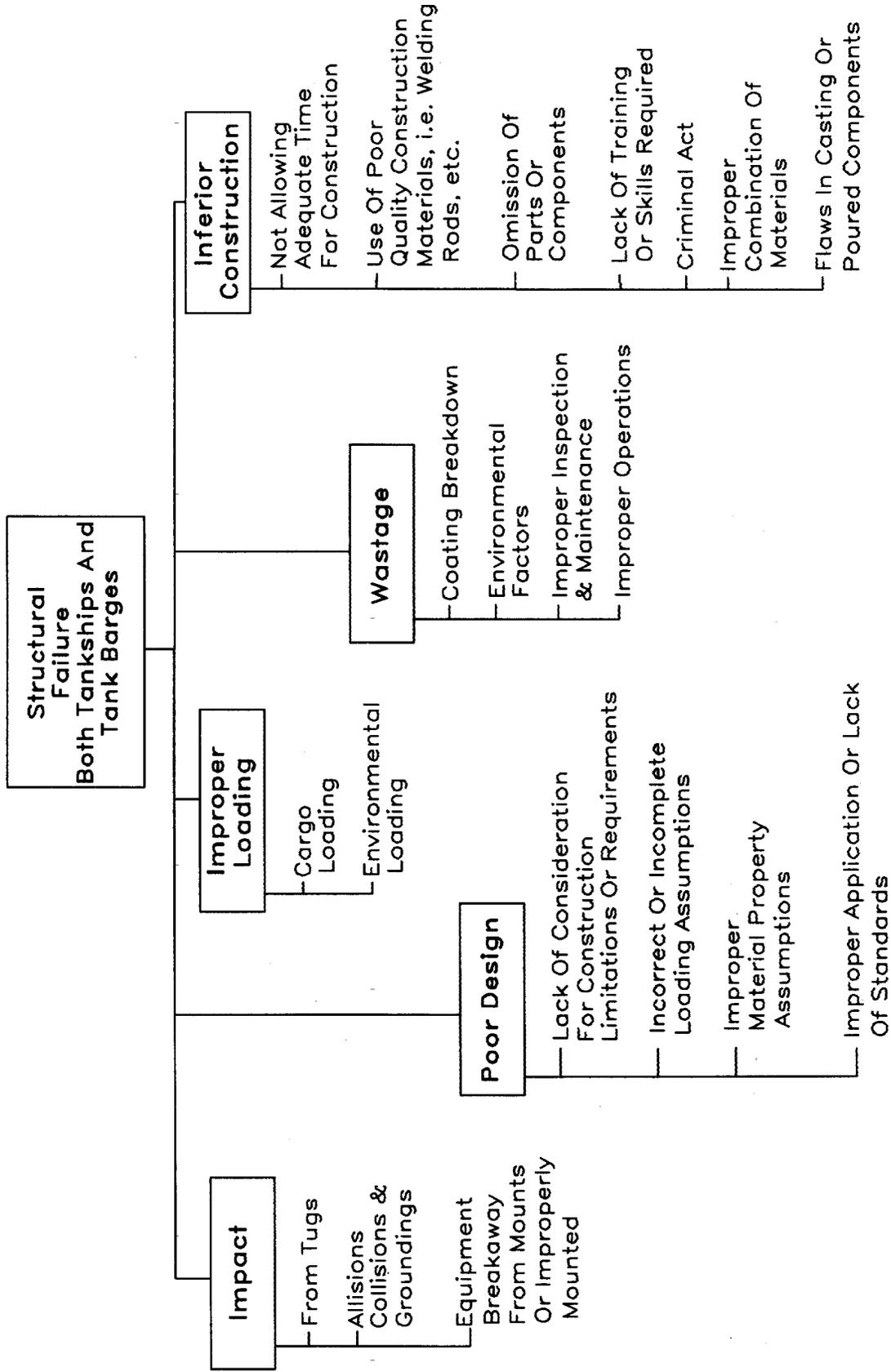


Figure 3: Structural Qualitative Model With Components

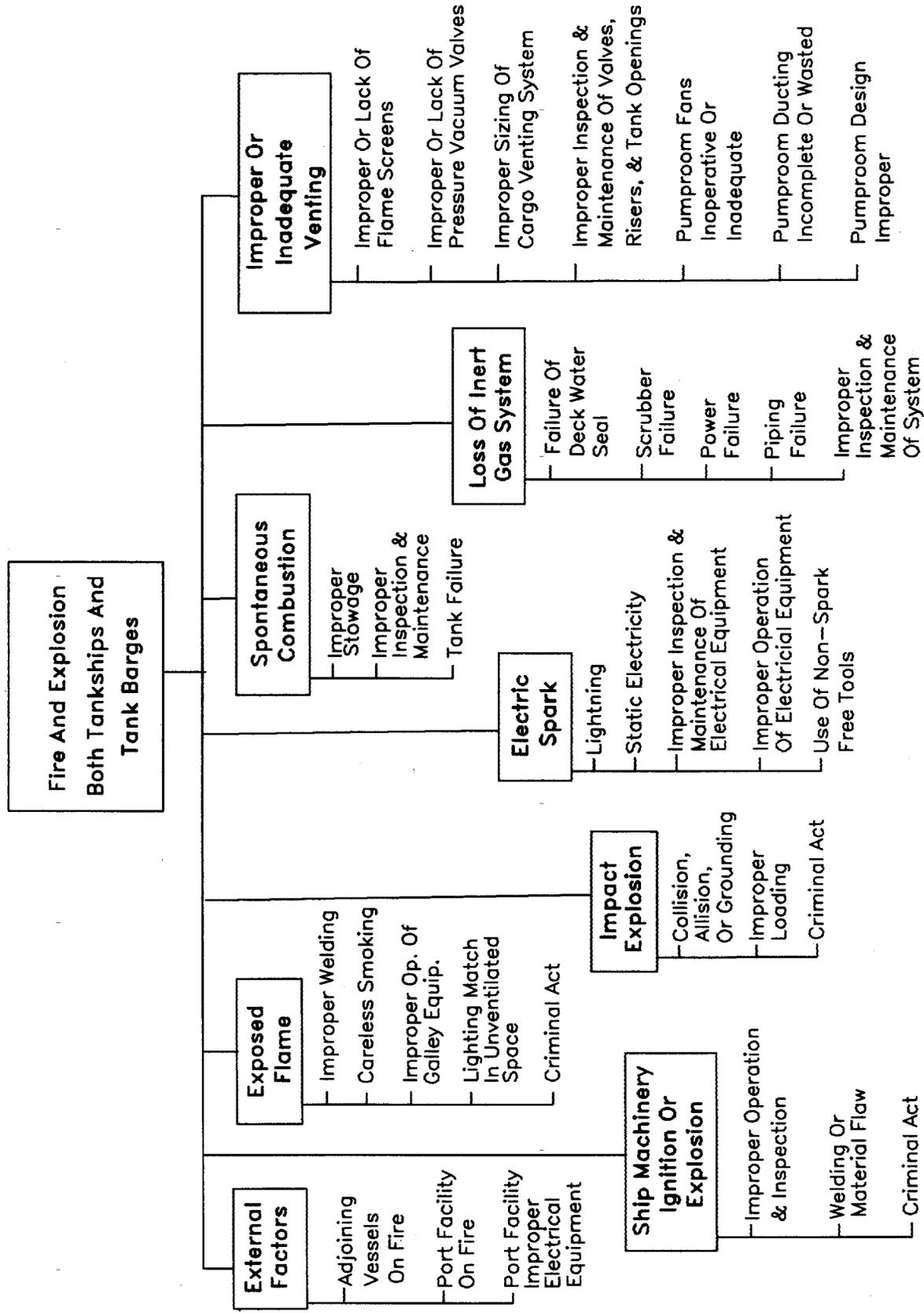


Figure 4: Fire And Explosion Qualitative Model With Components

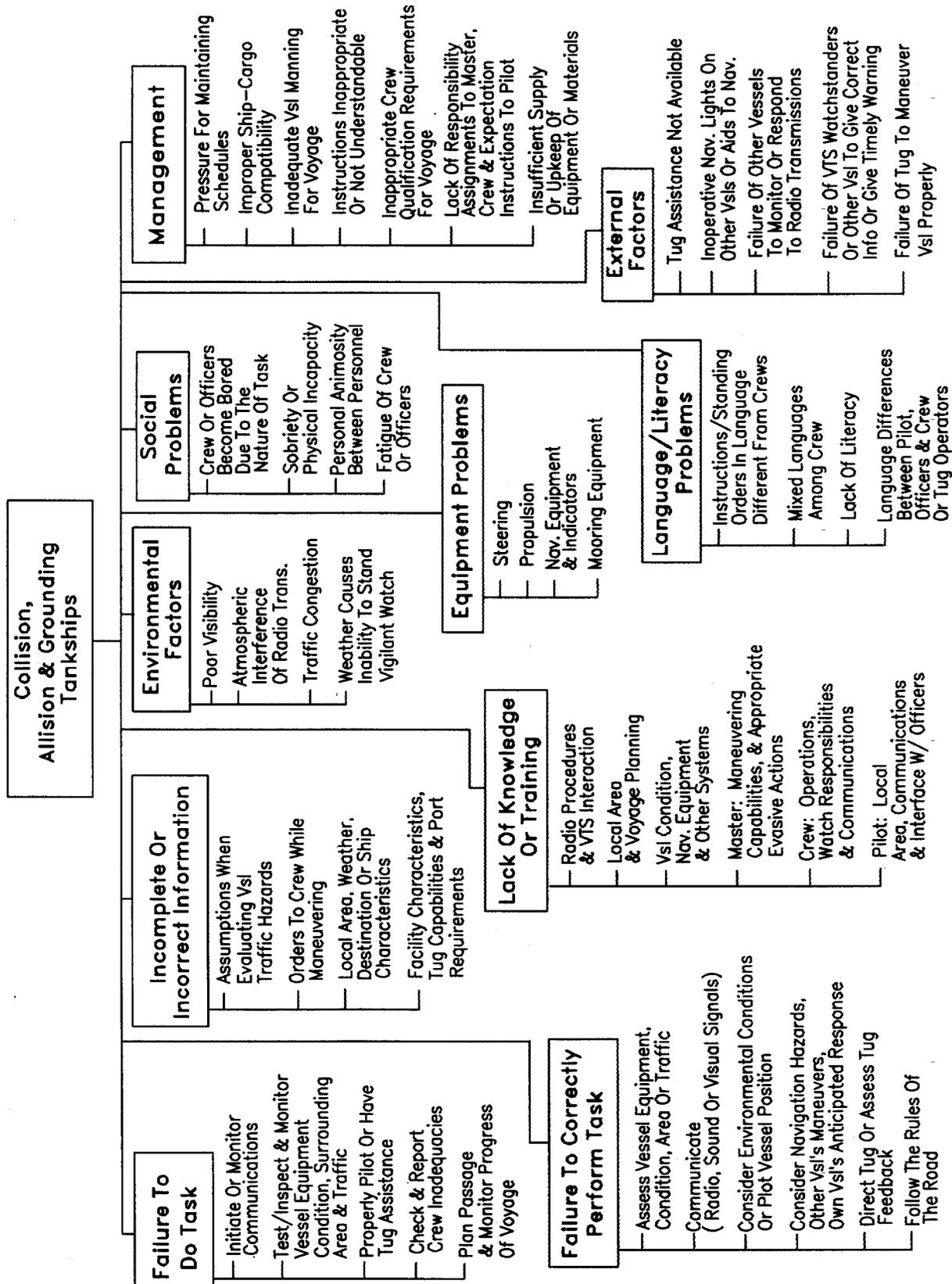


Figure 5: Tankship Qualitative Model With Components

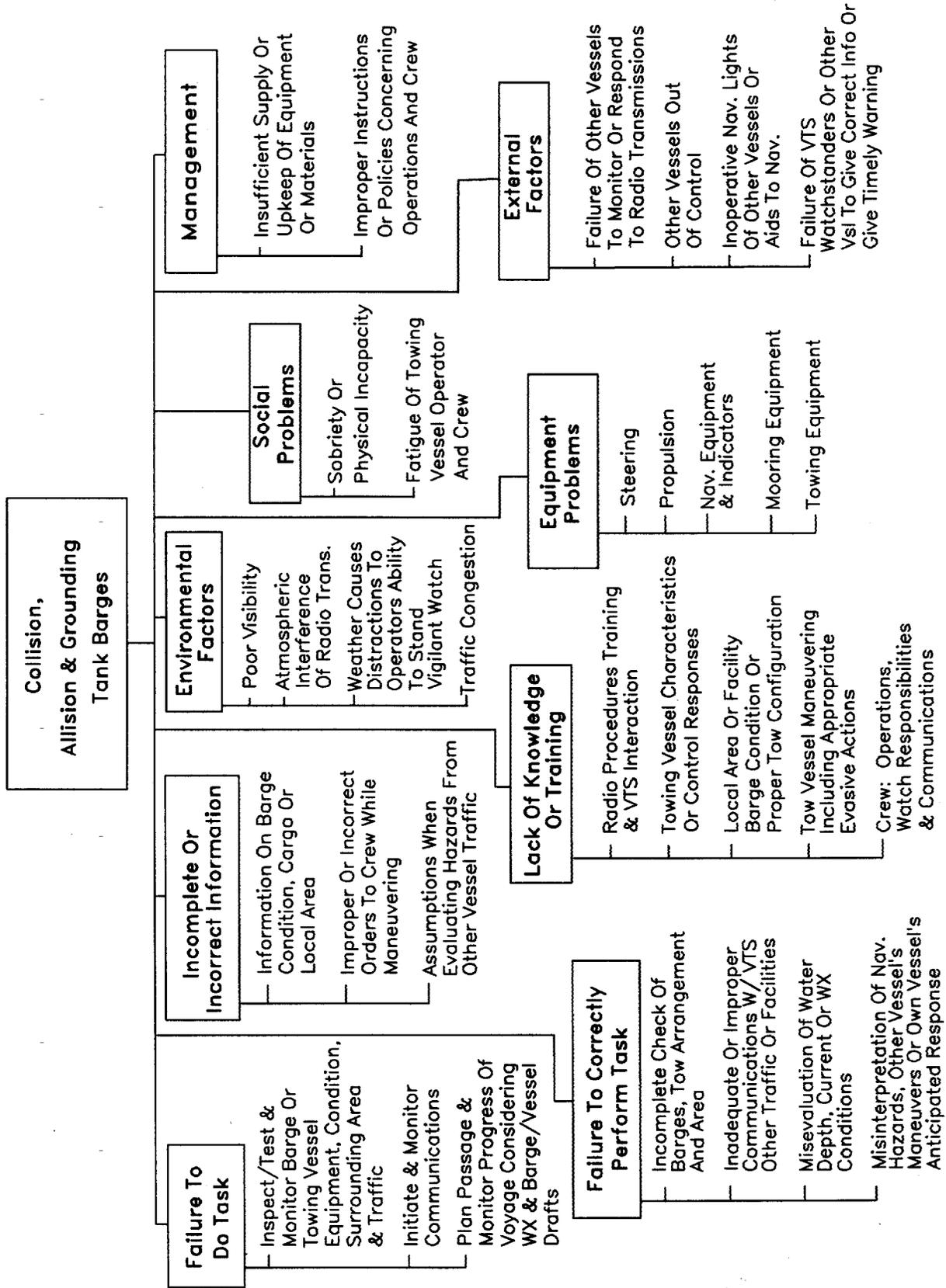


Figure 6: Tank Barge Qualitative Model With Components

Figure 1 shows how a qualitative evaluation of a marine system can identify effective improvements for existing or proposed regulations. Figure 2 identifies the general pollution hazard created by tank vessels. The scope of this analysis was further narrowed to those areas where a tank vessel without a double hull may pose a higher risk than other vessels or to areas where inconsistencies exist between requirements for U.S. domestic vessels and foreign certificated vessels. The Coast Guard developed detailed qualitative models for structural and fire or explosion accidents because the majority of the existing tank vessel fleet is older and not required to conform to many of the recent safety regulations. Collisions, allisions, and groundings were considered because of the oil spill potential of these incidents. The operational spill segment of the fault tree in Figure 2 and the terminal operations portion are only included in this analysis in areas where present regulations do not hold U.S. and foreign vessels to comparable standards. Figures 3 through 6 display the detailed qualitative models and associated high risk components within each identified hazard.

This type of analysis contains a subjective element. The Coast Guard has drawn from the knowledge of its experienced inspectors and licensed mariners to develop the fault trees identified in Figures 3-6. These fault trees are not meant to be comprehensive, instead they are used to clarify further discussion within this proposed regulation by identifying major operational causes of oil discharges and the measures that could potentially mitigate these causes from a tank vessel without a double hull.

As an example of this process, 33 CFR 164.35(g) requires all ships of 1,600 GT or more to post a list in the wheelhouse which identifies the vessel's general maneuvering characteristics. This requirement mitigates problems arising from "lack of knowledge" which may cause a collision, allision, or grounding as identified in Figure 5. In analyzing this requirement's effectiveness to mitigate this "lack of knowledge" component, it becomes clear that the requirement may not be as effective as it could be. A discussion of this issue can be found in a recent "Marine Technology" paper entitled "Maneuvering Information for the Pilot/Navigator: Its Source Value and Limitations," written by Mr. Thomas G. Knierim (Vol 31, No. 2, April 1994, pp. 123-144).

The Coast Guard received a total of 132 comments on the Existing Vessel

NPRM. Thirty of these comments discussed over 70 issues relating to operational measures. The following discussion is divided into seven categories: (1) General comments which address broad issues and the general content of the NPRM; (2) comments on proposed revisions to emergency lightering equipment requirements in 33 CFR 157.410; (3) comments on personnel training and information (see the fault-tree components of Figures 5 and 6 which address failure to perform a task, failure to correctly perform a task, and lack of knowledge or training); (4) comments on vessel maintenance surveys (see the components of Figures 3 through 6 for equipment failure, hull structural failure, or failure due to explosion); (5) comments on navigation and maneuverability (see the components of Figures 5 and 6 involving a lack of knowledge, training, or the use of incorrect information); (6) comments on requirements for the control and movement of tank barges (see the components of Figure 6 related to towing vessel operations and equipment); (7) comments on operational measures that are not addressed elsewhere in this SNPRM.

1. General

Several comments expressed concern that the proposed regulations do not reflect congressional intent. The comments stated that the NPRM improperly emphasized structural measures without adequate regard for operational measures which could have an equal or greater benefit for the environment at less cost. They also stated that the failure to assess significant regulatory alternatives violates the statutory mandate of OPA 90 and the requirements of Executive Order 12866. This SNPRM proposes operational measures that meet both the statutory mandate of OPA 90 and the mandate of the Executive Order.

Some of the comments stated that the requirements proposed in the NPRM would not satisfy the statutory mandate to provide "as substantial protection to the environment as is economically and technologically feasible" as required by section 4115(b) of OPA 90. One comment stated that operational measures would do more to protect the environment because 80 percent of all oil pollution is caused by human error, not by structural malfunctions. Several comments indicated that the operational measures could be implemented more quickly than structural measures. Many comments stressed the need for operational measures to prevent collisions or groundings, rather than structural requirements to reduce oil

outflow after a vessel collision or grounding.

This SNPRM proposes operational measures for both foreign and U.S. vessels that should improve the overall quality of tank vessel operations. Rulemakings complementing this effort propose navigation equipment for towing vessels and towing vessel operating license changes.

One comment suggested that vessel owners should be able to choose from a list of measures that, when used together, would equal a specified level of protection. This would require that each operational measure be assigned a credit based upon additional prevention or decreased oil outflow.

The Coast Guard considered various ways of allotting credits and developing a minimum level of protection. This concept did not address the different objectives of each proposed requirement. For example, how could a requirement for the pilot to plan a passage, intended to reduce the risk of a collision, allision, or grounding (Figure 5), be quantified in relation to a maintenance program intended to reduce the risk of a structural failure (Figure 3)? Blurring the lines between failure modes and risk components would not achieve equitable risk reduction among affected tank vessels. An "a la carte" idea was also researched to compare each failure mode with a list of possible risk reduction measures. Equivalencies between each measure could not be determined because, even among the components, an accurate quantitative assessment method was not available.

Instead, the Coast Guard evaluated these operational measures in terms of the failure mode which they address, whether vessel personnel, navigation, or maintenance practices. The Coast Guard is proposing minimum training requirements to address vessel personnel, information requirements and minimum equipment and tests to address navigation and maneuvering problems, and survey and physical prevention measures to address the integrity of the vessel's structure. Where the same risk component is addressed, within each measure, some equivalency determinations are provided to allow individual companies or vessels to tailor requirements to their operational needs. The proposed measures consider both the technical and economical feasibility mandates of the statute.

Other comments recommended that the Coast Guard strictly enforce its current pollution prevention regulations. The Coast Guard enforces the requirements of both international and domestic law. Additional

enforcement measures have been established and implemented that include the increased scrutiny of certain vessels that consistently violate laws or have a history of casualties. Until the effectiveness of these recent enforcement measures has been assessed, the Coast Guard does not intend to propose additional measures.

One comment requested that Canadian or other foreign flag vessels passing through the St. Lawrence Seaway in route to a Canadian port be exempt from these proposals. The comment estimated that the true cost of the proposals would be four to five times those quoted by the Coast Guard. Another comment requested that tankers calling at deepwater ports, where there are already various operational measures in effect, be exempted. One comment requested exemption for vessels which lighter 60 miles offshore and for those that call at the Louisiana Offshore Oil Port (LOOP) because section 3703a of title 46 of the United States Code does not apply to them. As previously discussed, these vessels do have phaseout requirements and are subject to the provisions in section 4115(b). The Coast Guard has determined that the proposed operational measures are appropriate and do not conflict with St. Lawrence Seaway or LOOP operations.

One company requested that asphalt carriers be exempted from the proposed rule; the Coast Guard does not agree. Asphalt is a petroleum-based cargo and the requirements contained in this portion of the rulemaking present no unique difficulties for an asphalt carrier.

Two comments requested that vessels transporting oil to American Samoa be exempted because of the remoteness of the islands and the fragility of the economy. Both comments stated that vessels calling there satisfy international requirements and will have no incentive to incur the additional cost these rules would impose. One of these comments contended that if this regulation were applied to these vessels, the supply of crude oil and petroleum products to American Samoa would be in jeopardy and the cost of fuel would rise. The other comment specifically requested that vessels transporting oil to the Pacific Islands be exempt from the requirements of the proposed rule that exceed the requirements of Regulation 13G of MARPOL 73/78. This would include the Hawaiian Islands, American Samoa, Guam, the commonwealth of the Northern Mariana Islands, and other U.S. possessions in the Western Pacific. The comment stated that the small number of foreign tanker operators willing to comply with the regulation,

coupled with the limited U.S. flag product tanker fleet, will severely limit the supply of essential petroleum products to the Pacific Islands.

The Coast Guard believes that the operational requirements contained in this rulemaking are economically feasible for vessels transporting oil to all of these areas. Equivalency provisions offer flexibility in compliance with certain requirements. Incorporated international standards accommodate both the foreign and domestic industry. The Coast Guard requests comments on the impact of this proposed rulemaking on vessels transporting oil to specific remote geographic areas like American Samoa and other Pacific Islands. Comments on the impact of the proposed rulemaking on areas that are economically dependent on tourism or fishing are also requested.

2. Emergency Lightering Requirements

The Coast Guard is proposing revisions to requirements for emergency lightering equipment published in a final rule on August 5, 1994, (59 FR 40186) entitled "Emergency Lightering Equipment and Advanced Notice of Arrival Requirements for Existing Tank Vessels Without Double Hulls." Section 157.410(c) of the final rule referenced the requirements of 46 CFR part 56.25 for cast iron and malleable iron fittings and flanges. Cast iron and malleable iron have very high failure rates in cargo piping systems due to their low cycle fatigue susceptibility and tendency to weaken when subjected to high temperatures. To ensure that these fittings are not installed in piping lines carrying flammable or combustible fluids near open flame, or any parts reaching temperatures above 260°C (500°F), this SNPRM proposes to amend § 157.410(c) to specifically prohibit the use of such valves or fittings.

3. Personnel Training and Information

Data attributes 80 percent of marine accidents to some form of human error. Human factors are broadly defined as a scientific and engineering discipline concerned with analysis, research, design development, and evaluation of human/human, human/machine, human/information and human/environment interfaces. Human factors issues include any condition or circumstance which affects the quality of human performance required to accomplish a complex task or series of tasks safely and effectively. As related to vessel navigation, this applies to four general subjects: error trapping or human intervention, task or mission coordination, team communication, and vessel integration. Error trapping or

human intervention is responsible for "near misses" as discussed in the report entitled "The Role of Human Error in Design, Construction, and Reliability of Marine Structures" published by the Ship Structure Committee (SSC-378, November 1994). Error trapping occurs when humans intervene to interrupt potentially catastrophic combinations of actions and events to bring systems back to within safe operating conditions. This SNPRM emphasizes human factors issues which would reduce the risk of accidents caused by ship personnel: failing to perform tasks, incorrectly performing tasks, lacking knowledge or training to perform assigned tasks, using incomplete or incorrect information, and failing to identify or correct social or managerial problems.

Because the prevention of accidents through improving the people involved in the system is an effective way to reduce risk within the marine industry, the Coast Guard established a task group on January 13, 1995 (60 FR 3289), formed by the Chief, Office of Marine Safety, Security and Environmental Protection to develop a long-term strategy to focus prevention efforts on casualties caused by human error. The Coast Guard's Prevention Through People (PTP) initiative has established a framework by which the Coast Guard, other government agencies, and the maritime industry, nationally and internationally, can work together outside of the regulatory process to manage maritime risks systematically. The task force report entitled "Prevention Through People" stresses the use of risk management tools to identify root causes and cost effective preventive measures; the employment of proactive action to detect, assess, and prevent human errors that affect safety; and improvement of investigative methods, data collection, analyses, and feedback. This report is available for public inspection at the address under **ADDRESSES**.

Training. The Coast Guard received several comments on improving personnel training. Six comments stated that additional personnel training was needed to ensure the competency of the crew. One of these comments urged the Coast Guard to require specific in-house training. Another of these comments suggested that drug and alcohol testing and awareness training be required.

Proposed §§ 157.415 and 157.420 include training requirements and performance standards to ensure the development and retention of certain skills. Drug and alcohol testing program requirements already exist and are applicable to the crews of tank vessels. For this SNPRM, existing drug and

alcohol requirements were considered. The Coast Guard has determined that additional requirements are not needed for drug and alcohol testing or awareness training at this time. The Coast Guard, however, commends companies with programs that exceed Federal requirements.

Three comments stated that bridge management training, including simulator training, would improve the competency of the crew. They recommended that vessels carry a bridge management manual which codifies the company's standards, practices, policies, and procedures.

Two different risk reduction solutions were proposed by the comments. The first solution addressed additional training requirements for improving crew navigational skills or development of management skills for the bridge crew. The second solution pertained to developing extensive operational procedures for various shipboard operations and navigational situations. Both risk reduction solutions address the lack of knowledge and the management components noted in Figure 5.

Company management generally develops various operational procedures in the form of bridge reference material. The crew is then expected to review the material and refer to it, if time permits, prior to acting in an emergency or a unique situation. Several sections of OPA 90 contain extensive planning requirements for emergency situations (i.e., the Vessel Response Plan requirement in 33 CFR part 155.) In contrast to these written procedures, recently developed team training techniques focus on the operation of the bridge team during both normal and emergency situations. This type of training is an example of reducing the risk of a marine casualty through improving the response of the people directly involved with the system.

The Coast Guard has proposed general bridge management training requirements to the Standards of Training and Watchkeeping (STW) Subcommittee of the International Maritime Organization (IMO) since 1991. However, the STW Subcommittee has not yet developed a training standard. The Coast Guard consider such training desirable for the crews of all vessels. This rulemaking may serve as the precedent for future regulations addressing the reduction of accident risk due to human error through team management training programs.

The bridge resource management (BRM) training proposed in § 157.415 of this SNPRM is similar to the techniques and practices that have been used in the

aviation field. BRM is not intended to teach the more "traditional" aspects of bridge watchstanding (i.e., navigation, shiphandling, and collision avoidance); rather, it focuses on integrating "traditional" technical skills with human factors skills to reduce the risk of human error-related accidents. These concepts reflect an emphasis on effective communication among watchstanders; the proper delegation of tasks and responsibilities; the importance of using all available resources (equipment, information, and personnel); and the need for watchstanders to understand the way stress and fatigue affect their performance.

The Coast Guard seeks uniform curriculum requirements for both U.S. and foreign licensed officers, and is presently working within IMO to develop these requirements. If IMO develops and adopts a resolution or other instrument that includes BRM skills and course curriculum, the Coast Guard intends to substitute, incorporate by reference or propose rules which reflect these international standards. In the interim, a general course curriculum was developed based on review of various existing courses used to train pilots, masters, mates, and military personnel. The Coast Guard proposes this general curriculum to ensure that the training courses emphasize open team communications, task coordination, and the integration of operations. Specific course length and a requirement for simulator training have not been included. The following references were used to develop the general course curriculum proposed in this rulemaking:

(1) IMO Guidelines "Human Relationships, 1.21" and "Ship Simulator and Bridge Teamwork, 1.22";

(2) American Petroleum Institute's "Guidelines for Developing Bridge Management Teams";

(3) U.S. proposal papers for both the Standards, Training and Watchkeeping Subcommittee (STW 25/3/14, STW 26/4/13) and the Safety of Navigation Subcommittee (NAV 38/13);

(4) Presentation on "Bridge Resource Management" by Mr. Richard T. Johnson, et al. (Society of Naval Architects and Marine Engineers Panel 0-44), to the International Conference on Marine Simulation and Ship Manoeuvrability (MARSIM 93), Saint John, Newfoundland, Canada, September 1993;

(5) SAS Flight Academy's course curriculum for its "Bridge Resource Management" course;

(6) ARCO Marine's Bridge Team Management Training course

curriculum utilizing SimShip and the Star 360° simulator; and

(7) The Coast Guard's student handbook for its course on "Team Coordination Training."

The training proposed in § 157.415 would be required for designated officers in charge of a navigational watch serving on either tankships and towing vessels. The Towing Safety Advisory Committee (TSAC) recommended that this type of training be required for towing vessel personnel as well as tankship personnel because it is an effective means of preventing accidents. Thus, an example of the personnel affected by § 157.415 would be the master, chief mate, one second mate, and the two third mates (a typical tankship officer complement) or the master and two mates (a towing vessel's officer complement). These individuals would be required to attend the initial BRM training and refresher training no less than once every 5 years. Initial course completion including a series of performance standards and course completion documentation is proposed in § 157.415 to verify that a vessel's officers have been adequately trained. The 5-year refresher training would coincide with present license renewal requirements. For U.S. licensed individuals, a rulemaking to propose requirements for this training and provisions for an endorsement directly onto the license is under development.

The Coast Guard recognizes that vessel owners, masters, or operators would be required to research course availability and to establish training programs to comply with the proposed bridge resource management training requirements. Therefore, in § 157.415(a) the Coast Guard is proposing that compliance with these requirements would not be required until 1 year after the effective date of the final rule. In addition, the Coast Guard recognizes that a substantial pool of merchant mariners already have received comparable BRM training and is proposing that these individuals be credited for the completion of this training if it has occurred within 3 years of the effective date of the final rule.

A more aggressive measure to address the entire crew and their interaction with the vessel operations is "Vessel Resource Management" training. This training course would apply to engine room personnel as well as other personnel assigned to the vessel. The integration of support services, bridge functions, engine room functions, maintenance, and communications with facilities or company management would be covered by this training. The Coast Guard recognizes the value of this

training and solicits comments on whether this type of comprehensive training should be required or recommended.

Training of unlicensed watchstanding personnel is also imperative. The Coast Guard is proposing vessel specific watch training for those watchstanding personnel who assist the officer in charge of a navigational watch. TSAC also recommended that this training requirement be applied to towing vessel personnel. This training would ensure that unlicensed watchstanders receive training tailored to management expectations and the equipment on board either the tankship or the primary towing vessel, prior to taking on watchstanding duties. General subjects for training are listed in § 157.420(a) to ensure watchstanders receive instruction on essential items that would enable them to provide accurate and useful information to the officer in charge of a navigational watch or other senior personnel. To ensure this training remains current and to account for personnel changes or equipment upgrades, an annual refresher of this watchstanding training is proposed.

The Coast Guard has included a proposed definition for the term "officer in charge of a navigational watch" to clarify which personnel would be required to complete the bridge resource management training. This term would also provide consistency with the terminology of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW). The proposed definitions for "primary towing vessel" and for "fleeting or assist towing vessel" would clarify that personnel on the towing vessel responsible for the navigation and control of the tank barge during most of the voyage would be required to have bridge resource management training, vessel specific watch training, and certain other requirements proposed in this rulemaking. This distinction is made because (1) during assist towing operations, the towing vessel personnel that made the transit with the barge (the primary towing vessel) generally stay on site and direct the mooring or anchoring operation; (2) in most cases, the tank barge company has management control over the primary towing vessel and its personnel because they directly own the vessel and employ its crew; and (3) this would ensure integrated tug barge operations are included in the rulemaking.

Pilot Licensing Programs. Three comments suggested improvements to the pilot licensing process. One comment recommended more aggressive

pilot licensing and revocation procedures and the adoption of more rigorous penalty standards. Another comment recommended a comprehensive review of mariner licensing standards and more rigorous enforcement of current regulations such as background checks; one recommended checking the National Drivers Register (NDR) before issuing a license.

A separate NPRM published on March 13, 1995 (60 FR 13570), proposed the incorporation of an NDR check prior to issuing a license. A licensing study is underway and revisions to current requirements are anticipated. In conjunction with the licensing study, a 1994 National Research Council Committee on Advances in Navigation and Piloting report entitled "Minding the Helm" (ISBN 0-309-04829-X) discusses and recommends several actions that could be taken by the Coast Guard to improve marine navigation and piloting. The Coast Guard is presently reviewing this report and anticipates future rulemakings to implement some of the recommendations.

Minimum Rest Hour Requirement. Another component of the accident hazards, shown in Figures 4, 5, and 6, deals with fatigue. Current work hour restrictions and rest hour requirements attempt to mitigate the risk of accidents. The Coast Guard evaluated existing requirements and proposes to expand the rest hour requirement for both foreign and U.S. crew members with duties directly related to vessel safety and oil transfer operations.

Proposed § 157.425 would require the owner, master, or operator of each tank vessel to ensure crew members involved in navigation, engineering, or oil transfer operations are provided a minimum of 6 continuous hours of rest within 12 hours prior to departing port or prior to cargo transfer operations. Because the operation and safe navigation of the tank barge hinges on the actions of the towing vessel personnel, tank barge owners would have to ensure that the towing vessel master or operator, any crew member assigned to helm or lookout tasks, as well as any personnel assigned tankerman duties for the barge cargo complied with these requirements. For tank barge companies that do not directly own the towing vessel or employ its crew, this requirement could be met by management oversight of the towing vessel company, a contractual agreement, or by towing vessel hiring practices.

A definition for "rest hour" is proposed to be added to § 157.03. This

term is borrowed from STCW. Watchstanding, assigned clerical duties, assigned painting, maintenance, or housekeeping duties all fall within a crewman's typical daily work load. A rest hour is that period during which a crew member has no assigned tasks. A rest hour, however, does include the time spent on drills or during an emergency situation. The Coast Guard also recognizes travel to a work site is not addressed in this proposal. The intention of this proposal is to ensure that well rested individuals are assigned to tasks that are important to vessel operations. Travel can have a negative effect on an individual's alertness; however, some commute time to the job site is standard for every profession. The Coast Guard is soliciting comments on when and how travel time should be factored into a rest hour requirement.

The Coast Guard recognizes the benefit of adequate rest for all mariners and is working within the IMO framework to establish an international standard. If IMO develops and adopts a resolution or other instrument that includes provisions for rest, the Coast Guard intends to substitute, incorporate by reference, or propose rules which reflect these international standards. The Coast Guard is also considering the incorporation of the more stringent work hour and rest hour requirements found in section 4114 of OPA 90 to include foreign tankships and other tank vessels. These work hour requirements have been included in the Designation of Lightering Zones Final Rule published on August 29, 1995 (60 FR 45006). The Coast Guard is soliciting comments on the feasibility of expanding application of the work hour and rest hour restrictions of section 4114 or the adoption of similar IMO provisions, under the authority of section 4115(b) of OPA 90.

4. Vessel Maintenance Surveys

Figure 3 depicts the qualitative evaluation of a structural failure hazard to a tank vessel. These types of hazards have been reduced in the past through drydock examinations, classification society requirements, and construction requirements such as the welding qualifications of 46 CFR part 57. The Coast Guard analyzed past requirements addressing structural failures and equipment failures as indicated in Figures 5 and 6. More significantly, because these vessels have been scheduled for a mandatory phase-out, it is suspected that the human factors issues related to management's reluctance to sufficiently supply or upkeep the vessel, and the vessel operator's failure to inspect or test the

tank vessel equipment may become more frequent. Vessel owners or operators may begin to weigh the maintenance investment against the short-lived return and could down-scale vessel upkeep accordingly. The Coast Guard recognizes this possibility and has evaluated existing requirements that would ensure vessel structure and equipment remain in safe operating condition. This analysis indicated that some additional measures could reduce the risk of a structural or equipment failure, and the risk of a collision, allision, or grounding due to equipment or upkeep problems.

The Coast Guard received several comments on improved maintenance aboard vessels. Three comments suggested that the Coast Guard require internal audits of vessel operations, equipment, and personnel for compliance with all applicable regulations and company standards. One comment recommended preventive maintenance programs on ships; another suggested formal in-house ship inspection programs.

In §§ 157.430 and 157.435, the Coast Guard is proposing a two-step approach to ensuring existing tank vessels are maintained at a level that will reduce the risk of a structural or equipment failure. Under this proposal, tankships, integrated tug barges, and tank barges would be required to (1) have an enhanced survey or an enhanced survey equivalent, and (2) conduct frequent vital system surveys.

Enhanced Surveys. Proposed § 157.430(a) would require an enhanced survey for all tank vessels of 5,000 GT or more as detailed in IMO Resolution A.744(18), entitled "Guidelines on the Enhanced Programme of Inspections During Surveys of Bulk Carriers and Oil Tankers." To prevent the need for additional drydockings, the requirement would reflect either the frequency of the U.S. scheduled drydock exam requirements in 46 CFR part 31 or that of a foreign vessel's flag administration. This requirement already exists under the International Convention for the Prevention of Pollution from Ships, 1973 and the related amendment to Annex I of MARPOL 73/78; however, the U.S. has expanded the scope of this requirement to include tank vessels of 5,000 GT or more that do not have double hulls. This survey requires detailed visual inspection as well as specific gauging. This survey should reduce the risk of both a global and local structural failure by closely recording and inspecting the hull prior to the vessel's phaseout date. It would also ensure that a detailed survey of the cargo piping and hull are available for

Coast Guard examination. This would enable the Coast Guard to affirm that vessel upkeep is adequate for safe operation.

Alternate Enhanced Surveys. To allow companies flexibility and credit for existing in-house survey programs, tankships not required to meet Annex I of MARPOL 73/78 and all tank barges would have the option of meeting an equivalent standard. This provision is proposed in § 157.430(b) and would allow companies with established in-house survey programs to simply upgrade them slightly and include oversight provisions.

The Coast Guard anticipates that many tank barge owners and small tankship owners already have preventive maintenance programs that include routine hull gaugings, pipe gaugings, and inspections beyond current Coast Guard requirements. These programs provide company management personnel with material condition documentation necessary for long-range company planning of vessel replacement or overhaul scheduling. Proposed § 157.430(b) would permit the company to follow its own program rather than start an entirely new process if the company can document that the present survey process is comparable in scope and recordkeeping to the IMO requirements. In addition, this section would require oversight of these programs to ensure that the vessel is adequately surveyed until it is phased out of service. Review of the gauging and inspection analysis would provide clear assessment of the vessel's structural soundness. The enhanced survey or preventive maintenance program reports would be required to be retained on board or made available within 24 hours to enable Coast Guard personnel to readily assess the vessel's suitability for service and also to assist in any emergency cargo transfer operations or emergency repairs.

Vital Systems Surveys. While an enhanced survey reduces the risk of both catastrophic and local hull failure, it does not directly address risk of equipment failure or the risk of a fire or an explosion. Figures 3 through 6 indicate certain mechanical or equipment failures which may contribute to or cause these types of accidents. The Coast Guard researched the present inspection and regulatory requirements in effect for each system. Many of these systems are inspected annually by either flag or port administrations. However, while 33 CFR 164.25 requires some tests and inspections, it does not detail some of the systems unique to tank vessels. While most companies already have

routine equipment maintenance and inspection programs, several systems are overlooked or not included in these programs.

In § 157.435, the Coast Guard is proposing more frequent surveys of systems deemed vital to the safe transfer of cargo, fire and explosion risk reduction, and maintaining navigational control. To ensure these systems get the maintenance they need to remain safe, these inspections would be conducted by vessel personnel, company personnel, or company designated representatives that are knowledgeable of the equipment's safe operating parameters and that have the authority, capability, and responsibility to initiate corrective action when equipment is not functioning properly. Because tank barge systems require similar vigilance to ensure they remain safe, tank barge owners, masters, or operators would be included in this requirement and would have a responsibility to ensure the barge systems outlined in proposed § 157.435 are surveyed by the appropriate personnel.

Those systems related to vessel control, such as steering and navigational equipment, are presently required to be tested and inspected as specified in 33 CFR part 164 if the vessel is 1,600 GT or more. For towing vessels, the Coast Guard recently proposed similar control and navigational equipment checks. However, the inspection of the emergency towing equipment required in the IFR published December 22, 1993 (58 FR 67988), is not covered in 33 CFR part 164. This emergency towing equipment is generally located on the vessel's deck and is required to be rigged for ready use. This towing equipment along with mooring lines and similar equipment are included as a vital system survey because of their exposure to prolonged adverse environmental conditions and their infrequent use. The Coast Guard solicits comments on these vital systems survey requirements. The Coast Guard specifically requests comment on whether additional systems should be surveyed to prevent equipment failure, which could lead to an oil spill, fire, or an explosion during cargo transfer operations, and whether specific emergency systems should be inspected more frequently than proposed or required.

This proposal also would require the inspection findings to be logged in the Oil Record Book required by 33 CFR 151, in the vessel's log, or other similar onboard documentation to ensure that the master or operator is aware of the condition of these vital systems.

No reporting requirements are proposed in § 157.435; however, there are existing port specific reporting requirements or port entry restrictions that would remain in effect if this proposal became a final rule. The Coast Guard solicits comments on reporting requirements for the failure of specific components within the proposed vital systems.

5. Navigation and Maneuverability

Improved navigation equipment and maneuvering systems would mitigate the risk of a collision, allision, or grounding attributable to lack of knowledge or reliance on incomplete or incorrect data. These two components within Figure 5 and 6 can be effectively addressed in various ways. Present regulations reflect highly technical navigation equipment requirements for tank vessels in 33 CFR part 164. This navigation equipment is being improved almost daily as computing systems and programming capabilities increase. Human error in reading the equipment or interpreting the data is also addressed within present requirements through radar operator endorsement requirements and other licensing requirements. The risk of an accident due to navigation equipment failure is also mitigated by the reporting requirements of 33 CFR parts 160 (Ports and Waterways Safety) and 164 (Navigation). Maneuvering systems are addressed in present requirements for information about the vessel's maneuvering characteristics and reliability of the vessel's control systems.

Autopilot Alarm. One comment stated that vessels should be equipped with an alarm that sounds when the helm is turned more than 5° from amidships while the autopilot is engaged.

The Coast Guard agrees with this practical and simple alarm requirement and in § 157.440(a) is proposing a requirement for an additional alarm on all tankships with installed autopilot equipment. As recommended by TSAC, a tank barge owner or operator would be required to ensure that the towing vessel has a means to indicate to the towing vessel operator that the autopilot is engaged and manual rudder commands would not be effective unless the autopilot is shut off. Because a towing vessel wheelhouse is generally arranged for a single operator and the autopilot system is simplistic, a physical indicator to remind the master or operator that the autopilot is engaged would serve as adequate warning. On tankships, there are multiple watchstanders, frequent duty rotations, and complex autopilot systems that

make it easier to lose track of the autopilot status. An alarm requirement on a tankship would ensure both the officer in charge of a navigational watch and the helmsman are aware of the autopilot status.

Accident data indicates that there have been incidents when bridge crew personnel were unaware of the autopilot status and attempted to manually steer the vessel while the autopilot was engaged. In some instances their actions did not result in the desired change to the ship's heading or rudder angle due to the autopilot settings. The requirements proposed under § 157.440 would be in addition to requirements in 33 CFR 164.13 which restrict the use of an autopilot on tank vessels of 1,600 GT or more in certain areas and under certain conditions. These two requirements would not conflict because 33 CFR part 164 restricts the use of the autopilot, while this proposal would alert the tankship officer in charge of a navigational watch and the helmsman if the helm is turned manually while the autopilot is engaged. The Coast Guard is soliciting comments on the inclusion of a requirement for primary towing vessels to have a restriction on the use of the autopilot similar to 33 CFR 164.13(d).

Maneuvering Performance Capability. Proposed § 157.445 addresses both the lack of knowledge component and the use of incorrect or incomplete information component in Figure 5. Maneuvering performance capability is directly related to the vessel's design and can easily be established. The standards for ship maneuverability outlined in IMO Resolution A.751(18) use conventional trial maneuvers to evaluate vital maneuverability characteristics. IMO has deliberated ship maneuvering issues since 1968. Resolution A.601(15), entitled "Provision and Display of Maneuvering Information On Board Ships," was adopted in 1987. Resolution A.751(18) was adopted in November 1993, and is based on the premise that vessel maneuvering characteristics can be assessed from the results of typical sea trials. It differs from the present posting requirements of 33 CFR part 164 in two fundamental ways: (1) It scales maneuvering test results against minimum criteria; and (2) it requires zigzag maneuvers to establish first and second overshoot angles.

This performance standard serves to highlight those vessels with poor control capabilities due to design, or vessels that experience dynamic instability during some maneuvers. Under proposed § 157.445(b), the owner, master, or operator must inform

the COTP if the vessel fails to meet the IMO minimum criteria in any of the seven test areas. This provides the port state a guideline for recognizing the capabilities of approaching vessels and for taking appropriate action to reduce the risk of a grounding, allision, or collision. Providing advance notice to the Captain of the Port (COTP) that a vessel does not meet this performance standard mitigates the external factor component of Figure 5.

The Coast Guard also recognizes the twofold potential for these test results to assist a pilot: (1) They provide overshoot angle information; and (2) they provide the maneuvering information in relationship to the ship's length. This type of information is not contained within IMO's Resolution A.601(15) maneuvering wheelhouse poster nor in the existing 33 CFR part 164 wheelhouse maneuvering characteristic requirement. Posting of the test results of this performance standard would provide pilots with nondimensional maneuvering information. In addition, a thorough knowledge of this performance standard and its development would enable the pilot to compare the test results among vessels. It provides a benchmark for quantifying how well the vessel can be expected to respond under general conditions.

The Coast Guard has considered the applicability of these performance standards. The IMO resolution applies only to vessels of 100 meters or more in length constructed on or after July 1, 1994. The Coast Guard proposes to apply these requirements to all tankships of 5,000 GT or more that do not have double hulls. The IMO performance criteria was based on a study of 600 existing vessel designs and reflects simple, practical changes to current ship maneuverability trials. For those vessels which do not meet this standard, the proposed regulation does not bar them from port entry. Proposed § 157.445(b) would allow vessels which do not meet the standard to continue port entry; however, a vessel would be required to comply with a mandatory reporting requirement to ensure that the COTP is alerted to the inferior maneuvering performance of the vessel.

The Coast Guard recognizes that vessel owners and operators would require adequate time to perform the maneuverability tests required by this proposed requirement; therefore, under proposed § 157.445(a), the Coast Guard intends to delay the implementation of this proposed measure until 1 year after the final rule is published in the Federal Register.

Maneuvering and Vessel Status Information. Section 157.450 proposes to incorporate by reference an IMO resolution with three specific requirements: (1) standardizing the presentation of the maneuvering information required by 33 CFR part 164; (2) requiring the use of a pilot card; and (3) requiring a maneuvering booklet to be available to the master on board the vessel. The maneuvering poster required by this resolution incorporates all of the information that is required to be displayed by a vessel of 1,600 GT or more under 33 CFR part 164. This proposed requirement would ensure that every tankship presents this maneuvering data in the same format so the pilot can quickly assess the maneuvering characteristics of the vessel. The pilot card provides a "snapshot" of the vessel's current equipment status and maneuvering information unique to the transit. The maneuvering booklet gives detailed information on the specific maneuvering capabilities at various drafts and in various hydrodynamic situations. These details, along with squat characteristics, are essential for difficult transits through constricted channels and for damage control situations in the event of a marine casualty.

All three of these requirements have been recommended by the Coast Guard since 1989 through NVIC 7-89, "Maneuvering Information." Use of standardized forms to help prevent omission of important information is a common theme within bridge resource management philosophy. The Coast Guard also solicits comments on whether the pilot card should have additional information.

Minimum Under-keel Clearance. Three comments favored the implementation of minimum under-keel clearance requirements to prevent groundings. The Coast Guard agrees and in § 157.455 is proposing regulations which would establish a minimum under-keel clearance requirement for all tank vessels departing or entering a port. This proposed regulation is intended for both tankships and tank barges. The tank barge company would be required to ensure the tank barge meets this minimum under-keel clearance requirement either through establishing and enforcing company policy, through a contractual agreement with the towing vessel company, through hiring practices, or through direct company oversight of the tank barge's under-keel clearance calculations prior to port entry or departing port.

This requirement has been suggested in several forms over the past 10 years.

The Coast Guard, with the aid of the Navigation Safety Advisory Council (NAVSAC), considered a draft for similar requirements in 1991. After much debate, it decided not to pursue a federally-mandated clearance requirement. The difference between the current proposal and past proposals is fundamental. Past proposals considered "real-time" or actual under-keel depth and minimum under-keel depth throughout a transit. Problems with this type of requirement were substantial. The accuracy of the onboard depth sounder, the number of depth sounders and their hull placement, and the inconsistencies between published data and actual water depth, all complicated the task of regulating actual under-keel depth.

The proposed requirements in § 157.455 are based on anticipated under-keel depth and represent a fundamental passage planning requirement. IMO has provided guidance on general under-keel clearance considerations since 1978 in its "Guide to the Planning and Conduct of Passages" (SN/Circ. 92, 23 October 1978). As a passage planning requirement, this proposal would reduce human error by ensuring the hazard components (shown in Figures 5 and 6) related to failure to do a task, failure to correctly perform a task, incomplete or incorrect information, and lack of knowledge or training are addressed on those tank vessels presenting a higher oil spill risk, due to design, if a grounding occurs.

Conscientious operators already carefully calculate the deepest draft of the vessel and then review the intended route to ensure there is adequate depth underneath the keel. Several companies already have policies dictating this planning requirement and several U.S. ports, such as the ports of Long Beach and Los Angeles, already have established guidance for minimum under-keel clearances. NAVSAC recommended that an adequate depth for transit determination be made by a joint agreement between the local Captain of the Port (COTP) and the port and harbor safety authority or association or other similar group. This recommendation would be appropriate if the safe navigation of a particular port indicates that it is necessary to establish permanent under-keel clearance requirements. The Coast Guard recognizes that some local COTP and port and harbor safety authorities presently have or may wish to establish clearance requirements. This proposal would not preempt present or future local standards. The proposal

establishes an anticipated minimum under-keel clearance of at least .5 meters (2 feet) for all ports. If a local standard is less than the proposed .5 meter clearance, the proposed notification requirement enables the COTP to positively control the local policy. It is anticipated that a local under-keel clearance requirement that is more stringent than the .5 meter clearance would be enforced through a joint COTP and harbor safety authority agreement. This proposed clearance reflects general industry standards and provides an added cushion of safety for vessels while operating in areas where charted depths may not have been updated by surveying agencies for sometime. Tank vessels fitted with double bottoms would be exempt from this under-keep clearance requirement because within the risk framework developed for this rulemaking, the double bottoms provide protection from oil spills that may be caused by this type of accidental or non-emergency intentional grounding.

A vessel's log or similar onboard documentation should indicate that the master or operator has considered the factors that may affect a vessel's draft and has reviewed the appropriate scaled charts, tide tables, and other applicable publications to calculate the anticipated controlling depth. Charts and publications may contain conflicting water depth information. Some of these variances are due to different survey periods, survey techniques, or recording purposes. The most conservative depth should be used to calculate the anticipated depth.

This preventive measure would require all affected vessels to carefully plan port transits. Grounding would not indicate a violation of the requirements in proposed § 157.455 if the owner, master, or operator has properly logged or documented the proposed planning requirements and can recreate the calculations done prior to port entry or departure. Satisfying the planning requirements, however, does not relieve the owner, master, or operator of ensuring that other navigational requirements and practices are followed.

Intentional grounding during a transit, unless done to reduce the risk of a collision or allision, or during a similar type of emergency, would violate the regulation if done with without the express approval of the COTP. This proposed restriction on intentional grounding is not intended to unconditionally prohibit this practice rather, it focuses on ensuring that the local COTP understands the vessel's operation and agrees to the practice. In areas where port bottom conditions are

known and do not pose a threat to the integrity of the hull, approval for certain vessels to load cargo by intentionally grounding would be acceptable. An anticipated caveat to a vessel being allowed to routinely ground for loading operations is a specific shell plate and weld condition survey or some other type of structural review provision to ensure the vessel remains structurally fit for the additional loading stresses.

Pilotage Passage Plans. One comment recommended that the Coast Guard require pilot passage plans. This would require the pilot to prepare a written passage plan prior to boarding a vessel, provide copies of the plan to the bridge team, and discuss the plan with the bridge team prior to beginning the passage. Guidance on this issue has been developed by IMO and is entitled, "Guide to the Planning and Conduct of Passages" (SN/Circ. 92, 23 October 1978).

Although many pilots already prepare plans for passage through a port, the vessel's crew also needs to actively communicate with the pilot prior to a port transit. This proposed rulemaking addresses only the vessel's responsibility to accurately inform the pilot of the vessel's status and to monitor the pilot during a transit by incorporation of pilot cards and bridge resource management training. The Coast Guard and IMO are undertaking a separate initiative to address the pilot's responsibilities to the vessel.

Navigation Equipment. Several comments stressed the need for improved navigation equipment and suggested requiring state-of-the-art navigation equipment such as a Global Positioning System (GPS) Receiver and collision avoidance radar. Other suggestions included electronic charts, advanced sonar systems and a speed log.

Within both the international community and among U.S. vessel operators, a significant amount of discussion has centered on the value of navigational information versus the training of navigators. While equipment with additional capabilities is extremely useful, navigational safety also depends on the officer using this information. The Coast Guard has determined that the present automatic radar plotting aid (ARPA) requirements and the electronic positioning device required in 33 CFR part 164 set an adequate minimum standard. The proposed bridge resource management training would give the officers responsible for vessel navigation the tools they need to interpret and use all the information gathering systems at their disposal. The Coast Guard is considering future proposals for

Electronic Chart Display and Information System (ECDIS) or differential GPS (DGPS) capabilities on vessels. While ECDIS may indicate the ship's actual position on an electronically generated chart, any requirement for electronic positioning devices is premature until standards for equipment have been developed and DGPS signals can provide an accurate, high integrity signal throughout the United States. However, owners purchasing new units should consider a GPS unit capable of receiving a DGPS signal or interfacing with a differential receiver.

Vessel Traffic Service Systems. Several comments stated that the Coast Guard needs to develop stronger rules for Vessel Traffic Service Systems (VTS). Three comments stated that the Coast Guard should require a vessel's mandatory participation in a harbor's active VTS. Other comments stated that more ports were in need of VTS. One comment stated that the VTS existing in Valdez, AK, San Francisco, CA, New Orleans, LA, and New York, NY, have deficiencies including inadequate funding, lack of maintenance and poor training. Most comments stated that VTS are an obvious measure to reduce oil pollution which should be improved and extended to more ports.

Section 4107(b)(1)(B) of OPA requires the Secretary to study the need for new, expanded or improved VTS. The 1991 Port Needs Study (Vessel Traffic Service Benefits) documents the benefits and costs of Coast Guard VTS in 23 selected ports on the Atlantic, Gulf, and Pacific coasts. The study employs a comprehensive cost-benefit model that considers the far-reaching consequences of marine accidents based on navigational risk. The results are being used by the Coast Guard to make capital investment decisions for the entire VTS program. One change is the establishment of requirements and procedures which simplify previous VTS regulations and mandate participation in all VTS (59 FR 36316; July 15, 1994). Other VTS developments are being proposed in separate documents and are not within the ambit of this rulemaking.

Voyage Data Recorder (Black Box). Another comment suggested installation of a comprehensive event recorder (black box) to allow investigators to reconstruct the events leading to a near-miss or marine casualty.

As indicated in Figures 3 through 6, a black box would not directly reduce the risk of an accident. Present regulations require recording capabilities on depth sounding devices and logging requirements for various

other navigation indicators. This information has been used in the past to reconstruct accident events. A comprehensive recording system such as a black box could improve investigation quality and reduce the time needed to reconstruct accident events. Additionally, it might be a factor in reducing the risk of future casualties if used as a management oversight tool to heighten management's awareness of vessel operations. In addition, use of the black box could provide information on near-misses which could be used to assess regulatory effectiveness and pinpoint potential areas of traffic or operational concern.

Other types of recorders that include active warning systems (linked into existing VTS or capable of alarming a vessel automatically in a potential collision situation) are in use on some offshore oil platforms. These early warning systems work in conjunction with DGPS and ECDIS. Because of their dependence on DGPS and ECDIS, the Coast Guard believes that it is premature to require active warning systems. While voyage data recorders and early warning systems are both technologically feasible, they are costly. A general requirement for an automatic, tamper proof voyage recording system that would record voice, radar, position information, engine, and course data would impose significant costs. This SNPRM solicits comments on a voyage data recorder requirement, inclusion of an early warning capability in a recording device, and recommended provisions for near miss data collection.

Escort Vessels

Several comments pointed out the value of escort vessels. One comment also recommended requiring bow thrusters for tankers without tug escorts. The escort vessel issue is being addressed in a separate regulatory project. This proposed rule considers escorts as a possible alternative when the vessel does not meet certain maneuverability performance standards. The Coast Guard has determined that the proposed requirements for emergency steering capabilities combined with maneuvering performance standards would reduce the risk of a collision, allision, or grounding due to poor maneuverability and mitigates some of the equipment failure components in Figure 5. Comments on possible requirements for bow thrusters are solicited in this proposed rulemaking.

Routing Restrictions.

Several comments suggested various route restrictions to increase safety.

Four comments recommended more stringent pilotage requirements. Five comments recommended limitation of vessel movement. Two other comments recommended voluntary routing. One comment recommended mandatory speed limits. One comment suggested that the Coast Guard identify those ports with rocky bottoms and prohibit entry by tankers without double bottoms. Such provisions directly correlate with the risks of structural failure (Figure 3) from impact.

Although the Coast Guard recognizes that groundings and collisions could be reduced through routing restrictions, it does not have the authority at this time to enforce mandatory routing restrictions or exclusionary transit zones on foreign vessels outside of U.S. navigable waters. At the sixty-fifth session of the Marine Safety Committee (MSC), in May of 1995, the Committee adopted amendments to the International Convention for the Safety of Life at Sea, 1974, and its Protocol of 1978, which would permit the establishment of mandatory routing measures through IMO. This MSC resolution, MSC 46(65), becomes effective January 1, 1997.

Present routing practices off the coast of California are voluntary and were developed after extensive research. Diverse weather patterns, vessel traffic, marine life considerations, and other factors pose safety problems in some geographic areas. Because of the unique nature of each port and offshore area, the Coast Guard has traditionally left speed limit, safety zone and other restrictions to the local COTP. As required by section 4111(b) of OPA 90, the Coast Guard is currently studying tanker routing and solicits comments on establishing routing restriction requirements.

6. Additional Operational Requirements for Tank Barges

Several comments suggested improvements to towing vessels. One comment stated that the Coast Guard should require navigation equipment on towing vessels. Another comment stated that independent emergency steering capability should be required on towing vessels. One comment recommended restrictions on tandem towing when loaded, requiring twin screw tugs, and requiring towing vessel horsepower to barge deadweight ratios. One comment recommended that the Navigational Safety requirements of 33 CFR part 164 be extended to towing vessels. One comment suggested two independent propulsion systems.

The Coast Guard has issued several rulemakings affecting the entire

commercial towing industry. The recent proposed rulemaking entitled "Navigation Safety Equipment for Towing Vessels" (60 FR XXXX) contains several of the requirements mentioned above. It proposes requirements for vessels engaged in towing that are 8 meters or more in length. These requirements include certain navigational equipment, such as radar; searchlights; and electronic position fixing devices, depending on the vessel's area of operation; general navigation safety requirements; and topline inspections for vessels engaged in towing astern. Further requirements on licensing for towing vessel operators also may be proposed.

Emergency Steering Capability. In § 157.460(a), the Coast Guard is proposing that the owner or operator of a tank barge would be responsible for ensuring the primary towing vessel has either twin screws with independent power or a backup steering system. Twin propulsion designs with separate engine controls, dual shafts, and propellers certainly would meet the intent of this requirement and are allowed under this proposal. To reduce the impact of this regulation and to allow vessel owners time to schedule shipyard facilities, the Coast Guard proposes a 1-year delayed implementation of this requirement.

This requirement was proposed after review of the risks of equipment failure and loss of steering as shown in Figures 5 and 6. Loss of steering for tankships is addressed by 33 CFR 164.39, 46 CFR 58.25, and the International Convention for the Safety of Life at Sea, 1974, and its Protocol of 1978, with amendments, Chapter II-1, Part C, regulation 29. Therefore, this SNPRM does not propose additional steering requirements for tankships.

Fendering Systems. The qualitative evaluation of the structural failure hazard (Figure 3) revealed that structural fractures due to the stress on local hull areas of a tank barge, where a towing vessel or a pier routinely comes in contact with the barge, have not been addressed and could contribute to the cause of some oil spills. While this type of fracturing may be identified by the enhanced survey requirements proposed in § 157.430 of this SNPRM, a more fundamental and cost effective solution is adequate fendering. Because fendering on a barge would be very costly, would decrease structure accessibility under the fendering system, and may increase the rate of local structural deterioration surrounding the fendering system, the Coast Guard is proposing that the owner or operator of a tank barge would be

responsible for ensuring the primary towing vessel and any other assist or fleeting towing vessels have adequate fendering systems. This proposal would require vessel owners and operators to ensure towing vessel fendering systems are assessed through management policy, on-site inspection or oversight, contractual arrangements, or hiring practices as an important protective measure for their barge's structural integrity. Fleeting and assist towing vessels are included in this proposal because during docking operations, the forces they exert on the barge hull also contribute to the fracture problem. Although there are no international or domestic guidelines for appropriate fender technical specifications, § 157.460(b) proposes a performance guidelines for preventing metal to metal contact of the towing vessel and the tank barge.

7. Other Operational Measures

Many of the comments proposed improvements through other operational measures, including planning improvements. Two comments recommended cargo loading and casualty planning. The comments stated that the risk of pollution could be reduced significantly through a strategic cargo loading plan which included criteria for loading a partial cargo or discharging at several ports. For example, if cargo is retained after discharging at the first port of call, cargo can be retained in center tanks instead of wing tanks. One comment stated that effective casualty planning would reduce the likelihood of a pollution incident; these plans are not currently required.

Hydrostatic balanced loading minimizes the accidental oil outflow by strategically loading cargo tanks to take advantage of the hydrostatic balance between the cargo and sea water. This concept is presently being studied and will be considered in the Existing Vessel Structural Measures rulemaking. Casualty planning requirements are addressed in "Shipboard Oil Pollution Emergency Plans" (59 FR 51332; October 7, 1994).

Three comments were received regarding emergency transfer systems (ETS). Two of these comments supported the implementation of ETS while one comment stated that ETS was unproven and not likely to prevent pollution. These systems generally require additional cargo piping and pump refit or installation. It should also be noted that the Coast Guard has completed a report to Congress entitled, "The Feasibility of Using Segregated Ballast Tanks (SBT) for Emergency

Transfer of Cargo and Storage of Recovered Oil," 1995. In this study, it was found that in the event of a vessel casualty, such as a collision or grounding, there are often fundamental changes in the vessel's stability condition which make it potentially unsafe and inadvisable to use SBT for emergency transfer of cargo. The regulatory assessment study for the third portion of this project will address these systems and any special considerations in their use.

Three comments recommended that wing tanks be kept empty. One stated that empty wing tanks would reduce the likelihood of oil outflow in collisions by 100 percent and in groundings by at least 50 percent, compared to estimates of 30 percent and 15 percent provided in the Existing Tank Vessels NPRM. This comment specifically suggested that the wing tanks remain empty rather than ballasted with water or other non-petroleum cargo. Significant structural refit to reinforce bulkheads between empty wing tanks and cargo tanks, possible piping refit, and substantial stability reassessment may be required. The Coast Guard is soliciting comments on the economic and technical feasibility of this proposal.

One comment recommended emergency retrieval equipment or emergency towing pendants similar to those provided for in Washington State regulations. Four comments stated that tow wire maintenance and inspection should be required. An interim final rule (IFR) requiring emergency towing equipment was published in the Federal Register on December 22, 1993, entitled, "Discharge Removal Equipment for Vessels Carrying Oil" (58 FR 67988). This required the majority of existing tank vessels to have an emergency towing wire meeting an IMO standard. This IMO standard has been revised to incorporate a requirement that the equipment can be deployed automatically and by a limited number of crew. The Coast Guard supported these changes at IMO and intends to implement these new requirements in a future rulemaking. In addition, an NPRM entitled, "Navigation Safety Equipment for Towing Vessels" published elsewhere in this issue of the Federal Register proposes minimum tow wire standards and inspection requirements.

Amendments to 46 CFR Part 31

To ensure cross reference to the proposed enhanced survey requirements, tables (a) and (b) in 46 CFR 31.10-21 would be revised to direct individuals using 46 CFR part 31 to

§ 157.430(a); however, it does not change existing drydock requirements.

Amendment to 46 CFR Part 35

To ensure cross reference to part 157, § 35.01-40(c) of title 46 of the CFR is revised to refer individuals using 46 CFR part 35 to the applicable pollution prevention requirements.

Incorporation by Reference

The following material, in part, would be incorporated by reference in § 157.02: IMO Assembly Resolution A.601(15) with Appendices 1-3, "Provision and Display of Manoeuvring Information on Board Ships"; IMO Assembly Resolution A.744(18) Annex B, "Guidelines on the Enhanced Programme of Inspections During Surveys of Bulk Carriers and Oil Tankers"; IMO Assembly Resolution A.751(18) with Explanatory Notices in MSC/Circ.644, "Interim Standards for Ship Manoeuvrability"; and Oil Companies International Marine Forum (OCIMF) "International Safety Guide for Oil Tankers and Terminals" (Second Edition). Copies of the materials are available for inspection where indicated under **ADDRESSES**. Copies of the material are available for the sources listed in § 157.02.

Before publishing a final rule, the Coast Guard will submit this material to the Director of the Federal Register for approval of the incorporation by reference.

Assessment

This proposal is a significant regulatory action under section 3(f) of Executive Order 12866 and has been reviewed by the Office of Management and Budget under that order. It requires an assessment of potential costs and benefits under section 6(a)(3) of that order. It is significant under the regulatory policies and procedures of the Department of Transportation (DOT) (44 FR 11040; February 26, 1979).

A draft Assessment has been prepared and is available in the docket for inspection or copying where indicated under **ADDRESSES**. The Assessment is summarized as follows.

This rulemaking would apply to all existing vessels of 5,000 GT or more that do not have double hulls and that carry oil, including non-petroleum oil, in bulk as cargo. An estimated 1359 existing tank vessels (190 U.S. tankships, 1080 foreign tankships, 86 U.S. tank barges and 3 foreign tank barges) currently operating on the U.S. navigable waters would be affected by this proposed rulemaking.

Industry Cost

Some of the proposed operational measures require actions prior to each port transit or cargo transfer. As a result, vessels on coastwise or frequent transit schedules would incur higher expenses than vessels with a lower frequency of port calls. In contrast, the decrease in fleet size as vessels arrive at their phaseout date results in a downward trend in estimated annual costs from 1996 through 2014.

First year compliance cost of this SNPRM would total about \$183.8 million. Annual costs of the proposal would trend downward, leveling out at \$5.8 million during 2012-2014, the final years that the proposal would be in effect. The present value of this proposal is discounted at 7 percent throughout this assessment in accordance with current Office of Management and Budget guidance to reflect the costs or benefits as they would have been in the year OPA 90 was enacted. The present value of this proposal, discounted at 7 percent, would total \$443.6 million. U.S. tankships and tank barges would together account for an estimated one-third of total costs, and foreign tank vessels and barges would account for the remainder. A discussion of costs for each proposed requirement follows.

The costs associated with the operational measures proposed in this SNPRM were developed based on vessel type, vessel use, and average vessel size. The cost analysis was applied to tankships and tank barges. Cost analysis calculations were based upon the following assumptions:

(1) The proposed rulemaking would come into effect in 1996;

(2) The recurring cost of this rulemaking would reflect the future vessel population decrease as required by the phaseout schedule in section 4115(a) of OPA 90 and shown in NVIC 10-94;

(3) Both costs and benefits developed for this rulemaking are discounted at 7 percent back to 1990; and

(4) All recurring costs are calculated for the year 2001.

Emergency Lightening Equipment. Lightening equipment costs were based on the costs used in the Emergency Lightening Equipment and Advanced Notice of Arrival Requirements for Existing Tank Vessels Without Double Hulls Final Rule (59 FR 40186). This SNPRM proposes to expand the applicability of these emergency lightening requirements from oil tankers to all tank vessels. No U.S. tank vessels with exclusive non-petroleum oil cargo carriage authority are in operation.

There would be no costs to U.S. tankships or tank barges. An estimated 114 foreign tankships and 2 foreign tank barges carry non-petroleum cargo and may be affected by this change. The onetime costs for this proposed requirement for foreign tankships is estimated to be \$456,000–\$1.1 million and for foreign tank barges would be \$8,000–\$19,000. Based on the average onetime cost for foreign tankships and tank barges, the present value of point-estimate costs for emergency lightering discounted at 7 percent to 1990 would be \$530,000.

Bridge Resource Management Training. The cost of proposed § 157.415 would vary based on crew complement, crew salary, and estimated existing training programs. Based on typical crew compliments and accounting for personnel turnovers, seven tankship officers were assumed to require this training per tankship while six officers were used to estimate the cost to each tank barge. Crew daily wages were estimated based on American Institute of Merchant Shipping (AIMS) data, Tanker Advisory Report statistics, and American Waterways Operators (AWO) information. Although simulator training is not proposed as a required element of the BRM training course, past completion of an existing Coast Guard approved bridge resource management course would meet the proposed requirements. An estimated 60 percent of U.S. tankships and tank barge companies have already met this training requirement for their deck officers through commercial bridge management courses. An estimated 30 percent of the foreign vessels operating on routes within U.S. waters have trained their officers in management-type curriculum. The commercial bridge management course fees, approximately \$5,000 per person (for a 5-day course), were used to estimate the cost of this proposal. The refresher training course offered by commercial vendors was estimated to be \$500 per person.

Total cost of the proposed BRM training requirement to industry for U.S. tankships would be \$3.7 million. Foreign tankship total initial estimated cost would be \$33.0 million. The U.S. tank barge total initial estimated cost would be \$2.0 million. The total cost to the foreign tank barge industry would be \$79,000. The present value of the costs of BRM training discounted at 7 percent to 1990 would total \$35.1 million.

Vessel Specific Watch Training. The Coast Guard estimates the additional cost incurred by proposed § 157.420 would be negligible. The cost attributed to time loss due to this training is

negligible because this type of training falls within the scope of a master's present responsibility to ensure the crew is "fit for duty." Recordkeeping requirements are addressed in the "Collection of Information" section.

Minimum Rest Hour Requirement. To meet proposed § 157.425, shoreside augmentation of the vessel crew to allow the vessel officers and crew members time to rest, is estimated to include one officer (assume average second mate salary) and two tankerman (assume average third mate salary) for each port visit on a tankship and one tankerman (assume average mate salary) for a tank barge. On U.S. vessels, one officer was not included because under 46 U.S.C. 8104(a), the master is presently required to meet this rest hour minimum. Shoreside augmentation requirements would vary based on the number of port visits per vessel correlated with an estimate on average visit length. Careful crew scheduling and time management could reduce the amount of augmentation required prior to departing port. It is estimated that U.S. tankships would require shoreside augmentation prior to 60 percent of their port departures, foreign tankships would require augmentation prior to 40 percent of their port departures, and tank barges (both foreign and U.S.) would require 80 percent augmentation to meet this proposal. If shoreside augmentation would be required prior to a port departure, a full day's wage for the estimated number of personnel required for augmentation was used. The cost for posting a notice to crew members on the rest hour minimums was not calculated because it is minimal.

The 1-year cost for augmented shoreside manning on U.S. tankships would be \$2.2 million and for foreign tankships would be \$1.5 million. The 1-year cost for augmented shoreside manning on U.S. tank barges would be \$991,000. The 1-year cost for augmented manning for foreign tank barges would be \$6,500. By 2001, the total cost of this proposed requirement to the U.S. tankship industry would be \$1.55 million, and to foreign tankships, \$1.03 million. For the tank barge industry, this recurring augmentation cost would be \$714,000 for the U.S. industry and slightly less than \$4,000 for the foreign industry. The present value of the costs of rest hour minimums discounted at 7 percent to 1990 would total \$19.7 million.

Enhanced Survey and Alternate for Enhanced Survey. Those tankships regulated by flag administrations signatory to MARPOL 73/78 and having adopted Regulation 13G of Annex I are

presently required to complete the proposed enhanced survey of § 157.430(a) starting in 1995. For this proposed rulemaking, no cost is associated to this group of vessels for the enhanced survey requirement. U.S. tankships presently are not required to meet Regulation 13G of Annex I of MARPOL 73/78. Under this proposal, they would be required to conduct enhanced surveys and incur the cost associated with these surveys.

The cost of an enhanced survey for a vessel classed by a recognized classification society is estimated to be 25 percent higher than the cost of the special survey currently performed by the class societies. This cost includes the fee for the surveyor's time and required documentation. For a 21,000 GT tankship, the increased cost for a surveyor and a final report is estimated to be \$11,000. Additional costs to the industry for this proposed requirement would include making approximately two tank interiors accessible to the surveyor through the use of scaffolding, ladders, lines, or other arrangements and additional gauging requirements (approximately 30 percent more than present classification society requirements). Some additional repair costs could also be incurred after a review of the survey is completed. Cost estimates do not include the cost to drydock the vessel, gas free it for inspection, or keep it in the drydock. These costs are already incurred with present drydocking requirements.

It is estimated that 64 tankships are either not classed or are classed by classification societies not recognized by the Coast Guard. These vessels would incur additional costs associated with a design review and a condition survey for reclassification by a recognized society. Classification costs or enhanced survey costs for vessels already required to drydock, but never classed or not classed by a recognized classification society, would be \$514,000.

Tank barges are not required to meet Regulation 13G of Annex I of MARPOL 73/78. Proposed § 157.430(b) allows tank barges and vessels smaller than the MARPOL cutoff to substitute comparable company programs for the enhanced survey requirements. Because the company program clause assumes the owner has an established survey program and would not need to conduct extensive additional repairs, the cost of these company programs would be less than the cost of a classification survey.

The cost estimates associated with proposed § 157.430 (a) and (b) were amortized to reflect a 12-month period. First year cost averages would be \$14.9

million for U.S. tankships; \$23.0 million for foreign tankships; \$2.3 million for U.S. tank barges; and \$80,000 for foreign tank barges. Because the cost estimates have been averaged and it has been assumed that the vessels affected by this rulemaking would be in service for at least two drydock enhanced surveys prior to their phaseout, recurring cost would be the same as the first year costs listed above. The Coast Guard recognizes this recurring cost estimate is conservative; however, as the fleet population diminishes the average cost of an enhanced survey may increase due to the age and possible repair requirements of the remaining tank vessels subjected to the survey. The present value of the costs of the enhanced survey discounted at 7 percent to 1990 would total \$67.38 million.

Vital Systems Surveys. The cost of proposed § 157.435 would vary based on port departure frequency, crew salary, and the estimated time required for each survey. A survey would be required before a tank vessel begins cargo transfer operations or prior to a vessel departing port. An estimate of port departures was calculated based on 1993 Coast Guard data and reflects an average departure frequency of 28 for U.S. tankships, 32 for U.S. tank barges, 6 for foreign tankships, and 7 for foreign tank barges. Three surveys were estimated for each port departure.

Crew members affected by this proposed requirement would be senior personnel. For tank barge surveys, an average towing vessel master's wage was used for cost evaluation. For tankship surveys, an average chief mate's wage and a chief engineer's wage were used for cost evaluation. Survey time was estimated at 1 hour on a tankship (1/2 hour each for both the chief mate and the chief engineer) and approximately 48 minutes for the master of a primary towing vessel or a senior tank barge representative.

The vital systems survey cost for U.S. tankships would be \$660,000 with a recurring cost (for year 2001) of \$472,000. The cost to foreign tankships would be \$465,000 with a recurring cost (for year 2001) of \$322,000. The survey cost to U.S. tank barges would be \$289,000 with a recurring cost (for year 2001) of \$208,000. The survey cost to foreign tank barges would be \$2,500 with a recurring cost (for year 2001) of \$1,500. The present value of the costs of vital systems discounted at 7 percent to 1990 would total \$6.0 million.

Autopilot Alarm or Indicator. The cost for the alarm or indicator proposed in § 157.440 was calculated based on the assumption that 10 percent of the U.S.

tankships presently meet this requirement, none of the foreign tankships presently have this capability, and 3 towing vessels would require an indicator for every 2 tank barges affected by this rulemaking. It was also assumed that the tank barge company owned the towing vessel and would incur the cost of this requirement. The estimated installation cost of a visual and audible autopilot alarm is \$5,000 on electronic tankship steering systems and the estimated autopilot indicator cost is \$100. The cost attributed to the testing of this alarm would be negligible based on the short amount of time required to test the device and the preexisting requirement to do so under 33 CFR 164.25. This proposal would have a onetime estimated cost to U.S. tankships of \$855,000; to foreign tankships, \$5,400,000; to U.S. tank barges, \$12,900; and to foreign tank barges, \$500. The present value of autopilot alarm costs discounted at 7 percent to 1990 would total \$4.2 million.

Maneuvering Performance Capability. To meet proposed § 157.445, tankships would require additional maneuvering tests and also recalculation or confirmation of previous maneuvering characteristics presently required by 33 CFR 164.35(g). Additional tests are proposed primarily to evaluate overshoot angles and time to check yaw. Computer simulations of these performance tests would not be accepted. A cost of \$18,500 was based on an independent subcontractor coming on board a tankship to conduct the tests and provide the documentation required. This estimate reflects industry cost for test preparation, equipment, personnel, transportation, vessel operational delay, data processing, and final report collation. It was assumed that the tests required to meet this performance standard proposal have not been completed by any of the tankships affected by this SNPRM. The total onetime cost to the U.S. tankship industry would be \$3.5 million and the cost to the foreign tankship industry would be \$20.0 million. The present value of maneuvering performance capability costs discounted at 7 percent to 1990 would total \$15.7 million.

Maneuvering and Vessel Status Information. No additional maneuvering tests would be required for proposed § 157.450, however, some recalculation of data from the original tests used to develop the wheelhouse poster of 33 CFR 164.35(g) may be required. To compile a maneuvering booklet, additional calculations and documentation also may be required. A cost estimate of \$1,080 was developed for this proposal and reflects an average

U.S. licensed naval architect fee for 4 hours spent to recalculate wheelhouse poster data and 16 hours spent to assemble the maneuvering booklet. Vessel population estimates indicated that 75 percent of both foreign and U.S. tankships presently meet the wheelhouse poster requirement and 20 percent presently meet the maneuvering booklet requirement. The cost attributed to the pilot card requirement would be negligible because the cost of the pilot cards themselves would be minimal while the time spent to complete them would be incorporated into the scope of an officer in charge of a navigational watch's normal duties.

Proposed § 157.450 has a onetime cost attributed to the wheelhouse poster and the maneuvering booklet. The estimated onetime cost of this proposal would be \$142,000 for the 190 U.S. tankships and \$805,000 for the 1,080 foreign tankships. The present value of maneuvering and vessel status information costs discounted at 7 percent to 1990 would total \$631,000.

Minimum Under-keel Clearance. The cost estimate for proposed § 157.455 assumed that tankships presently entering or departing U.S. navigable waters operate with an under-keel clearance range of 0.15 meters to 2.00 meters and an average anticipated under-keel clearance of 0.6 meters (2 feet). Present tank barge under-keel clearances were estimated to be much less than tankship averages. An estimate of the number of port entries and departures was made for each vessel type. Tank barges were estimated to be affected by this proposal during each port entry and each port departure. U.S. tankships were estimated to be affected by this proposal during each port entry and during 35 percent of the port departures. Foreign tankships were estimated to be affected by this proposal during each port entry and during 20 percent of the port departures.

The cost of the proposal was estimated to be a 3 percent loss of cargo carrying capacity for each .3 meters needed to decrease the tank vessel's draft. An estimate of required draft decrease or cargo loss due to this proposal was made for each vessel type. It was estimated that 30 percent of the affected tank barge (10,000 GT average size) population would not lose cargo carrying capacity due to this proposal, 50 percent of the population would lose 3 percent of their cargo carrying capacity, and 20 percent would lose 6 percent of their cargo carrying capacity. It was estimated that 75 percent of the affected U.S. tankship (33,300 GT average size) and foreign tankship (50,000 GT average size) population

would not lose cargo carrying capacity due to this proposal, 20 percent of the tankship population would lose 3 percent of their cargo carrying capacity, and 5 percent of the tankship population would lose 6 percent of their cargo carrying capacity. The cost attributed to the proposed recording requirement would be negligible because the time spent completing the vessel log entry or other similar documentation would be incorporated into the scope of the officer of a navigational watch's normal duties.

As a result of the reduced cargo capacity, the first year cost of proposed § 157.455 for a U.S. tankship would be \$18 million. Foreign tankship costs would be \$35.1 million. U.S. tank barge costs would be \$12.4 million and foreign tank barge costs would be \$142,000. By 2001, the total cost of proposed § 157.455 to the U.S. tankship industry would decrease to \$13 million, and the cost to foreign tankships would decrease to \$27.3 million. For the tank barge industry, the recurring cost of under-keel clearance would be \$13.3 million for the U.S. industry and \$142,000 for the foreign industry. The present value of the costs of under-keel clearance discounted at 7 percent to 1990 would total \$292.6 million.

Emergency Steering Capability.

Proposed § 157.460(a) applies to the primary towing vessels engaged in towing tank barges of 5,000 GT or more without a double hull. An estimated total of 134 towing vessels would be affected by this proposal. Of these vessels, research indicates 80 percent presently meet this proposed requirement. It was assumed that the towing vessels that do not meet this proposed requirement are owned by the tank barge company. The cost to reconfigure the towing vessel's steering gear would be \$25,000 based on an independent subcontractor installing additional piping and tankage on an existing hydraulic steering system.

The onetime emergency steering requirement cost would be \$645,000 for U.S. tank barge companies; and \$25,000 for foreign tank barge owners or operators. The present value of emergency steering capability costs discounted at 7 percent to 1990 would total \$446,000.

Fendering System. Proposed § 157.460(b) applies to the primary towing vessels and the fleeting or assist towing vessels engaged in maneuvering tank barges of 5,000 GT or more without double hulls. A total of 312 towing vessels would be affected by this proposal. Of these vessels, research indicates 80 percent presently have adequate fendering systems. It was

assumed that those towing vessels that do not meet this proposed requirement are owned by the tank barge company or the tank barge company would realize a cost increase in the leasing of an adequately fendered towing vessel. The cost to add or reconfigure the towing vessel's fendering system would be \$1,320 based on a towing vessel's personnel installing an additional 8 linear feet of commercial fenders during a routine maintenance period.

Proposed § 157.460(b) would have an estimated initial cost to U.S. tank barges of \$79,500; and to foreign tank barges of \$3,000. Recurring costs, reflecting the diminishment of the tank barge fleet by 2001, would be \$57,000 for U.S. tank barges and \$2,000 for foreign tank barges. The present value of the cost of fendering systems discounted at 7 percent of 1990 would total \$329,000.

Government Cost

Federal Government cost would include Coast Guard personnel time and resources to review survey records and documentation required by this proposed SNPRM during annual tank vessel examinations (foreign vessels) or annual inspections (U.S. vessels). The length of time added to a typical examination or inspection would vary based on the type of service in which the vessel engages. The Coast Guard is estimating that these requirements would increase the time of examination or inspection by an average of 0.5 hours for any given requirement. The various requirements range from 0.25 hours to inspect log entries or records to 8 hours to review documentation of an enhanced survey on a U.S. tankship or tank barge.

Government costs attributable to implementation of this rule are based on twelve proposed requirements. The Coast Guard examination or inspection would evaluate relevant documentation on BRM training, vessel specific training, minimum rest hours, enhanced surveys, vital systems surveys, maneuvering performance capability information, maneuvering information, and minimum under-keel clearance. During an annual examination or inspection the Coast Guard inspector would also ensure the emergency lightening equipment, the autopilot alarm or indicator, the emergency steering gear and the fendering systems on the towing vessels meet the proposed requirements.

The proposed maneuvering performance test requirement, specified in § 157.445(b), instructs tankships that do not meet the IMO criteria to report their maneuvering capability to the COTP 24 hours prior to port entry.

Requests of this nature are not anticipated to be frequent. For this cost estimate, 10 percent of the existing tankship population was assumed to require some deviation from the IMO criteria. To review a vessel request for port entry and determine appropriate operational restrictions would take Coast Guard personnel an average of 4 hours.

Therefore, the government cost analysis assumes the increased annual inspection time would average 6.95 hours for U.S. tank vessels and 4.75 hours for foreign tank vessels. In addition, deviation requests from U.S. tankships for the proposed maneuvering performance standard would be 76 hours while requests from foreign tankships would average 432 hours. Based on a \$35.00 per hour wage estimate for a Coast Guard inspector, the Coast Guard expects the 1,188 additional man-hours of inspection and deviation request evaluation time would cost \$39,801 annually.

Cost-Benefit Evaluation

Costs. Cost estimates were based on the forecast 19-year life for all proposed rulemaking. For all proposed requirements, the undiscounted costs of compliance are projected to be \$897.6 million. The present value of the costs of this proposed regulation discounted at 7 percent to 1990 would total \$443.6 million.

Benefits. Pollution mitigation benefits from the proposed operational measures would accrue mainly in areas around loading terminals, narrow channels, and in open waters during lightering operations.

A review of casualty and spill data was conducted in an attempt to pinpoint past accident frequency as related to each proposed operational measures. However, the complex cumulative effect of human error and equipment failure made it difficult to quantify the benefits of each measure. For example, the grounding of the foreign tankship WORLD PRODIGY off Brenton Reef in Rhode Island Sound was caused by a combination of fatigue, poor bridge resource management, and insufficient passage planning (especially under-keel clearance) which lead to this 1989 oil spill. The major explosion aboard the U.S. tankship MT SURF CITY was caused by poor tank entry precautions and undetected bulkhead deterioration between a cargo tank and a ballast tank. Because of the interrelationship between the proposed requirements that focus on a reduction in human error along with the proposed requirements for improved equipment inspections and capabilities, the Coast

Guard chose to quantify the benefits using a gross estimate of benefits for this SNPRM regulatory assessment.

A preliminary estimate of the anticipated benefits and resultant cost-benefit for each measure was conducted and is described in detail within the regulatory assessment. This preliminary estimate included a review of certain tank vessel casualties from 1989 through 1994, the resultant oil spill or potential for an oil spill, vessel damage, and loss of life. Benefits were estimated for each proposed measure by reviewing the casualty report, analyzing each casualty's root causes, and estimating a percentage of the recorded or estimated spillage associated with each root cause. The actual and potential amounts of oil spilled were then broken down from these estimated root cause percentages and accredited to each of the proposed measures, if applicable.

Using Figures 3 through 6 of this SNPRM, a risk effectiveness factor was developed that estimated the percentage of causal factors leading to an accident that would be eliminated if each proposed measure was established. A range of total anticipated benefits over the 19-year span of this rulemaking was estimated for each proposed measure by annualizing the per-vessel benefits resulting from the actual and potential spill data, extrapolating this into a cumulative present value of oil spills avoided based on the number of vessels remaining in service each year, and multiplying this cumulation by the measure's effectiveness factor. The Coast Guard intends to include an estimate or qualitative discussion of the benefits of each proposed measure in the final rule. Relevant comments are requested on the methodology used for the preliminary benefit analysis as well as each measure's anticipated benefits and its economic feasibility.

The gross estimate of benefits for this rulemaking was conducted and involved an assessment of casualty data over the past 20 years. The Coast Guard estimates that the proposed measures would avert at least one major spill of about 300,000 barrels over the next 19 years. This is equivalent to a spill resulting from a collision between two 70,000 GT tankships, with cargo loss from at least two tanks on each tank vessel. Alternatively, this would be equivalent to a grounding that results in a complete loss of cargo from a small (21,000 GT) tankship.

The monetary benefits of the proposed regulation would include the avoided costs of spill cleanup, third-party compensation (lost earnings to fishermen, etc.), and natural resource damages. Historically, casualty reports

have either not addressed these avoided costs, or their results have been widely disputed. There are many reasons for this. For example, there are numerous factors affecting the possible impact associated with an oil spill, such as type of product, environment, time of year, location, and weather conditions. Therefore, the assessment of damage and associated costs were subjective and in some cases, even in large spills, they were never confirmed. Accordingly, the Coast Guard uses the unspilled oil quantity in barrels as the benefit value, discounted at 7 percent back to 1990. If the averted 300,000-barrel spill were to occur in 1996, when the final rule is scheduled to take effect, the discounted benefit would be the value of avoiding a 213,896 barrel spill in 1990. If the averted 300,000-barrel spill were to occur in 2014, the discounted benefit would be the value of avoiding a 77,526 barrel spill in 1990.

Cost-Benefit. The benefit of this proposed rule would range from the value of avoiding a 77,526 barrel spill in 1990 to the value of avoiding a 213,896 barrel spill in 1990, depending on when the averted spill is assumed to occur. The net present value of the cost of this proposed rulemaking would range from \$2,075 to \$5,700 per barrel of unspilled oil, when a mean present value of \$3,900 per barrel of unspilled oil. This compares with, for example, \$13,000 per barrel of unspilled oil for the "Discharge Removal Equipment for Vessels Carrying Oil" IFR (58 FR 67988); \$12,500 per barrel of unspilled oil for the "Vessel Response Plans" IFR (58 FR 7376); \$7,000 per barrel of unspilled oil for the "Overfill Devices" IFR (59 FR 53286); and \$1,300 per barrel of unspilled oil for the "Response Plans for Marine Transportation-Related Facilities" IFR (58 FR 7330).

Small Entities

Under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), the Coast Guard must consider whether this proposal, if adopted, will have a significant economic impact on a substantial number of small entities. "Small entities," may include (1) small businesses and not-for-profit organizations that are independently owned and operated and are not dominant in their fields and (2) governmental jurisdictions with populations of less than 50,000.

This rulemaking considered small business impact for vessels privately held by independent companies with an estimated capital investment value of less than \$500 million or companies that have less than 500 employees. State and local governments, which altogether

own less than a dozen tank vessels, will not be significantly affected. Not-for-profit organizations do not engage in the transportation of oil in bulk by water.

There are a number of companies meeting the definition of small business operating in each segment of industry (tankship, tank barge, and towing vessel). Of the 190 U.S. tankships affected by this proposed rulemaking, 16 are owned by 6 small businesses. Many of these company's tankships are over 30 years old, have less cargo carrying capacity than their competition, and are laid up due to market or company financial conditions. Six small businesses own or operate 32 of the affected U.S. tank barge population. No foreign small businesses own or operate foreign tank vessels that would be affected by this proposed rulemaking. Tank barge companies are required under this proposal to enlist towing vessels with certain capabilities and trained personnel. Indirectly, some towing vessel companies may also be affected by these proposed requirements; however, the Coast Guard has determined that most tank barge owners also own their towing vessels or regularly contract with a limited number of towing companies.

An economic impact is unavoidable, as the statute clearly targets existing vessels of 5,000 GT or more than carry oil in bulk as cargo and that do not have double hulls. The present value of the total cost to the industry of this proposal discounted at 7 percent to 1990 would total \$443.6 million. However, the Coast Guard has proposed several measures within this rulemaking to accommodate small business needs and provide flexibility to small entities affected by this rulemaking.

The proposed training requirements include allowances for comparable company training courses and a 1-year compliance delay. In-house training by smaller businesses would be accepted as long as the curriculum and demonstration of skill provisions could be met. Company programs are anticipated to cost a fraction of commercial training and should provide smaller businesses with a means to train personnel at a lower cost than the present commercial courses.

Additionally, the proposed rulemaking acknowledges past course completion; thus, personnel would be given a longer time to meet this requirement if they have completed similar courses, either company-sponsored or commercial, within 3 years of the effective date of the rule. Maritime schools and many commercial courses have been offering this type of curriculum since 1991. Allowing for the

delayed compliance date and past course completion, the training course phase-in period would be 4 years. This longer phase-in period should assist smaller companies in setting up a suitable in-house or commercial course program. It also recognizes that a substantial number of merchant mariners in the industry are already trained. The 4-year phase-in is also intended to ease the competitive burden of obtaining commercial course slots, should entities choose to use commercial training facilities.

Small business needs are accommodated in the proposed enhanced survey requirement by allowing companies owning tank barges or tank vessels less than 30,000 dwts to conduct their own surveys and to choose among various organizations for program oversight.

To accommodate small businesses in the tank barge industry, the cost of reconfiguring a towing vessel owned by the tank barge company was minimized by requiring the proposed autopilot alarm to be an indicator; a simple sign placed on the wheel would suffice. This gives a comparable warning in the small confines of the one-man towing vessel wheelhouse as would an alarm for the larger, multiple-person, complex bridge of a tankship. The proposed emergency steering capability requirement accommodates a range of designs by allowing for either a secondary steering system or twin propulsion capability. This allows the majority of tank barge companies to continue using their vessels or the vessels they typically lease; however, it also ensures that the master or operator would have some maneuvering capability in an electrical, hydraulic or engine failure, which would be a benefit to all operators.

Smaller tankship companies should have the capability to conduct the maneuvering performance standard tests of IMO Resolution A.751(18). While the assessment cost of this item is for a commercial company to conduct the maneuvering tests, this proposed rulemaking in no way prohibits a company from conducting the tests in-house. The guidelines and technical details of the tests are well documented and are within the capabilities of a licensed master or pilot. The equipment needed for these types of maneuvering tests, such as a DGPS, is available on the commercial market at low cost.

The proposed operational measures would affect several small businesses within the maritime industry until 2015, a period of about 19 years. Through the design of this proposal's measures as described in the preceding paragraphs, the Coast Guard believes that the

flexibility in this proposed rulemaking balances the requirements on tank barges and tankships and provides equitable treatment of U.S. and foreign flag vessels.

Therefore, the Coast Guard certifies under 5 U.S.C. 605(b) that this proposal, if adopted, will not have a significant economic impact on a substantial number of small entities. If, however, you think that your business or organization qualifies as a small entity and that this proposal will have a significant economic impact on your business or organization, please submit a comment (see **ADDRESSES**) explaining why you think it qualifies and in what way and to what degree this proposal will economically affect it.

Unfunded Mandate

Under the Unfunded Mandates Reform Act (Pub. L. 104-4), the Coast Guard must consider whether this proposal, if adopted, will result in an annual expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, or \$100 million (adjusted annually for inflation). That Act also requires (in Section 205) that the Coast Guard identify and consider a reasonable number of regulatory alternatives and from those alternatives select the least costly, most cost-effective, or least burdensome alternative that achieves the objective of the rule.

The cost analysis completed for this SNPRM estimates first year compliance costs to be 183.8 million. Annual costs of the proposal would trend downward, leveling out at \$5.8 million during 2012-2014, the final years that the proposal would be in effect. The only time this proposal would result in estimated costs of \$100 million or more to either State, local, or tribal governments in the aggregate, or to the private sector would be in its first year of implementation. State, local, and tribal governments, which altogether own less than a dozen tank vessels, would account for less than 2 percent of the estimated first-year costs. Therefore, the private sector would be most impacted by first-year costs. The preliminary cost-benefit analysis done for this SNPRM addresses expected cost-effectiveness for each proposed measure. For those measures that were estimated to be the most costly, alternative requirements, extended implementation periods, or provisions for a COTP to determine appropriate implementation on a case-by-case basis were proposed in this SNPRM.

If you think that your business or organization falls under the provisions of the Act and this proposal will have

an annual impact on your business or organization that meets the parameters, please submit a comment (see **ADDRESSES**) explaining why you think it qualifies and in what way and to what degree this proposal will economically affect it.

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 that 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 proposal contains collection-of-information requirements in the following sections: §§ 157.415, 157.420, 157.425, 157.430, 157.435, 157.445, 157.450, and 157.455. The following particulars apply:

Dot No: 2115.

Administration: U.S. Coast Guard.

Title: Operational Measures to Reduce Oil Spills From Existing Tank Vessels Without Double Hulls.

Need for Information: Without adequate operational measures on tank vessels, the potential for spills as a result of human error is greatly increased. This proposal requires the mariner to record, post, keep documentation or provide notification that is necessary for the safe operation of the vessel including: (1) Documentation for company management and the Coast Guard to ensure personnel are trained and systems are being surveyed both frequently and thoroughly; (2) information to ensure the crew is informed of rest hour requirements; (3) certain vessel specific maneuvering characteristics so that personnel navigating the vessel have a quick reference to critical information; (4) documentation of a vessel's command and control status to ensure a pilot receives accurate information prior to maneuvering evolutions. These requirements are consistent with good commercial practice and the dictates of good seamanship for safe navigation and maintenance of vital equipment. Additionally, a vessel owners, master, or operator would be required to notify the COTP if the vessel did not have certain maneuvering capabilities so that safe port entry provisions can be made.

Proposed Use of Information: The primary use of this information would be for Coast Guard inspectors to determine if a vessel is in compliance or, in the case of a casualty, whether

failure to meet these proposed regulations contributed to the casualty. The Coast Guard has no specific plan to collect this data for statistical analysis.

Frequency of Response: Owners, masters, or operators of tank vessels subject to this proposed regulation would be required to record, post, keep documentation, or provide notification of the following: (1) Under § 157.415(d), annual completion of bridge resource management training for each officer of the navigational watch; (2) under § 157.420(d), completion of annual training by letter or vessel log entry, by each crew member assigned to a navigational or engineering watch; (3) under § 157.425(b), permanent posting of the minimum rest hour requirement in crew lounge areas and work spaces; (4) under § 157.430 (a) and (b), completion of an enhanced survey during each drydock examination (this information must also be provided to the Coast Guard upon its request); (5) under § 157.435, by vessel log entry or similar means on board the vessel, completion of each required vital systems survey; (6) under § 157.445(b), notification of a maneuvering capability that is less than the IMO criteria; (7) under § 157.445(c), permanent posting of test results for maneuvering performance capability; (8) under § 157.450, permanent posting of standardized IMO maneuvering information in the wheelhouse, completion of a pilot card before entering the port or place of destination and prior to departing port, and maintenance of an onboard maneuvering booklet; (9) under § 157.455(a)(3), by vessel log entry or similar means on board the vessel, calculations of under-keel clearance before entering the port or place of destination and prior to departing port.

Burden Estimate: 76,913 hours.

Respondents: 1404.

Average Burden Hours per Respondent: 55.

The Coast Guard has submitted the requirements to OMB for review under section 3504(h) of the Paperwork Reduction Act. Persons submitting comments on the requirements should submit their comments both the OMB and to the Coast Guard as indicated under ADDRESSES.

Federalism

The Coast Guard has analyzed this proposal under the principles and criteria contained in Executive Order 12612 and has determined that this proposal does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

Environment

The Coast Guard considered the environmental impact of this proposal and concluded that preparation of an Environmental Impact Statement is not necessary. An Environmental Assessment and a draft Finding of No Significant Impact are available in the docket for inspection or copying where indicated under ADDRESSES. The additional training, survey, and operational considerations required by this rule would enhance navigation safety and thereby reduce the likelihood of an oil spill or other environmental damage.

List of Subjects

33 CFR Part 157

Cargo vessels, Oil pollution, Reporting and recordkeeping requirements.

46 CFR Part 31

Cargo vessels, Marine safety, Reporting and recordkeeping requirements.

46 CFR Part 35

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

For the reasons set out in the preamble, the Coast Guard proposes to amend 33 CFR part 157, 46 CFR part 31, and 46 CFR part 35 as follows:

PART 157—RULES FOR THE PROTECTION OF THE MARINE ENVIRONMENT RELATING TO TANK VESSELS CARRYING OIL IN BULK

1. The authority citation for part 157 continues to read as follows:

Authority: 33 U.S.C. 1903; 46 U.S.C. 3703, 3703a (note); 49 CFR 1.46. Subpart G also is issued under section 4115(b), Pub. L. 101-380, 104 Stat. 520.

2. In § 157.01, paragraph (a)(2) is revised to read as follows:

§ 157.01 Applicability.

(a) * * *

(2) Any other vessel that enters or operates in the navigable waters of the United States, or that operates, conducts lightering under 46 U.S.C. 3715, or receives cargo from or transfers cargo to a deepwater port under 33 U.S.C. 1501 *et seq.*, in the United States Exclusive Economic Zone, as defined in 33 U.S.C. 2701(8).

* * * * *

3. Section 157.02 is added to read as follows:

§ 157.02 Incorporation by reference.

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in paragraph (b) of this section, the Coast Guard must publish notice of change in the Federal Register; and the material must be available to the public. All approved material is available for inspection at the Office of the Federal Register, 800 North Capitol Street NW., suite 700, Washington, DC, and at the U.S. Coast Guard, Merchant Vessel Inspection and Documentation Division (G-MVI), 2100 Second Street SW., Washington, DC 20593-0001, and is available from the sources indicated in paragraph (b) of this section.

(b) The material approved for incorporation by reference in this part and the sections affected are as follows:

International Maritime Organization (IMO)

4 Albert Embankment, London SE1 7SR, England.

IMO Assembly Resolution A.601(15), Provision and Display of Manoeuvring Information on Board Ships, Annex sections 1, 2.3, and 3 with appendices157.440

IMO Assembly Resolution A.744(18), Guidelines on the Enhanced Programme of Inspections During Surveys of Bulk Carriers and Oil Tankers, Annex B sections 1.1.3-1.1.4, 1.2-1.3, 2.1, 2.3-2.6, 3-8, and Annexes 1-10 with appendices157.430

IMO Assembly Resolution A.751(18), Interim Standards for Ship Manoeuvrability, Annex sections 1.2.2, 2.2-2.4, 3-5 with Explanatory Notes in MSC/Circ.644157.440

Oil Companies International Marine Forum (OCIMF)

6th Floor, Portland House, Stag Place, London SW1E 5BH, England.

International Safety Guide for Oil Tankers and Terminals, Second Edition, Chapters 6, 7, and 9157.430

4. In § 157.03, paragraphs (pp) through (tt) are added to read as follows:

§ 157.03 Definitions.

* * * * *

(pp) *Departing port* means departing from an anchorage or facility for a transit beyond the navigable waters of the United States as established in 33 CFR 2.05-25(b) or, for a vessel on the Great Lakes, a transit beyond the breakwater of harbor entrance.

(qq) *Fleeting or assist towing vessel* means any commercial vessel engaged in towing astern, alongside, or pushing ahead, used solely within a limited

geographic area, such as a particular barge fleeting area or commercial facility, and used solely for restricted service, such as making up or breaking up larger tows.

(rr) *Officer in charge of a navigational watch* means any officer employed or engaged to be responsible for navigating or maneuvering the vessel and for maintaining a continuous vigilant watch during his or her periods of duty and following guidance set out by the master, international or national regulations, and company policies.

(ss) *Primary towing vessel* means any vessel engaged in towing astern, alongside, or pushing ahead and includes the tug in an integrated tug barge. It does not include fleeting or assist towing vessels.

(tt) *Rest hour* means an off-duty period of 1 hour during which no tasks are assigned to the crew member and the crew member is not scheduled to perform any duty. A rest hour may include response to drills or emergencies.

SUBPART G—STRUCTURAL AND OPERATIONAL MEASURES FOR CERTAIN TANK VESSELS WITHOUT DOUBLE HULLS

5. Section 157.400 is revised to read as follows:

§ 157.400 Applicability.

This subpart applies to each tank vessel of 5,000 gross tons or more that—

(a) Carries oil in bulk as cargo or cargo residue;

(b) Enters or operates in the navigable waters of the United States or that operates, conducts lightering under 46 U.S.C. 3715, or receives cargo from or transfers cargo to a deepwater port under 33 U.S.C. 1501 *et seq.*, in the United States Exclusive Economic Zone (EEZ), as defined in 33 U.S.C. 2701(8); and

(c) Is not currently equipped with a double hull meeting § 157.10d of this part, or an equivalent to the requirements of § 157.10d, but required to be equipped with a double hull at a date set forth in 46 U.S.C. 3703a(b)(3) and (c)(3).

6. In § 157.410, paragraph (c) is revised to read as follows:

§ 157.410 Emergency lightering requirements for tank vessels.

* * * * *

(c) Reducers, bolts, and gaskets must meet the requirements of 46 CFR subpart 56.25. Cast iron and malleable iron shall not be used for valves or fittings in lines carrying flammable or combustible fluids which are directly connected to, or in the proximity of,

equipment or other lines having open flames, or any parts operating at temperatures above 260°C (500°F).

7. Section 157.415 is added to read as follows:

§ 157.415 Bridge resource management training.

(a) After [12 months after the effective date of the final rule.], a tank vessel owner, master, or operator shall not assign a person to duties as an officer in charge of a navigational watch unless that person has satisfactorily completed a course that includes the following:

(1) Instruction in the following areas:

(i) Communications: effective management of the flow of information, including but not limited to, the exchange of information between the master and the pilot, the master and the crew members, and the officer in charge of a navigational watch and crew members.

(ii) Voyage planning: the planning of both ocean and pilotage water transits to account for navigational hazards, weather, vessel traffic, operational restrictions, facility and port requirements, and compliance with local and international regulations.

(iii) Error trapping: identifying and verifying elements in a sequence of events that could lead to an accident.

(iv) Situational awareness: accurate perception of any factors and conditions that affect a vessel over time.

(v) Pilot and bridge team integration: the effective flow of knowledge between the vessel's crew and the pilot to incorporate knowledge of the local port area and ensure cooperation in the development of the vessel's navigation plan.

(vi) Watch team training: method for training watchstanding personnel to efficiently and effectively stand a watch.

(vii) Emergency situation procedures: development and use of procedures, including communications between crew and shoreside personnel and use of onboard safety equipment, for successful emergency response.

(2) Practical demonstration of the following skills:

(i) Ability to recognize potential hazards to navigation, incorporate these considerations into a voyage plan, and communicate these hazards to subordinates, senior watchstanding personnel, and a pilot during a voyage.

(ii) Ability to recognize subordinate limitations and take appropriate action to ensure the subordinates are attentive and provide accurate feedback on their assigned tasks during a voyage.

(iii) Ability to recognize and initiate communications with other vessels, subordinates, and senior watchstanding

personnel to prevent miscommunication or an inappropriate action.

(iv) Ability to work with and, at the same time, monitor a pilot to ensure consistency with vessel operating characteristics and the voyage passage plan.

(v) Ability to use all available bridge equipment to perform their assigned duties, and to display knowledge of the appropriate action(s) to take in the event of an equipment malfunction.

(b) Tank vessel owner, master, or operator shall not assign a person to duties as an officer in charge of a navigational watch unless that person has demonstrated knowledge of company and vessel standard operating procedures including allowed variations, watch augmentation provisions, relationship of the officer in charge of a navigational watch to the master or pilot when both are on the bridge, and emergency navigation procedures.

(c) The training identified in paragraph (a) of this section must be completed at least once every 5 years.

(d) Satisfactory completion of a commercial or company course approved by the Coast Guard or, for an individual holding a foreign license, the appropriate flag administration, that contains elements comparable to those required in paragraphs (a)(1) and (a)(2) of this section meets the initial training requirement if completed after [36 months prior to the effective date of the final rule.].

(e) Course completion must be documented by a certificate, license endorsement, or a letter confirming that each officer in charge of a navigational watch has satisfactorily completed the training requirements. Copies of each officer's certificate, endorsement, or letter confirming their completion must be retained on board the vessel or otherwise be made readily available to the Coast Guard for examination upon request.

(f) A tank barge owner or operator shall ensure that those individuals assigned to duties on the primary towing vessel that are similar to the duties of the officer in charge of a navigational watch also complete bridge resource management training as specified in paragraphs (a) through (e) of this section.

8. Section 157.420 is added to read as follows:

§ 157.420 Vessel specific watch training.

(a) The owner, master, or operator of a tank vessel shall not assign duties to an individual assigned lookout, helmsman, or engineering watch duties unless that person has successfully

completed a course that includes academic instruction in the following areas, as applicable to the individual's job responsibilities:

(1) Communications: effective flow of information between personnel, including the importance of feedback and timeliness.

(2) Error trapping: identifying and verifying elements in a sequence of events that could lead to an accident.

(3) Equipment: employing correct use and monitoring requirements of the equipment necessary to perform assigned duties, including the appropriate action(s) to take in the event of an equipment malfunction.

(4) Watch team integration: the effective flow of information among the vessel's crew to ensure the person in charge of vessel navigation is kept aware of events pertaining to equipment operation and personnel effectiveness.

(b) Each individual must complete initial training that meets the requirements of paragraph (a) of this section prior to assignment of watchkeeping duties.

(c) Each individual must complete annual training that meets the requirements of paragraph (a) of this section.

(d) Completion of training must be documented by a certificate, vessel log entry, or a letter confirming that each individual has satisfactorily completed the training requirements. Copies of the certificate or letter confirming completion must be retained on board the vessel or otherwise made readily available to the Coast Guard for examination upon request.

(e) A tank barge owner or operator shall ensure that those individuals assigned to duties on the primary towing vessel that are similar to lookout, helmsman, or engineering watch duties also complete vessel specific watch training as specified in paragraphs (a) through (d) of this section.

9. Section 157.425 is added to read as follows:

§ 157.425 Minimum rest hour requirement.

(a) A tankship owner, master, or operator shall ensure each person is provided a minimum of 6 continuous rest hours within the 12 hours prior to departing port or prior to cargo transfer operations before assuming the following duties:

(1) Officer in charge of a navigational watch, lookout, helmsman, engineer officer in charge of a manned engine room on a tankship, member of an engineering watch on a tankship, and the operator or master of the vessel, if scheduled as a member of the duty

rotation for officer in charge of a navigational watch.

(2) Person in charge of cargo transfer operations.

(b) A tank barge owner or operator shall ensure that the individuals on the primary towing vessel having duties similar to those listed in paragraphs (a)(1) and (a)(2) of this section are provided a minimum of 6 continuous rest hours within the 12 hours before assuming his or her duties prior to departing port or prior to cargo transfer operations.

(c) If a crew member's rest hours have been interrupted by drills or emergencies, the operator or master shall assess the crew member's fitness for duty before assigning him or her to any of the duties described in this section.

(d) Minimum rest hour requirements must be posted on tank vessels in crew lounge areas and work spaces.

10. Section 157.430 is added to read as follows:

§ 157.430 Enhanced survey requirements.

(a) *Enhanced survey.* The tank vessel owner, master, or operator shall ensure an enhanced survey is conducted during each regularly scheduled drydock examination required under 46 CFR part 31 or at a frequency specified by the vessel's flag administration. Survey scope and recordkeeping requirements must comply with the standards of IMO Resolution A.744(18), Annex B sections 1.1.3-1.1.4, 1.2-1.3, 2.1, 2.3-2.6, 3-8, and Annexes 1-10 with appendices.

(b) *Alternate enhanced survey.* For a tankship of less than 20,000 deadweight tons (dwt) carrying crude oil, a tankship of less than 30,000 dwt carrying product, or a tank barge, one of the following may be substituted for the enhanced survey requirements in paragraph (a) of this section:

(1) An enhanced survey performed by a recognized classification society.

(2) An enhanced survey performed by the company with oversight by the Coast Guard or the vessel's flag administration, a recognized classification society, or an independent auditing authority approved by the Coast Guard if—

(i) The frequency of survey is no less than that required by 46 CFR part 31 or as specified by the vessel's flag administration;

(ii) Program plans establishing comparable standards with the requirements in paragraph (a) of this section are approved by the Commandant (G-MVI) and contain the following information:

(A) The scope of the inspection program.

(B) Permanent recordkeeping requirements.

(C) An implementation plan outlining a continuous survey program and identifying by job title those individuals whom the company will assign to conduct the surveys.

(D) Confirmation from the administration, a recognized classification society, or an independent auditing authority approved by the Coast Guard that the oversight implementation plan is feasible.

(c) A copy of the most recent survey must be retained onboard the vessel or, upon request by the Coast Guard, made available within 24 hours for examination.

11. Section 157.435 is added to read as follows:

§ 157.435 Vital systems surveys.

(a) A tank vessel owner, master, or operator shall survey the following systems:

(1) *Cargo systems.* The survey must include the examination and testing of the items listed in Chapters 6, 7, and 9 of the International Safety Guide for Oil Tankers and Terminals, if applicable, prior to cargo transfer operations.

(2) *Mooring systems.* The survey must include a visual examination of the emergency towline, the anchor releasing mechanism, and mooring lines prior to departing port.

(b) Surveys must be conducted by company management personnel, company designated individuals, or vessel senior officers knowledgeable about the equipment operating parameters and having the authority, capability, and responsibility to initiate corrective action when the equipment is not functioning properly.

(c) The material condition of each system identified in paragraph (a) of this section must be recorded in the vessel's Oil Record Book, Part I or Part II, as applicable, the vessel's log, or other onboard documentation.

12. Section 157.440 is added to read as follows:

§ 157.440 Autopilot alarm or indicator.

(a) A tankship owner, master, or operator shall ensure that each installed autopilot unit without automatic manual override has an audible and visual alarm, which is distinct from other required bridge alarms, that will activate if the helm is manually moved while the autopilot is engaged.

(b) A tank barge owner or operator shall ensure that each autopilot unit without automatic manual override installed on the primary towing vessel has a means to clearly indicate the autopilot status and warns personnel of

the requirement to disengage the autopilot if positive rudder control is needed.

13. Section 157.445 is added to read as follows:

§ 157.445 Maneuvering performance capability.

(a) A tankship owner, master, or operator shall ensure that maneuvering tests in accordance with IMO Resolution A.751(18), sections 1.2.2, 2.3–2.4, and 3–5 (with Explanatory Notes in MSC/Circ.644) have been conducted by [12 months after the effective date of the final rule]. Satisfactory completion of maneuvering performance tests must be shown by—

(1) For a foreign flag tankship, a letter from the flag administration or a recognized classification society stating the requirements in paragraph (a) of this section have been met; or

(2) For a U.S. flag tankship, test results from the vessel owner confirming the completion of sea trial maneuvers or a letter from a recognized classification society stating the requirements in paragraph (a) of this section have been met.

(b) If a vessel undergoes a major conversion or alteration affecting the control systems, control surfaces, propulsion system, or other areas which may be expected to alter maneuvering performance, the tankship owner, master, or operator shall ensure that maneuvering tests are conducted as required by paragraph (a) of this section.

(c) If a vessel does not meet the performance standards of IMO Resolution A.751(18), the owner, master, or operator must inform the Captain of the Port (COTP) by message, letter, or radio contact, at least 24 hours before entering the port of place of destination. Upon notification, the COTP will determine if additional operational restrictions for port entry should be imposed on the vessel. These may include, but are not limited to—

(1) Requiring a tug escort or augmentation of existing escorts;

(2) Restricting transit times;

(3) Restricting vessel speed;

(4) Requiring the vessel to follow a specified route and make specified reports;

(5) Barring entry into port; or

(6) Imposing other measure(s) appropriate for local conditions.

(d) Performance test results, recorded in the format of Appendix 6 of the Explanatory Notes in MSC/Circ.644, must be prominently displayed in the wheelhouse.

14. Section 157.450 is added to read as follows:

§ 157.450 Maneuvering and vessel status information.

A tankship owner, master or operator shall comply with IMO Resolution A.601(15), Annex sections 1, 2.3, and 3 with appendices.

15. Section 157.455 is added to read as follows:

§ 157.455 Minimum under-keel clearance.

(a) For a tank vessel that is not fitted with a double bottom that covers the entire cargo tank length, a vessel owner, master, or operator shall meet the following requirements prior to entering the port or place of destination and prior to departing port:

(1) The tank vessel's deepest navigational draft must be calculated including the following factors—

(i) The mean draft;

(ii) The trim and list characteristics; and

(iii) The intended transit speed and the corresponding squat characteristics, if known.

(2) The anticipated controlling depth must be calculated including the following factors—

(i) Tide and current conditions;

(ii) Present sea state conditions;

(iii) Past weather impact on water depth;

(iv) The depth at the facility or anchorage; and

(v) The depth of the transit area found in the publication and chart materials required to be on board the vessel by 33 CFR part 164.

(3) The anticipated under-keel clearance must be calculated by subtracting the tank vessel's deepest navigational draft from the anticipated controlling depth. The vessel's calculated deepest navigational draft, anticipated controlling depth, and the calculated anticipated under-keel clearance must be recorded in the vessel's log or in other onboard documentation.

(4) The vessel shall not proceed without the approval of the local COTP if the anticipated under-keel clearance is less than .5 meter (2 feet).

(b) For a tank barge that is not fitted with a double bottom that covers the entire cargo tank length, the tank barge owner or operator shall ensure that the primary towing vessel owner, master, or operator meets the requirements specified in paragraphs (a) (1) through (4) of this section.

16. Section 157.460 is added to read as follows:

§ 157.460 Additional operational requirements for tank barges.

(a) *Emergency steering capability.* The owner or operator of each tank barge shall ensure that by [12 months after effective date of the final rule] the primary towing vessel has—

(1) A steering gear system with a main power unit, an alternative power unit, and two remote steering gear control systems, except that separate steering wheels or steering levers are not required. The steering gear control systems shall be arranged so that if the system in operation fails, the other system can be brought into immediate operation from a position on the navigating bridge; or

(2) Twin screw propulsion with separate control systems for each propeller.

(b) *Fendering system.* An owner or operator of a tank barge shall ensure the primary towing vessel and any fleeting or assist towing vessels have a fendering system that is of substantial size and composition to prevent metal to metal contact between the towing vessel and the barge during maneuvering operations.

PART 31—INSPECTION AND CERTIFICATION

17. The authority citation for part 31 continues to read as follows:

Authority: 33 U.S.C. 1321(j); 46 U.S.C. 2103, 3306, 3703; 49 U.S.C. App. 1804; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; E.O. 11735, 38 FR 21243, 3 CFR, 1971–1975 Comp., p. 793; 49 CFR 1.46; Section 31.10–21a also issued under the authority of Sec. 4109, Pub. L. 101–380, 104 Stat. 515.

18. In § 31.10–21, Table (a) is revised to read as follows:

TABLE 31.10.—21 (a) SALT WATER SERVICE VESSELS EXAMINATION INTERVALS IN YEARS

	Ship and single hull barge ⁹	Double hull barge with internal framing ¹	Double hull barge with external framing ²	Single hull barge with independent tanks ^{3,9}	Wood hull ship and barge	Ship and single hull barge grade D and E cargoes only ^{4,9}	Double hull barge grade D and E cargoes only ⁵	Single hull asphalt barge ^{6,9}	Double hull asphalt barge ⁷
Drydock	2.5	5.0	5.0	5.0	2.5	2.5	5.0	2.5	5.0
Internal structural	2.5	2.5	2.5	2.5	5.0	5.0	2.5	10.0	2.5
Cargo tank internal	⁸ 2.5	⁸ 5.0	⁸ 10.0	⁸ 10.0	⁸ 2.5	5.0	10.0	10.0	15.0

Notes:

¹ Applicable to double hull tank barges (double sides, ends, and bottoms) when the structural framing is on the internal tank surface.

² Applicable to double hull tank barges (double sides, ends, and bottoms) when the structural framing is on the external tank surface accessible for examination from voids, double bottoms, and other similar spaces.

³ Applicable to single hull tank barges with independent cargo tanks where the cargo tanks are not a contiguous part of the hull structure and which has adequate clearance between the tanks and between the tanks and the vessel's hull to provide access for examination of all tank surfaces and the hull structure.

⁴ Applicable to single hull tankships and tank barges certificated for the carriage of grade D and E cargoes only.

⁵ Applicable to double hull tank barges (double sides, ends, and bottoms) certificated for the carriage of grade D and E cargoes only.

⁶ Applicable to single hull tank barges certificated for the carriage of asphalt only.

⁷ Applicable to double hull tank barges (double sides, ends, and bottoms) certificated for the carriage of asphalt only.

⁸ Or as specified in part 38 or 151 as applicable.

⁹ Enhanced survey requirements apply as specified in 33 CFR part 157.

19. In § 31.10–21, Table (b) is revised to read as follows:

TABLE 31.10.—21(B) FRESH WATER SERVICE VESSELS EXAMINATION INTERVALS IN YEARS

	Ship and single hull barge ⁹	Double hull barge with internal framing ¹	Double hull barge with external framing ²	Single hull barge with independent tanks ^{3,9}	Wood hull ship and barge	Ship and single hull barge grade D and E cargoes only ^{4,9}	Double hull barge grade D and E cargoes only ⁵	Single hull asphalt barge ^{6,9}	Double hull asphalt barge ⁷
Drydock	5.0	10.0	10.0	10.0	2.5	5.0	10.0	5.0	10.0
Internal structural	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	5.0
Cargo tank internal	⁸ 5.0	⁸ 5.0	⁸ 10.0	⁸ 10.0	⁸ 2.5	5.0	10.0	10.0	15.0

Notes:

¹ Applicable to double hull tank barges (double sides, ends, and bottoms) when the structural framing is on the internal tank surface.

² Applicable to double hull tank barges (double sides, ends, and bottoms) when the structural framing is on the external tank surface accessible for examination from voids, double bottoms, and other similar spaces.

³ Applicable to single hull tank barges with independent cargo tanks where the cargo tanks are not a contiguous part of the hull structure and which has adequate clearance between the tanks and between the tanks and the vessel's hull to provide access for examination of all tank surfaces and the hull structure.

⁴ Applicable to single hull tank ships and tank barges certificated for the carriage of grade D and E cargoes only.

⁵ Applicable to double hull tank barges (double sides, ends and bottoms) certificated for the carriage of grade D and E cargoes only.

⁶ Applicable to single hull tank barges certificated for the carriage of asphalt only.

⁷ Applicable to double hull tank barges (double sides, ends and bottoms) certificated for the carriage of asphalt only.

⁸ Or as specified in part 38 or 151 as applicable.

⁹ Enhanced survey requirements apply as specified in 33 CFR part 157.

PART 35—OPERATIONS

20. 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.

21. In § 35.01–40, paragraph (c) is revised to read as follows:

§ 35.01–40 Prevention of oil pollution—TB/ALL.

* * * * *

(c) 33 CFR parts 151, 155, 156, 157 and 164.

Dated: October 27, 1995.

A.E. Henn,

Vice Admiral, U.S. Coast Guard Acting Commandant.

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