of the test. If the project is eligible for a lower non-Federal share:

(1) The revised share will be specified in the LCA (there will be no recalculation of this share once the LCA is signed).

(2) An exhibit attached to the LCA will include the Benefits Based Floor (BBF) determined in § 241.5(a); the Eligibility Factor (EF) determined in § 241.5(b); if the Eligibility Factor is greater than zero but less than one, the estimated standard non-Federal share; and the formula used in determining the ability to pay share as described in paragraphs § 241.5 (c)(1) through (c)(4).

(d) If at the time of project completion, the standard non-Federal share based on actual costs is less than the ability to pay share specified in the LCA, the standard share will apply.

(e) For structural projects. (1) If the standard LERRD plus cash requirement exceeds the ability to pay cost-share, the Federal Government will make any necessary adjustments in expenditures in the following order: First, paying any cash requirement in excess of five percent of total project costs (if any) that would, under standard cost-sharing, have been the responsibility of the non-Federal sponsor; second, making payments for LERRD; and third, providing for reimbursement at the end of construction. Federal payments for LERRD will be made only after the non-Federal payment for LERRD reaches a percentage of total project costs equal to the ability to pay non-Federal cost-share less the five percent cash requirement. If such arrangements are necessary, the LCA should be prepared to reflect agreement on the best manner available for acquisition of those LERRD over the limiting percentage, or for reimbursing the sponsor upon completion of construction.

(2) The non-Federal sponsor will be required to provide a cash payment equal to a minimum of five percent of estimated total project costs, regardless of the outcome of the ability to pay test. The project sponsor shall make cash payments during construction at a rate such that the amount of non-Federal payments in each year, as a percentage of total non-Federal cash payments, equals the amount of Federal expenditures (including sunk pre-construction engineering and design costs as a first year Federal construction expenditure) as a percentage of total Federal expenditures. Total Federal expenditures include cash payments for construction and if necessary (due to ability to pay considerations), for LERRD, and for reimbursement to the non-Federal sponsor. Total Federal expenditures for the purpose of this calculation, do not include expenditures which allow the non-Federal sponsor to defer payment of the non-Federal share under the provisions of this rule.

(f) For non-structural projects, reductions in the non-Federal cost-share as a result of the ability to pay test will not affect the procedures for determining the non-Federal and Federal payment schedules. For non-structural projects, no specific cash payments during construction are required by law.

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federal register

Monday
October 2, 1989

Part IV

Department of Transportation

Federal Aviation Administration

Aeronautical Charts and Aeronautical Publications Change of Effective Dates; Notice

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

[Docket No. 26024]

Aeronautical Charts and Aeronautical Publications Change of Effective Dates

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed policy.

SUMMARY: This notice proposes to change the day of the week on which aeronautical charts and aeronautical publications will become effective. Currently aeronautical charts and publications become effective on Thursdays at 0901 Universal Coordinated Time. However, increases in air traffic activity on weeknights indicate that a change may be required to resolve problems being experienced by certain Air Freight Operators.

DATES: Comments must be received on or before December 1, 1989.

ADDRESSES: Comments on the proposal may be mailed or delivered in duplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket (AGC-204), Docket No. 26024, 800 Independence Avenue, SW., Washington, DC 20591. Comments may be examined in the Rules Docket weekdays, except Federal holidays, between 8:30 a.m. and 5:00 p.m.

FOR FURTHER INFORMATION CONTACT: Mr. Oliver F. Cooper, National Flight Data Center, Airspace-Rules and Aeronautical Information Division, ATO-200, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591, telephone (202) 267-9311.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested parties are invited to participate in this proposed policy change by submitting such written data, views, or arguments as they may desire. Comments that provide the factual basis supporting the views and suggestions presented are particularly helpful in developing reasoned decisions on the proposal. Communications should identify the docket and be submitted in triplicate to the address listed above. Commenters wishing the FAA to acknowledge receipt of their comments on this proposed policy change must submit with those comments a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket No. 26024." The postcard will be date/time stamped and returned to the commenter. All communications received before the specified closing date for comments will be considered before taking action on the proposed change. The proposal may be changed as a result of comments received. All comments submitted will be available for examination in the Docket both before and after the closing date for comments. A report summarizing each substantive public contact with FAA personnel concerned with this proposed policy change will be filed in the docket.

Availability of the Proposed Policy

Any person may obtain a copy of the notice of proposed policy by submitting a request to the Federal Aviation Administration, Office of Public Affairs, Attention: Public Inquiry Center, APA-200, 800 Independence Avenue, SW., Washington, DC 20591, or by calling (202) 267-3484. Communications must identify the notice number of this proposed policy. Persons interested in being placed on a mailing list for future proposals should also request a copy of Advisory Circular No. 11-2A which describes the application procedure.

Background

In January 1989, the FAA was requested, by way of a letter from seven major air freight carriers, to change the day on which aeronautical charts and related publications are put into effect. The letter was followed by several conferences with the FAA Administrator and others to discuss this request. As a result of these discussions, the FAA has agreed to evaluate a proposal to change the effective dates of certain charts and associated aeronautical publications.

Discussion

The International Civil Aviation Organization (ICAO) Annex 15 prescribes, in part, that the various forms of notices to airmen regarding circumstances affecting aeronautical systems, e.g., flight information regions, air traffic system routes, navigation aids, communication facilities, air traffic service procedure, etc., shall be originated under the Aeronautical Information Regulated System. That is, the establishment or withdrawal of, or significant changes to elements of such systems are to be based on a series of common effective dates at 28-day intervals beginning Thursday, May 5, 1966. Additionally, Annex 15 provides procedures for the origination and distribution of aeronautical information well in advance of effective dates (Annex 15, section 5.2). Further, the current edition of Annex 15 specifies January 15, 1987, a more recent date, on the same "28-day Thursday" interval.

The United States follows these provisions except that, since 1975, the United States, along with Canada and Mexico, has used a 56-day cycle, i.e., alternate "28-day Thursdays." Flight information publications, including navigation charts and other aeronautical documents used by all operational and planning elements of the aviation community, are processed on the same cycle.

Air route traffic control center (ARTCC) computer systems must be shut down to update their data bases with the system changes effective on "Aeronautical Information Regulation and Control Thursdays." This shutdown procedure requires all flight plans in the system to be printed out and then re-entered manually when changeover to the updated data base is completed. In one ARTCC in particular, the shutdown and startup must be accomplished between the inbound and outbound peak traffic periods of eight air freight carriers—a period of about 2 hours. Approximately 200 proposed flight plans must be re-entered when the updated system is operational. If hardware, software, or other problems delay the system startup, flight delays can, and have resulted from lack of flight plan information. These carriers report that the consequences of this situation have included late freight deliveries, missed connections, financial loss, and customer dissatisfaction for the air freight companies.

Thursday has become one of the busiest days for air traffic operations. The problem could be alleviated by changing the aeronautical information regulations and control (AIRAC) day to Monday when air freight traffic and other traffic activity are at their lowest. To accomplish this change, the United States would be required to propose to ICAO that Annex 15 be amended accordingly. Such a proposed amendment would need to be coordinated and approved through the Interagency Group on International Aviation (IGIA) before being submitted to ICAO.

Issues for Public Comment

Before presenting the issue to IGIA, the FAA is soliciting comments from all interested parties on the desirability of changing the AIRAC day to Monday. Comments should address the advantages or disadvantages, e.g., economic, procedural, operational, safety, etc., that would result if this policy change were made.

Issued in Washington, DC, on September 22, 1989.

David J. Hurley,

Acting Director, Air Traffic Operations Service.

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federal register

Monday
October 2, 1989

Part V

Department of Transportation

Coast Guard

46 CFR Parts 50, 56 and 61
Vessel Piping Systems; Final Rule

DEPARTMENT OF TRANSPORTATION

Coast Guard

46 CFR Parts 50, 56 and 61

[CGD 77-140]

RIN 2115-AA17

Vessel Piping Systems

AGENCY: Coast Guard, DOT.

ACTION: Final rule.

SUMMARY: These regulations amend the vessel piping systems regulations to clarify technical requirements, correct errors, and revise the lists of acceptable standards and specifications. These changes result from advances in technology and suggestions from industry and Coast Guard field units and provide a better understanding of the technical requirements for vessel piping systems. In addition, these amendments delete the manufacturers' affidavit system used to verify compliance of various piping components with the regulations and, instead, incorporate industry developed standards. These changes eliminate the submission of technical information for these components and reduce the overall cost burden in staff hours and paperwork for both industry and the Government, while providing a better method for ensuring that the components comply with Coast Guard regulations.

DATES: This rule is effective on November 1, 1989. The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of November 1, 1989.

FOR FURTHER INFORMATION CONTACT: Lieutenant Commander Peter Richardson, Office of Marine Safety, Security, and Environmental Protection; Marine Technical and Hazardous Materials Division, (202) 267-2206.

SUPPLEMENTARY INFORMATION: On January 9, 1985, the Coast Guard published a Notice of Proposed Rulemaking (NPRM) in the **Federal Register** (50 FR 1072). The NPRM was entitled "Miscellaneous Changes to parts 50 and 56," and 27 comments were received on the proposal. On May 18, 1988, the Coast Guard published a Supplemental Notice of Proposed Rulemaking (SNPRM) entitled "Vessel Piping Systems," in the **Federal Register** (53 FR 17868). The SNPRM expanded upon the earlier NPRM and further proposed deletion of the affidavit system whereby manufacturers verify compliance with regulations in the fabrication of vessel piping system components. The Coast Guard received 8 comments in response to the SNPRM, bringing the total number of comments received on the proposal to 35. A public hearing was not requested and one was not held.

Drafting Information

The principal persons involved in drafting this document are Mr. Howard L. Hime, Project Manager, and Mr. Stephen H. Barber and Lieutenant Commander Don M. Wrye, Project Counsels, Office of Chief Counsel.

Background

These regulations clarify certain technical requirements for vessel piping systems in 46 CFR part 56, correct errors, and revise the lists of acceptable standards and specifications. In addition, these regulations delete from 46 CFR part 50 the manufacturers' affidavit system used to verify compliance of various piping components with the regulations and, instead, incorporates industry developed standards. These regulations have no effect on installations and equipment already accepted by Coast Guard marine inspectors and maintained in good and serviceable condition. However, when a piece of equipment or a system is replaced, these regulations (as well as other regulations issued after the original date of acceptance) which relate to the equipment or system would be applicable to the replacement.

Discussion of Comments and Changes

1. Section 50.25-1

This section was revised by the SNPRM to describe the basic acceptance criteria for materials and piping components.

One comment requested clarification of the marking required by paragraphs (c) and (d). Paragraph (c) was revised to clarify that the marking is that required by the adopted industry standard. Paragraph (d) and § 50.25-10, which are for components not complying with an industry standard, were not changed since it is clear that the marking is that which is normally applied to the component by the manufacturer.

2. Section 56.01-3

One comment pointed out the section title is incorrect since there is no longer a 102.4.7 in American National Standards Institute (ANSI) B31.1. The section title in the final rule has been revised to delete this reference.

3. Section 56.01-6

This section has been removed and all standards referenced in that section have been incorporated into a new § 56.01-2. Regarding comments on the old § 56.01-6, one comment recommended the adoption of American Society for Testing and Materials (ASTM) F-25 and ASTM F-25.13 standards. Several standards developed under ASTM F-25 Committee on Shipbuilding Standards were proposed for incorporation by reference under the SNPRM. The Coast Guard is actively involved with industry in the development of shipbuilding standards through this committee, its subcommittees, and its task groups. The final rule incorporates many of these standards. As more standards are developed and found to be suitable for incorporation into the regulations, they will be included by future rulemaking projects.

4. Section 56.01-10

A new paragraph (f) was added by the proposed rule which would have permitted the substitution of a piping system diagram (required to be submitted by § 56.01-10(c)(1)) which contained locations where required and a fully detailed material list in lieu of an arrangement drawing (as required by § 56.01-10(c)(2)) unless calculations were also required for that system.

Three comments questioned the requirement in paragraph (f)(2) for "a fully detailed bill of material." One stated the requirement should be deleted since the presently permitted diagram material schedule is sufficient. One felt the wording needed clarification. One indicated the wording was misleading and would be incompatible with the efforts of the National Shipbuilding Standards Program (Panel SP-6) to develop a standardized method of describing pipe and piping system components on piping diagrams. The introductory sentence to paragraph (f) of the final rule has been changed to clarify that this paragraph provides an alternative to submitting the arrangement drawings of § 56.01-10(c)(2). Paragraph (f)(2) has been reworded to ensure that piping diagrams contain sufficient information to enable plan reviewers to substantiate that components comply with applicable regulations, while at the same time be compatible with the efforts of Panel SP-6 of the National Shipbuilding Standards.

5. Section 56.04-10

This section was changed by the proposed rule to clarify the acceptance criteria for piping systems which do not require specific plan approval.

One comment indicated that a statement should be included in this section to indicate that pressure vessels would have to meet part 54 as applicable. This recommendation has not been incorporated. Pressure vessels are not considered appurtenances and are not covered by this section. It is unnecessary to indicate that pressure vessels must meet part 54, as applicable.

One comment said paragraph (c) should specify "operational" failures, since failure in any pressurized system could constitute a hazard to personnel. This recommendation has not been incorporated. The wording has been unchanged in the final rule. This paragraph allows the inspector to evaluate systems and consider many parameters (e.g., proximity to switchboards, locations relative to personnel access routes, the dependence of vital systems upon them, etc.) in determining whether they are inherently safe and suitable for the environment in which they are installed.

6. Section 56.07–5

This section was amended by the addition of a definition for "vital system."

Two comments said the definition was itself subject to broad interpretation and did little to clarify the intent of the term. This definition has been changed to coincide with the definition for "vital system or equipment" found in § 62.10 of this subchapter. This change was made to promote uniformity in the regulations and clarify the intent behind this definition.

7. Section 56.07–10

Paragraph (c) of this section was revised by the proposed rulemaking to clarify that it replaced only paragraph 101.5.3 of ANSI B31.1, which deals with considerations to account for earthquake effects, with requirements which relate specifically to ship motion dynamic effects.

One comment questioned the requirement of paragraph (c)(2) of reducing tabulated allowable stress values by at least 20% when a ship motion analysis is not conducted for Class I systems. The comment stated that since the system would not be operated while the ship was in motion, no dynamic ship motion analysis should be required and no reduction in specified allowable stresses would be necessary. This paragraph is unchanged in the final rule. The proposed wording is clear in specifying when allowable stress values must be reduced. If vessel owners feel they have extenuating circumstances which warrant a relaxation of this requirement, they may seek an approval of their system on a case-by-case basis from the Marine Safety Center.

One comment said that paragraph (d)(1) should reference 102.2.2 of ANSI B31.1 instead of 102.2. This recommendation has been included in the final rule.

8. Section 56.15–1

Paragraph (a) of this section was amended by the proposed rules to clarify the fact that materials used in the fabrication of pipe joining fittings manufactured in accordance with standards referenced in these regulations must comply with subpart 56.60 of this part.

One comment said that requiring a component's material to meet Subpart 56.60 when it complied with a referenced standard was unjustified. The comment stated that any material specified within an adopted standard should be acceptable for use. This paragraph was revised by the SNPRM and the wording in question has been left unchanged in the final rule. Component materials must meet the requirements of subpart 56.60, since these have been found to be specifically suitable for shipboard applications. While referenced standards ensure components of acceptable pressure/temperature designs, some materials accepted in those standards may be unsuitable for the marine environment.

9. Section 56.20–1

This section was amended by the proposed rules to clarify wording that has been a frequent cause of confusion. Additionally, the SNPRM deleted reference to the affidavit system, instructed manufacturers how to obtain acceptance of their products, permitted, with some limitations, the use of welded valves, and incorporated into the regulations additional current industry standards for valves.

Three comments were received in response to the initial proposed rules. One stated the valve specification should be broadened to include modern valve designs not currently acceptable. The SNPRM accomplished this with its proposed method for manufacturers to gain product acceptance of valves not built to referenced standards. These procedures are included in the final rule.

One comment indicated that clarification was needed as to what constitutes a "welded valve." The SNPRM expands upon the present working of the regulations and clarifies that the procedures of subpart 56.70 and part 57 must be followed for welded valves. These requirements are applicable to welds which form part of the pressure-containing boundary of the valve (i.e., body, bonnet).

10. Section 56.20–9

This section was revised by the proposed rules for clarification purposes and to limit the use of wafer valves to agree with the American Bureau of Shipping (ABS) Rules for Building and Classing Steel Vessels and allow piping inboard of a skin valve to be removed without drydocking the vessel.

Three comments indicated questions remained with the revised wording of paragraph (a). They also all uged that quarter-turn (rotary) valves be permitted in addition to outside yoke and screw valves with rising-stem. The attempt to clarify the requirements of this section obviously led to further confusion. Quarter-turn (rotary) valves have long been accepted aboard Coast Guard inspected and certificated vessels. Numerous standards referenced in Table 56.60–1 (b) relate to this type of valve. Paragraphs (e) and (f) of this section specifically address plug cocks. Section 56.20–15 addresses resiliently seated valves, traditionally quarter-turn valves. The fact that three commenters said such valves should be permited indicates still further clarification of this section is necessary. Therefore, requirements have been added for quarter-turn and lever operated valves.

Four comments indicated that further clarification of paragraph (b) was necessary, while one commenter felt that the paragraph was overly restrictive on the size limitation for socket type welding ends for class I piping systems. These comments are agreed with. The size restrictions have been changed to agree with other socket weld restrictions in the regulations and the ABS Rules for Building and Classing Steel Vessels, which also clarifies the requirements of this paragraph.

One comment requested further clarification of the allowable use of wafer-type valves for shell connections in paragraph (c). This recommendation has been incorporated in the final rule. The intent behind not allowing wafer-type valves as shell connection shut-off valves is that many wafer valves are held in place by the pressure exerted by adjacent piping flanges. They do not permit piping immediately inboard of the valve to be removed for repair without raising the shell connection out of the water. This is not in keeping with good marine practice. Therefore, this paragraph has been revised to clarify this point.

11. Section 56.20–15

A new paragraph (c) was added by the proposed rule which clarified the requirements of resiliently seated valves. It specified how manufacturers are to qualify their valves to desired categorization.

One comment pointed out that the valve categorization specified in paragraph (b) did not coincide with the valve categorization criteria of paragraph (a). This comment is agreed with. The first sentence of paragraph (b) has been revised to include positive shutoff valves as a third category of resiliently seated valves.

Several comments were received which related to paragraph (c). Three indicated that actual fire testing provided the most meaningful results and should be used to determine Category A and positive shutoff designations. Four questioned the formulas used to determine leakage rates for the various categorizations, claiming they were unclear or incapable of being met. None of the comments made were incorporated. Being a new requirement, confusion was anticipated. These tests were included in the regulations to provide definite limits to be used in categorizing resiliently seated valves. Testing a valve by removing the resilient seating material affords manufacturers a way to avoid bearing the cost of fire testing their product. It is a simple matter to determine the flow through a valve at its rated pressure and comparing it against the flow through the valve closed with the resilient seating material removed and subjected to the same pressure. For those manufacturers who choose not to utilize this option, they may conduct a fire test of their valve or submit calculations verifying their product acceptance, provided the alternate method chosen is acceptable to the Commandant (G–MTH).

12. Section 56.25–20

The SNPRM modified this section to bring its wording into line with that contained in ANSI B31.1. One commenter felt that paragraph (b) of this section should be further revised to more fully comply with ANSI B16.5. Specifically, carbon steel bolts should be permitted to have either hex heads or square heads, and the maximum operating temperature for low strength carbon steel bolts should be reduced to 400 °F. The final rule reduces the maximum operating temperature allowed for low strength carbon steel bolts to 400 °F. This is in agreement with ANSI B16.5 and ANSI B31.1. The requirement that carbon steel bolts have heavy hexagon steel heads and nuts has been retained. Though this exceeds the requirements of ANSI B16.5, it complies with the requirements of ANSI B31.1 and retains the requirements presently contained within these regulations.

Two comments pointed out that paragraph (c), in prohibiting the use of headed alloy bolts, conflicts with ANSI B16.5 and ANSI B31.1. The final rule eliminates this prohibition. It additionally leaves the wording of the first sentence of paragraph (d) unchanged. This change brings the regulatory requirement into line with long adopted codes and standards.

One comment indicated that Class 3 threads have been the standard used by all manufacturers and felt that paragraph (d) should be revised to reflect this fact. This comment has not been included in the final rule. The present wording permits Class 3 threads as well as others and agrees with the requirements of ANSI B16.5, ANSI B31.1 and the ASME Code. No change is warranted. The Coast Guard sees no reason to restrict the choice to only one class of threads.

13. Section 56.30–5

The SNPRM proposed revisions to several of the requirements for welded joints outlined in this section.

One comment pointed out that, in paragraph (c), the references to subparagraphs § 56.30–10(b) (5) and (6) should be deleted from the first sentence of this paragraph since they are not applicable to socket welds. This suggestion has been included in the final rule.

Two comments were made regarding paragraphs (c) and (d), questioning why the requirement for a fillet weld leg size of 1.4 times the nominal pipe wall thickness (1.4T) has been retained when ANSI B31.1 has permitted this dimension to be reduced to 1.09T. The final rule has not been changed. A fillet weld leg size of 1.4T results in a fillet weld throat thickness equal to the nominal pipe wall thickness. The NPRM discussed the recent trend of reducing fillet weld leg size to 1.09T. The reduction in fillet weld size was permitted primarily for socket type pipe joints and socket weld fittings where the surface of the parts to be joined did not always allow for larger fillets. However, many experts do not consider this reduction appropriate for fillet welds which effectively serve as all or part of the hub area of a flange to a pipe joint. Our regulations already contain provisions to reduce the fillet size in Class II piping and when heavy wall pipe is used for long life in corrosive service rather than for strength. For these reasons we decided not to change our requirements for fillet weld size except to include a provision that the fillet weld need not be larger than the space available for it on the hub of the flange. No data, as specifically requested by the NPRM, was submitted to prove the 1.4T requirement is overly conservative. Therefore, the change to 1.09T will not be made.

14. Section 56.30–10

The SNPRM proposed revisions to several of the requirements for flanged joints outlined in this section.

Two comments were made about the proposed sentence added to the note to Figure 56.30–10(b). Both pointed out referencing a hub thickness of ⅛-inch is meaningless since all ANSI hubs have a thickness larger than this. These comments are agreed with. The note has been changed accordingly.

Two comments stated that in paragraph (b)(2), the size of the strength fillet welds for slip-on type flanges should be changed to coincide with ANSI B31.1, i.e., permit a leg length of 1.09 times the nominal pipe thickness. This suggestion has not been included in the final rule for the reasons discussed above.

One comment objected to the proposed wording of paragraph (b)(3) since it limits the use of slip-on flanges to a maximum nominal pipe size (NPS) of 4 for all Class I piping systems whereas the existing rules permit their use in sizes exceeding 4 NPS in relatively low pressure Class I systems. The final rule is as proposed. The changes to this section and § 56.95–10 are made to bring regulatory requirements into agreement with ANSI B31.1 and correct long-standing printing errors in 46 CFR Table 56.95–10.

One comment stated that paragraph (b)(5) should be modified to allow hubbed plate flanges in accordance with appendix 2 of section VIII of the ASME Code. This suggestion has not been included in the final rule. Hubbed plate flanges are currently permitted by § 56.25–5 which allows flanges to meet the design requirements of appendix 2 of section VIII of the ASME Code. Paragraph (b)(5) is intended only to address flat plate flanges and modifying this paragraph to include hubbed plate flanges is unnecessary.

15. Section 56.30–20

One comment stated paragraph (c) of this section, regarding restrictions on threaded joints, is too vague but offered no suggestions for clarification. The wording of this paragraph has been unchanged in the final rule. The rule is

sufficiently specific to allow designers and plan reviewers to determine where threaded joints are not permitted.

16. Section 56.35–15

The NPRM attempted to clarify and differentiate the requirements for metallic and nonmetallic expansion joints.

Four comments indicated confusion still exists and recommended the Coast Guard recognize the standards of the Expansion Joint Manufacturers Association (EJMA). This suggestion was incorporated. The SNPRM revised this section and § 56.35–10. Section 56.35–10 now contains requirements for nonmetallic expansion joints (regardless of their pressure rating) and § 56.35–15 contains requirements for metallic expansion joints. Standards of the EJMA have been added to Table 56.60–1(b) as applicable to piping systems. Expansion joints meeting adopted standards will be suitable for use within their design pressure/temperature ratings. Those not built to recognized standards must be proven suitable on a case-by-case basis in accordance with § 50.25 of this chaper.

17. Section 56.50–1

Paragraph (c) of this section was amended by including the fact that modern sluicing arrangements for tankships would be considered for approval on a case-by-case basis by the Marine Safety Center.

One comment stated that the use of sluicing systems should be allowed on vessels other than tankships. This comment has not been included in the final rules. Sluicing arrangements are only suitable for vessels dedicated to the carriage of liquid cargoes, i.e., tankships. Should, at some future date, another vessel designer propose such a system, it may be considered for acceptance under the "general equivalency" regulations of 46 CFR 50.20–30.

One comment suggested that paragraph (g)(2) be amended to include a requirement that valve position indicating systems be independent of the valve control systems. This suggestion has been incorporated into the final rules. Vessel personnel must know the status of remotely operated valves from the position of the remote valve control. The position indicating system should be independent of the control system in order that failure of the latter will not result in failure of the former. Paragraph (g)(2)(iii) has been amended by the addition of the requirement that valve position indicator systems be independent of the valve control systems. This is consistent with the requirement contained in § 62.30–5 of this subchapter.

One comment suggested that paragraph (g)(3) be revised to clarify its intent. This recommendation has been included in the final rule. Paragraph (g)(3) has been revised to clarify that the required self-indicating air cock in the actuating line to an air operated remote control valve must indicate the desired valve position, i.e., open or closed. The independent valve position indicator, required by amended paragraph (g)(2)(iii), serves to verify that the actual valve position coincides with the desired valve position.

18. Section 56.50–15

One comment pointed out that the steam heating requirements of paragraph (h) of this section should be amended to bring the regulatory requirements into line with accepted shipboard practices. This comment is agreed with. The present regulations limit steam pressure for "space heating" to 45 pounds per square inch gage (psig). The question has frequently been asked as to the meaning of "space heating." Space heating has been interpreted to mean heating for accommodation and public spaces. Non-accommodation and non-public spaces (e.g., work spaces, machinery spaces, gear lockers) are permitted to have steam heating systems in excess of 45 psig. Paragraph (h) of this section has been revised to clarify this policy.

19. Section 56.50–45

The NPRM proposed that paragraph (b) of this section be modified by specifying that the suctions for the main and emergency circulating pumps be "well separated" in addition to independent.

Two comments pointed out that the proposed change was vague and open to significant variations in interpretation. These comments are agreed with, and the proposed change has been deleted from the final rule.

20. Section 56.50–50

The proposed rules amended paragraph (c) of this section to inform designers that bilge systems other than the conventional manifold-type may be considered on a case-by-case basis by the Marine Safety Center, and to require bilge discharge valves to comply with the rapid operation requirements currently imposed upon suction valves.

One comment stated the requirements for common rail-type systems should be clearly specified and moved to a separate section. This suggestion has not been incorporated into the final rule. The present regulations adequately address common rail-type bilge systems, and the amendments to this paragraph permit any nonmanifold-type bilge system to be evaluated on a case-by-case basis.

Two comments indicated that the proposed wording could be interpreted to require stop-check manifold type valves for bilge overboard discharges. This point is agreed with. The intent of the proposed rule was that bilge overboard discharge valves comply with the location and accessibility requirements of the bilge suction valves, but the proposed rules did not intend that bilge overboard discharge valves be of the stop-check type. Therefore, the fourth sentence has been modified to indicate that bilge overboard discharge valves must meet the location and accessibility requirements of the suction manifolds.

The proposed rules amended paragraph (d)(1) of this section to correct a long-standing typographical error in the formula used to determine the diameter of the suction to each main bilge pump.

Five comments pointed out that the proposed rule was still incorrect. This observation is agreed with. The improper fix was a result of a misprint. The formula is correct in the final rule.

Paragraph (f)(3) of this section was amended by the proposed rules to clarify the emergency bilge suction requirements of paragraph (f).

One comment was made which pointed out that the proposed amendment did not accomplish its goal. This comment is agreed with. The existing text of paragraph (f)(3) will be left unchanged. Instead, the word "except" will be deleted from the first sentence of the introductory text of paragraph (f). This word is the apparent cause of the confusion over this requirement. By this deletion, vessel designers should have no problem determining when a vessel is required to have an emergency bilge suction. It should be noted that vessels engaged solely in river service are not required to have an emergency bilge suction. The requirements for emergency bilge suctions stem from the International Convention for the Safety of Life at Sea 1974, as amended (SOLAS 74/83), which is not applicable to these vessels. Additionally, the purpose of an emergency bilge suction is to "buy time" in the event of catastrophic flooding. Vessels in river service, unlike vessels with ocean, coastwise or Great Lakes routes, are usually closer to the safety of shore.

The NPRM proposed incorporating piping separation requirements

contained in various locations within 33 CFR and 46 CFR into paragraph (h) of this section.

Several comments were made in response to this proposal. These pointed out that the requirements went beyond bilge and ballast piping to which § 56.50–50 pertains, that this paragraph should be referenced in other sections, and the imposition of requirements for spaces which could contain Grade E liquids (with flashpoints below 150°F) will cause problems with diesel propelled vessels (since diesel flashpoints are at 140°F). These comments are agreed with, and the proposed change has been deleted. To clarify the ambiguity in the present text, wording has been added to indicate that these bilge piping requirements are intended to apply to drain spaces containing dry cargo (i.e., cargo holds). The first sentence of this paragraph specifies "cargo holds" instead of "cargo spaces."

The NPRM proposed modifying paragraph (k) of this section by making the requirements applicable to all tanks through which bilge and ballast piping pass rather than just deep tanks, with the specific exception of ballast piping passing through ballast tanks.

Three comments were received that related to this proposed change. One comment stated that the wording was still unclear and proposed alternate wording. Two comments stated that the restrictions were excessive and proposed allowing the use of expansion joints and dresser-type couplings in bilge and ballast lines within tanks. As a result of these comments, this paragraph was modified by the SNPRM. The requirements still apply to all tanks, rather than just deep tanks, with the exception of ballast piping passing through ballast tanks. In addition, alternates to welded pipe or enclosing piping in pipe tunnels (such as expansion joints or dresser-type couplings) could be approved by the Marine Safety Center, provided certain design verifications are submitted and found to be satisfactory.

21. Section 56.50–55

Three comments indicated that clarification was needed in paragraph (c) with respect to the requirement of a suction velocity of not less than 400 feet per minute through the bilge suction pipe. This requirement was included in the SNPRM and has been retained in the final rule. The question has been frequently raised as to whether or not this suction velocity was required in suction piping larger than that required by § 56.50–50 of this part. This would require builders to install pumps larger than that required if the minimum pipe size were provided.

The intent of the regulations regarding bilge suction velocity is to ensure that a given volume of water can be removed in a given time. The larger (or deeper) the compartment, the larger the required volumetric flow rate. Minimum pipe sizes are specified in the regulations. Since volumetric flow rate is the prime concern, if a designer opts to install larger than required piping, a pump may be installed which will produce a lesser fluid velocity through that pipe, provided the volume of fluid removed in a given time will at least equal that amount passing through the minimum required pipe size at 400 feet per minute.

Paragraph (e)(1) of this section was modified by the proposed rules to clarify the intent of the separation of bilge pump requirements and to provide an example of an acceptable alternative bilge pump arrangement.

Two comments interpreted the example to be a required pumping arrangement and took exception. Though the example was provided to illustrate one acceptable alternative pumping arrangement, rather than a required alternative, it is clear that the proposed wording could lead to confusion. To remedy this problem, the example has been deleted from the final rule. Ideally, bilge pumps should be located in separate watertight compartments. In vessels which do not have separate watertight compartments, or in which it is not practicable to locate bilge pumps in separate watertight compartments, designers may propose alternative arrangements (i.e., locating all bilge pumps within the machinery space) for consideration by the Marine Safety Center.

22. Section 56.50–60

The NPRM combined the requirements of § 56.50–5 with the requirements of this section and changed the title of this section to read: "Systems containing oil."

Three comments pointed out the new title would lead readers to believe the requirements also apply to lube oil, hydraulic oil, and thermal fluid systems. The Coast Guard agrees with these comments since this was the intent of the combination as stated in the NPRM. Unless otherwise specified, the requirements apply to all oil systems. Therefore, the proposed section heading is retained.

One comment suggested that the first sentence of paragraph (c) of this section be reworded for the sake of clarification. This has been done in the final rule by revising the first sentence to remove redundant language.

Three comments requested that paragraph (d) of this section be expanded to address acceptable valve types in specific locations (i.e., Category A valves at tanks with positive shutoff valves at the machinery space bulkhead), clarify the energy storage requirements for power operated valves, and clarify the design requirements for the power actuators for power operated valves. Paragraph (3)(i) of this section was revised by the SNPRM to clarify that the energy storage requirements are applicable only to valves actuated by hydraulic or pneumatic power. The Coast Guard reviewed the present requirements for valves at tanks and the design requirements for valve power operators and found the requirements adequate. Therefore, these requirements have not been changed in the final rule.

23. Section 56.50–75

This section was modified by the NPRM with minor editorial corrections.

One comment stated further revisions were necessary to address the use of heated fuel oil systems. The comment has not been included in the final rule. The present regulations of this section, coupled with fuel system and general requirements found elsewhere in this subchapter (e.g., §§ 56.01–1, 56.50–60, 58.01–5, etc.) are considered at this time to be adequate.

24. Section 56.50–85

Paragraph (a) of this section was modified by the NPRM to clarify that the venting requirements specified applied to independent fixed non-pressure tanks or containers as well as to integral tanks. Paragraph (a)(4) of this section was revised by the SNPRM to require all tank vents to extend above the weather deck, with certain specified exceptions.

One comment stated that the venting requirements for cofferdams, voids, duct keels, etc., should also be included. This comment has not been included in the final rule. These requirements are intended to apply to liquid-carrying tanks. Venting requirements for other spaces are found in other, more appropriate, places within the regulations.

One comment questioned the fact that paragraph (a)(7) of this section addresses flame screens on bilge slop and contaminated drain tank vents, but neglects to specify where such vents should terminate. This concern was addressed in the SNPRM and has been included in the final rule. Paragraph (a)(7) was redesignated as (a)(8) in the final rule. Paragraph (a)(4) of this section now contains requirements for

the terminus of tank vents dependent upon the fluid within the tank.

Two comments felt the proposed regulations were too lax. Allowing bilge oily-water holding tanks and bilge slop tanks to vent into the machinery space is, they indicate, an unsafe practice. These comments are not agreed with. Bilge oily-water holding tanks and bilge slop tanks contain oil/water mixtures from the machinery space bilge. Present regulations permit venting of these tanks within the machinery space. The Coast Guard is unaware of any problems that indicate this practice is unsafe. The danger of lighter, more volatile, vapors being concentrated within such tanks is minimized since they largely separate from the oil as it accumulates in the bilge and are exhausted to atmosphere through the ventilation system. Additionally, vents from these tanks are required to be fitted with flame screens. This proposed regulation clarified present regulations, agrees with present policy, and is in agreement with classification society requirements.

25. Section 56.50–95

This section was amended by the NPRM to clarify existing wording, address tank overflows used as tank vents, and establish requirements for locking of sea valves.

One comment proposed amending paragraph (a)(1) of this section to indicate that valves required by this section should be as close to the hull penetration as practicable. This comment is agreed with and is included in the final rule.

One comment stated that paragraph (b)(1) of this section should be further modified to clarify that it applies only to discharges above the waterline. This comment has not been incorporated. The requirements are sufficiently clear and have caused no confusion in the past. In their present form they are virtually identical to the requirements found in the Load Line Regulations (46 CFR 42.15–60(c)) and various classification society rules (e.g., ABS Rules, 36.25–2).

One comment stated the intent behind the proposed change to paragraph (c) of this section was unclear because the term "storage tank" is not defined. This comment is agreed with. The final rules have been changed to eliminate the term "storage tank" from the second sentence. Additional, the fourth sentence has been rewritten to clearly indicate that overflow pipes which also serve as tank vents must not be fitted with positive shutoff valves.

26. Section 56.60–1

The section heading and the note to the heading of Table 56.60–1(a) of this section were amended by the SNPRM to clarify that Table 50.60–1(a) actually replaces Table 126.1 in ANSI B31.1.

One comment stated that "eliminating Table 126.1" reduced the choice of allowable materials. It is precisely because of such misunderstandings that the wording in the heading has been changed. As stated in paragraph (a)(1) of this section, the material requirements in this subpart must be used in lieu of those in ANSI B31.1. Table 56.60–1(a) is a list of only those materials currently listed in Table 126.1 of ANSI B31.1 that are acceptable. If all the materials in Table 126.1 were acceptable, there would be no need for Table 56.60–1(a). The choice of allowable materials is not narrowed; it is the same as it was before. The proposed change has been retained in the final rule.

The SNPRM incorporated additional industry standards, in large part in conjunction with the deletion of the affidavit system. Standards will continue to be adopted as they are found suitable. This section was further amended by the NPRM and SNPRM to clarify wording, incorporate additional acceptable material standards into the regulations, and delete those which have been discontinued or found to be unsuitable for shipboard applications.

Sixteen comments suggested additional standards to be incorporated by reference. The suggested standards were reviewed. Several were found to be already incorporated by reference into the regulations. Others were found to be suitable and have been included in the final rule. Of those standards not adopted, some were found to have an unsuitable design factor of safety, lacked adequate testing criteria, or had no marking requirements. The Coast Guard is constantly looking for standards to adopt so as to reduce the regulatory burden on industry. However, certain key elements must be included in a marine engineering standard before it will be incorporated by reference. These elements include: Acceptable materials of construction, adequate design criteria, quality assurance during fabrication, final product testing, manufacturer's certification, and product marking to indicate conformance to the standard. Members of standards developing committees are strongly encouraged to include these criteria in their standards, thereby enabling them to be incorporated by reference into these regulations. Interested persons are strongly encouraged to continue to suggest standards for incorporation in these regulations.

27. Section 56.60–2

One comment stated that the restriction in footnote 5 of Table 56.60–2(a) of this section prohibiting certain brass materials from being used in salt water systems should be eliminated. This comment has not been included in the final rule. However, the second sentence of footnote 5 has been revised to explain the intent behind this restriction. The brass materials affected by this footnote all have high concentrations of zinc, and are subject to dezincification when used in a salt water environment. Copper-zinc alloys containing more than 15% zinc are susceptable to this dealloying process which weakens the alley and allows the leakage of liquids or gasses through the remaining porous mass. Most of the aluminum alloys affected by this footnote have greater than 0.6% copper and are susceptable to stress corrosion cracking unless they are solution heat treated and either naturally aged or subjected to a precipitation heat treated temper.

28. Section 56.60–10

One comment questioned whether cast iron and malleable iron conforming to standards and specifications other than those listed in Tables 56.60–1(a) and 56.60–1(b) of this part are restricted to a maximum temperature limitation of 450°F. The 450°F temperature limitation applies to all components made from cast iron or malleable iron. Section 56.60–10(a) has been changed to clarify this requirement.

29. Section 56.60–15

Two comments pointed out that Appendix E no longer exists in ANSI B31.1. This comment is agreed with. This section was revised by the SNPRM. Reference to Appendix E has been deleted.

30. Section 56.60–20

Paragraph (a)(1) of this section was amended by the NPRM to address the low melting points of other nonferrous materials instead of just aluminum and aluminum alloys.

Two comments indicated the proposed wording was vague, especially with respect to silver brazing alloys. These comments are not agreed with. The intent of this section has not been changed. Instead it has been clarified by pointing out that the low melting point of all nonferrous materials, not only aluminum and aluminum alloys, must be

considered in certain piping applications. Requirements relating to melting points of brazing materials are contained elsewhere in the regulations.

31. Section 56.60–25

Modifications and amendments to this section were proposed by both the NPRM and SNPRM. In addition to correcting grammatical errors in the text, burning rates for glass reinforced resins and other plastics were specified, and specific test criteria for nonmetallic hoses were given.

One comment questioned the deletion of the word "valve" from the first sentence of paragraph (a)(1)(ii) of this section. This deletion was unintentional, and the word has been retained in the final rule.

Five comments requested that reinforced thermosetting resin pipe (RTRP) be given wider acceptance in the regulations, including a relaxing of the present prohibitions placed upon the material when passing through bulkheads and being installed in concealed spaces. This suggestion has not been included in the final rule. The Coast Guard has been actively involved in studying RTRP for use aboard inspected and certificated vessels. In September of 1986, Navigation and Vessel Inspection Circular NVIC 11–86, "Guidelines Governing the Use of Fiberglass Pipe (FGP) on Coast Guard Inspected Vessels" was issued. It provided the marine industry with updated guidance regarding the application of FGP aboard vessels. Through this NVIC, the accepted applications of FGP were greatly expanded. Coast Guard personnel have been working closely with industry to develop consensus-type standards for FGP through ASTM's Committee F–25 on Shipbuilding. One of these standards, ASTM F1173, has been completed and is incorporated by reference into these regulations. Internationally, the Coast Guard is leading in the development of acceptance criteria for all piping materials other than steel, which includes FGP, in all shipboard systems. For FGP, the requested regulatory change will be addressed in a separate regulatory action.

Two comments indicated that the burning rate to determine a self-extinguishing flammability criteria has been deleted from ASTM D635. This comment is agreed with. The SNPRM amended this paragraph to specify an acceptable burning rate. This has been included in the final rule.

Numerous comments responded to the proposed changes to paragraph (c) of this section. Comments to the changes were favorable. Most comments wanted the changes to go further, expanding the permitted reinforcing materials, allowing reuse of field attachable fittings, and modifying various test requirements. The final rule is changed only to the extent proposed by the NPRM and SNPRM. Currently the Rubber Manufacturers Association (RMA) and the Society of Automotive Engineers (SAE) are working together to develop an industry standard for hoses intended for marine applications. Accordingly, no changes are anticipated to this paragraph until this effort is finalized. At that time, it is anticipated that the standard can be incorporated by reference, thereby negating the necessity to develop additional regulations.

32. Section 56.97–5

One comment indicated the term "scuppers" should be replaced with "scupper valves" since the former is used to describe a deck drain fitting which is not normally a part of a pressure piping system. Though the comment was correct in describing a scupper, the suggestion has not been included in the final rule. Valve tests are described in other portions of the subchapter and need not be repeated here. It is more appropriate to delete the word "scuppers" from this section. This has been done in the final rule.

33. Section 61.15–12

This new section was added by the SNPRM to detail requirements for the inspection and replacement of nonmetallic expansion joints. Although not a comment on the regulations, the National Transportation Safety Board (NTSB) recommended in their marine accident reports on the Prince William Sound (NTSB/MAR–87/07) and the Ogden Willamette (NTSB/MAR–83/06) that the Coast Guard require a complete internal and external examination of nonmetallic expansion joints installed in the main seawater circulating system during drydock inspections. This rulemaking requires external inspection of all nonmetallic expansion joints at each drydock inspection. Only if the external inspection indicates the need for additional examination would the fitting be required to be removed for internal inspection. Removal of expansion joints to facilitate routine internal examinations, when no defects are suspected, may not only be cost-prohibitive, but would increase the likelihood of inadvertent damage. In addition and in accordance with the NTSB recommendation in the same reports, nonmetallic expansion joints in piping systems which penetrate a vessel's side, where both the expansion joint and the hull penetration are below the deepest load waterline, would be required to be replaced ten years after their date of manufacture.

One comment pointed out that the proposed wording of paragraph (d) of this section did not differentiate between metallic and nonmetallic expansion joints, nor did it differentiate between specific piping systems. This comment partially is agreed with. In the final rule, the section title has been changed to "Nonmetallic expansion joints" and paragraph (a) of this section has been revised to specifically require inspection of nonmetallic expansion joints. The final rule continues to apply to any piping system which penetrates the hull where both the penetration and the nonmetallic expansion joint are below the deepest load waterline.

One comment stated the required ten year replacement interval, as specified in paragraph (b) of this section, is unjustified. The comment maintained that with proper installation, and long-term care, nonmetallic expansion joints can last the life of a vessel. The comment also stated that if a replacement interval was to be required, it should be tied to the date of installation, not the date of manufacture of the joint. Another comment requested that nonmetallic expansion joints on Great Lakes and other freshwater vessels be excluded from the ten year replacement interval. While some nonmetallic expansion joints do last the life of a vessel, many do not. Flooding as a result of failure of large nonmetallic joints in seawater and freshwater systems can have catastrophic results. Basing replacement intervals on dates of installation ignores the natural deterioration which occurs to the organic materials used to fabricate nonmetallic expansion joints. Despite the fact that joints may be "properly maintained," this deterioration cannot be avoided. Also, since large joints are not normally kept in a vessel's spare parts inventory, the date of installation of a joint should be close to its date of manufacture. The final rule retains the ten year replacement interval, based on date of manufacture. However, words have been added which gives the Officer in Charge, Marine Inspection authority to grant an extension of the ten year replacement requirement to coincide with the vessel's next required drydocking.

Incorporation by Reference

The material in subpart 50.15 and § 56.01–2 has been approved for incorporation by reference by the Director of the Federal Register under 5

U.S.C. 552 and 1 CFR part 51. The material is available as indicated in § 56.01–2.

If substantive changes are made by the publisher to the materials incorporated, those changes may be considered for incorporation.

However, before taking final action, the Coast Guard will publish a separate notice in the **Federal Register** for public comment.

E.O. 12291 and DOT Regulatory Policies and Procedures

These regulations are considered to be non-major under Executive Order 12291 and nonsignificant under Department of Transportation regulatory policies and procedures (44 FR 11034; February 26, 1979). A final evaluation has been prepared and placed in the public docket.

Two major issues in these regulations are the deletion of the affidavit system and the addition of the requirement to periodically replace certain nonmetallic expansion joints. A study conducted in 1980 concluded that the deletion of the affidavit system would result in an estimated annual savings in excess of $70,000 for the Coast Guard and $500,000 for vessel owners. Adjusting these figures by the Producer Price Index for Finished Goods for the years 1980 to 1987 results in an estimated annual savings (in 1987 dollars) of $84,000 for the Coast Guard and $600,000 for vessel owners. These savings are based on the elimination of the overall cost of the affidavit system, which was determined by evaluating the costs incurred by the Coast Guard to grant initial affidavit acceptances, evaluate products of affidavited manufacturers, and verify the proper use of affidavited products; by manufacturers to comply with the requirements of the affidavit system; and by vessel owners to purchase products from affidavited manufacturers.

Requiring vessel owners to periodically replace nonmetallic expansion joints in seawater piping systems would result in an estimated annual cost (in 1987 dollars) to vessel owners of approximately $2,520 for each steam propelled vessel and $1,172 for each diesel propelled vessel. In 1989, the U.S. fleet of vessels over 100 gross tons was made up of 937 diesel powered vessels and 376 steam powered vessels. The average age of the diesel and steam powered vessel fleet is approximately 10 and 15 years old, respectively. The economic burden upon the maritime industry to replace nonmetallic expansion joints within the existing fleet will be approximately $2,040,000 (in 1987 dollars) spread over the next ten years, or an average annual cost of $204,000. Considering the age of the average existing vessel and taking into the account replacement of some older nonmetallic expansion joints through routine maintenance, it is projected that the cost to the industry during the first year of implementation of these regulations will be $350,000 (in 1987 dollars). The economic benefits of periodic replacements of nonmetallic expansion joints are difficult, if not impossible, to quantify. However, when the costs of vessel replacement and the loss of vessel revenues which could result from expansion joint failures are considered, the economic benefits of periodic expansion joint replacement are substantial.

Regulatory Flexibility Act

These regulations have been evaluated in accordance with the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*). As described in the Regulatory Policies and Procedures section above, the effect of these regulations is to reduce Coast Guard and industry costs. Most of the changes clarify technical requirements, update lists of acceptable standards or editorially correct errors and will have a minimal economic impact. There is no reason to assume that the deletion of the affidavit system as a result of proposed regulations would cause small entities to be unable to effectively compete against larger concerns. To the contrary, the elimination of the affidavit system should increase sales opportunities for new companies entering the marine market because prospective clients would be unable to require a company first to have an affidavit accepted by the Coast Guard. The regulations requiring periodic replacement of nonmetallic expansion joints would apply to owners of Coast Guard inspected and certificated vessels. Due to the cost of owning and operating a vessel, the annualized cost of replacements is not considered to have a significant impact. The cost will be less on smaller vessels than on larger ones.

Therefore, the Coast Guard certifies under section 605(b) of the Regulatory Flexibility Act (5 U.S.C. 605(b)) that this final rule will not have a significant economic impact on a substantial number of small entities.

Paperwork Reduction Act

These regulations contain no new information or recordkeeping requirements. The information collection requirements contained in this rulemaking have previously been approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*) and have been assigned OMB control number 2115–0142. Section 50.25–10 eliminates the requirement for a manufacturer's affidavit, Form CG–935A, thus reducing this paperwork burden. The savings associated with this reduction have been previously discussed.

Section 56.01–10(f) reduces the number of arrangement drawings required to be submitted. Arrangement drawings are unnecessary if certain conditions are satisfied, e.g., the information is satisfactorily presented on associated diagrams.

Federalism Implications

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

Environmental Assessment

The Coast Guard has considered the environmental impact of these regulations and concluded that, under section 2.B.2. of Commandant Instruction M16475.1B, these regulations will have no significant environmental impact and are categorically excluded from further environmental documentation. The proposed regulations revise existing regulations to clarify technical requirements, correct errors, and substitute industry standards for existing regulatory requirements.

List of Subjects in 46 CFR Parts 50, 56, and 61

Incorporation by reference, Reporting and recordkeeping requirements, Vessels.

For the reasons set out in the preamble, chapter I of title 46, parts 50, 56, and 61 of the Code of Federal Regulations are amended as follows:

PART 50—GENERAL PROVISIONS

1. The authority citation for part 50 continues to read as follows:

Authority: 43 U.S.C. 1333; 46 U.S.C. 3306, 3703, 5115; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; 49 CFR 1.45, 1.46; § 50.01–20 also issued under the authority of 44 U.S.C. 3507.

2.–3. A new § 50.10–23 is added to read as follows:

§ 50.10–23 Marine Safety Center.

The term "Marine Safety Center" refers to the Commanding Officer, U.S.

Coast Guard, Marine Safety Center, 400 7th St., SW., Washington, DC 20590.

4. Section 50.15–1 is amended by revising the section heading and paragraph (b) and removing paragraph (c) to read as follows:

§ 50.15–1 General acceptance of standard requirements.

* * * * *

(b) The issue of the industry specification, standard, or code described in this subchapter as incorporated by reference, is generally accepted as an alternate during plan review and approval, or for repair or replacement. The Commandant (G–MTH) may authorize the use of an issue of an earlier or later date when circumstances warrant such action.

5. Section 50.15–20 is amended by revising paragraphs (a)(1) through (a)(13) and adding new paragraph (a)(14) to read as follows:

§ 50.15–20 Additional standards.

(a) * * *

(1) American Boat and Yacht Council, Inc. (ABYC), 305 Headquarters Drive, Suite 3, Millersville, MD 21108.

(2) American Petroleum Institute (API), 1220 L Street, NW., Washington, DC 20005.

(3) American Welding Society (AWS), United Engineering Center, 345 East 47th Street, New York, NY 10017.

(4) Commercial Standards, Commerce Department, National Bureau of Standards, Washington, DC 20234.

(5) Compressed Gas Association (CGA), 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

(6) Expansion Joint Manufacturers Association, Inc. (EJMA), 25 North Broadway, Tarrytown, NY 10591.

(7) Fluid Controls Institute, Inc. (FCI), 31 South Street, Suite 303, Morristown, NJ 07960.

(8) Manufacturers' Standardization Society of the Value and Fittings Industry (MSS), 127 Park Street, NE., Vienna, VA 22180.

(9) Military specifications, which may be obtained from the Commanding Officer, Naval Supply Depot, 5801 Tabor Avenue, Philadelphia, PA 19120.

(10) National Fire Protection Association (NFPA), Batterymarch Park, Quincy, MA 02269.

(11) National Fluid Power Association (NFPA), Post Office Box 49, Theinsville, WI 53092.

(12) Society of Automotive Engineers, Inc. (SAE), 400 Commonwealth Drive, Warrendale, PA 15096.

(13) Tubular Exchanger Manufacturers' Association, Inc. (TEMA), 25 North Broadway, Tarrytown, NY 10591.

(14) Underwriters' Laboratories, Inc. (UL), 12 Laboratory Drive, Research Triangle Park, NC 27709.

* * * * *

6. Section 50.20–5 is amended by revising paragraphs (b) and (c), removing existing paragraph (d) and redesignating paragraph (e) as paragraph (d) to read as follows:

§ 50.20–5 Procedures for submittal of plans.

* * * * *

(b) The plans, except as noted in paragraph (c) of this section, may be submitted in duplicate to the Officer in Charge, Marine Inspection, at or nearest the place where the vessel is to be built. Alternatively, plans may be submitted in triplicate to the Marine Safety Center.

(c) Plans for nuclear vessels should be submitted in triplicate to the Commandant (G–MTH).

* * * * *

7. Section 50.20–15 is amended by revising paragraph (a)(3) to read as follows:

§ 50.20–15 Previously approved plans.

(a) * * *

(3) A copy of the approved plan is available for review by the approving office.

8. The heading of subpart 50.25 is revised to read "Acceptance of Material and Piping Components."

9. Section 50.25–1 is revised to read as follows and Table 50.25–1(a) is removed:

§ 50.25–1 General.

(a) Materials and piping components used in the construction of boilers, pressure vessels, pressure piping systems, and related components are accepted by review of manufacturer or mill certificates under § 50.25–3 of this part, product marking in accordance with an adopted industry standard, or technical information indicating their compliance with the requirements of this subchapter.

(b) Plate, bar stock, pipe, tube, pipe joining fittings (tees, elbows, reducers, etc.), bolting, castings, forgings, and flanges, are accepted by review of manufacturer or mill certificates under §§ 50.25–3, 50.25–5, and 50.25–7 of this part.

(c) Valves, fluid conditioner fittings, and special purpose fittings complying with an adopted industry standard and marked in accordance with the standard are accepted through review of the marking indicating compliance with the adopted industry standard.

(d) Valves, fluid conditioner fittings, special purpose fittings, and pipe joining fittings not complying with an adopted industry standard are accepted for use on a case-by-case basis. Acceptance is granted by the Marine Safety Center or the Officer in Charge, Marine Inspection, having cognizance over the installation of the product. To obtain acceptance of a product, the manufacturer must submit, via the vessel owner or representative, the information described in § 50.25–10 of this part to the Marine Safety Center or the cognizant Officer in Charge, Marine Inspection.

(e) Components designed for hydraulic service which require shock testing under § 58.30–15(f) of this chapter and nonmetallic flexible hose assemblies must be accepted by the Commandant (G–MTH). Manufacturers desiring acceptance of these products must submit information necessary to show compliance with §§ 56.60–25(c) or 58.30–17 of this chapter, as applicable. Acceptance of specific installations of acceptable nonmetallic flexible hose assemblies and shock tested hydraulic components is granted by the Marine Safety Center or the cognizant Officer in Charge, Marine Inspection, as described in paragraph (d) of this section.

(f) The vessel owner or representative shall make available to the Officer in Charge, Marine Inspection, the manufacturer or mill certificates, specific letters of acceptance, or approved plans necessary to verify that piping components comply with the requirements of this subchapter.

10. In § 50.25–3, paragraph (a) is revised to read as follows:

§ 50.25–3 Manufacturer or mill certification.

(a) A manufacturer or mill producing materials used in certain products for installation on inspected vessels, shall issue a certificate or mill test report which shall report the results of chemical analysis and mechanical properties required by the ASTM specification.

* * * * *

11. Section § 50.25–5 is amended by revising paragraphs (a) and (d)(3) to read as follows:

§ 50.25–5 Products requiring manufacturer or mill certification.

(a) Products required to be certified by a manufacturer or by mill certificate shall be fabricated and tested in accordance with the applicable specifications. Such products will not normally be subject to mill inspection by the Coast Guard except as required by § 50.25–7.

* * * * *

(d) * * *

(3) In the opinion of the Officer in Charge, Marine Inspection, the application of the product does not require knowledge of the exact chemical analysis or mechanical properties enumerated on the manufacturer or mill certificate.

* * * * *

12. Section 50.25–7 is amended by revising paragraph (a) to read as follows:

§ 50.25–7 Testing of products required to be certified in presence of marine inspector.

(a) Certified products are not normally tested in the presence of a marine inspector. The Commandant may, however, assign a marine inspector to witness tests required by the applicable specifications to satisfy himself that the requirements are met.

* * * * *

13. Section 50.25–10 is revised to read as follows:

§ 50.25–10 Acceptance of piping components by specific letter or approved plan.

(a) A manufacturer of a piping component which does not comply with an adopted industry standard and requires acceptance by specific letter or approved plan must do the following:

(1) Submit an engineering type catalog or representative drawings of the component which includes the pressure and temperature ratings of the component and identify the service for which it is intended.

(2) Identify materials used to fabricate the component. Materials must meet the requirements of subpart 56.60 of this chapter. If the component is not manufactured to accepted material specifications, the manufacturer must prove equivalency to accepted material specifications by comparing details of the materials' chemical composition, mechanical properties, method of manufacture, and complete chemical and mechanical test results with an accepted material specification.

(3) Identify the industry standard, if any, to which the component is manufactured.

(4) Submit a description of nondestructive testing performed on the component.

(5) Submit a description of the marking applied to the component.

(6) Submit information showing compliance with the requirements of part 56, subparts 56.15, 56.20, 56.25, 56.30, or 56.35 of this chapter, as applicable.

(7) Submit any additional information necessary to evaluate the component's acceptability for its intended application.

(b) If the component is found to comply with the requirements of this subchapter, the component is designated as acceptable for its intended installation. This acceptance is in the form of a specific letter relating directly to the particular component or in the form of an approved piping system plan in which the component is identified as an integral part.

§§ 50.25–15, 50.25–20, 50.25–25, 50.25–30, 50.25–35 and 50.25–40 [Removed]

14. Sections 50.25–15, 50.25–20, 50.25–25, 50.25–30, 50.25–35, and 50.25–40 are removed.

PART 56—PIPING SYSTEMS AND APPURTENANCES [AMENDED]

15. The authority citation for part 56 continues to read as follows:

Authority: 33 U.S.C. 1321(j), 1509; 43 U.S.C. 1333; 46 U.S.C. 3306, 3703, 5115; 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.

16. In the note to subpart 56.01 preceding § 56.01–1, "USAS–B31.1" is revised to read "ANSI B31.1".

17. A new § 56.01–2 is added to read as follows:

§ 56.01–2 Incorporation by reference.

(a) Certain standards and specifications are incorporated by reference into this part with the approval of the Director of the Federal Register in accordance with 5 U.S.C. 552(a). To enforce any edition other than the one listed in paragraph (b) of this section, notice of the change must be published in the **Federal Register** and the material made available to the public. All approved material is on file at the Office of the Federal Register, 1100 L Street, NW., Washington, DC, and is available from the sources indicated in paragraph (b).

(b) The standards and specifications approved for incorporation by reference in this part, and the sections affected are:

American National Standards Institute (ANSI); 1430 Broadway, New York, NY 10018:	
ANSI B1.1–82 Unified Inch Screw Threads (UN and UNR Thread Form).	56.60–1; 56.25–20
ANSI B1.20.1–83 Pipe Threads, General Purpose (Inch).	56.60–1
ANSI B1.20.3–76 (reaffirmed 1982) Dryseal Pipe Threads (Inch).	56.60–1
ANSI B16.1–75 Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250 and 800.	56.60–1; 56.60–10
ANSI B16.3–85 Malleable Iron Threaded Fittings, Classes 150 and 300.	56.60–1
ANSI B16.4–85 Cast Iron Threaded Fittings, Classes 125 and 250.	56.60–1
ANSI B16.5–81 Pipe Flanges and Flanged Fittings.	56.25–20; 56.30–10; 56.60–1
ANSI B16.9–86 Factory-Made Wrought Steel Buttwelding Fittings.	56.60–1
ANSI B16.10–86 Face-to-Face and End-to-End Dimensions of Valves.	56.60–1
ANSI B16.11–80 Forged Steel Fittings, Socket-Welding and Threaded.	56.30–5; 56.60–1
ANSI B16.14–83 Ferrous Pipe Plugs, Bushings, and Locknuts with Pipe Threads.	56.60–1
ANSI B16.15–85 Cast Bronze Threaded Fittings, Classes 125 and 250.	56.60–1
ANSI B16.18–84 Cast Copper Alloy Solder Joint Pressure Fittings.	56.60–1
ANSI B16.20–73 Ring-Joint Gaskets and Grooves for Steel Pipe Flanges.	56.60–1
ANSI B16.21–78 Nonmetallic Flat Gaskets for Pipe Flanges.	56.60–1
ANSI B16.22–80 Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.	56.60–1
ANSI B16.23–84 Cast Copper Alloy Solder Joint Drainage Fittings—DWV.	56.60–1
ANSI B16.24–79 Bronze Pipe Flanges and Flanged Fittings, Class 150 and 300.	56.60–1
ANSI B16.25–86 Buttwelding Ends.	56.60–1; 56.30–5; 56.70–10
ANSI B16.28–86 Wrought Steel Buttwelding Short Radius Elbows and Returns.	56.60–1
ANSI B16.29–86 Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings—DWV.	56.60–1
ANSI B16.34–88 Valves-Flanged, Threaded and Welding End.	56.20–1; 56.60–1
ANSI B16.42–87 Ductile Iron Pipe Flanges and Flanged Fittings, Classes 150 and 300.	56.60–1
ANSI B18.2.1–81 Square and Hex Bolts and Screws, Inch Series.	56.25–20; 56.60–1
ANSI B18.2.2–87 Square and Hex Nuts (Inch Series).	56.25–20; 56.60–1
ANSI B31.1–86 Power Piping.	56.01–5
ANSI B36.10M–85 Welded and Seamless Wrought Steel Pipe.	56.07–5; 56.30–20; 56.60–1
ANSI B36.19M–85 Stainless Steel Pipe.	56.07–5; 56.60–1

American Society of Mechanical Engineers (ASME): United Engineering Center, 345 East 47th Street, New York, NY 10017:	
Boiler and Pressure Vessel Code:	
Section I, Power Boilers, 1983 with addenda.	56.15-5; 56.15-10; 56.60-1; 56.60-1; 56.70-15; 56.95-10 56.15-1
Section III, Rules for the Construction of Nuclear Power Plant Components, 1986 with addenda.	56.60-1
Section VIII, Division 1, Pressure Vessels, 1986 with addenda.	56.15-1; 56.15-5; 56.15-10; 56.25-5; 56.30-10; 56.30-30; 56.60-15; 56.60-1; 56.95-10
Section IX, Welding and Brazing Qualifications, 1986 with addenda.	56.70-5; 56.70-20; 56.75-20; 56.85-10
American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19103:	
ASTM A 36-84a Structural Steel.	56.30-10
ASTM A 47-84 Malleable Iron Castings.	56.60-1
ASTM A 53-84a Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.	56.10-5 56.60-1
ASTM A 106-84a Seamless Carbon Steel Pipe for High-Temperature Service.	56.60-1
ASTM A 126-84 Gray Iron Castings for Valves, Flanges, and Pipe Fittings.	56.60-1
ASTM A 134-80 Pipe, Steel, Electric-Fusion (ARC)-Welded (Sizes NPS 16 and Over.	56.60-1
ASTM A 135-84 Electric-Resistance-Welded Steel Pipe.	56.60-1
ASTM A 139-84 Electric-Fusion (Arc)-Welded Steel Pipe (Sizes 4 in. and over).	56.60-1
ASTM A 178-84a Electric-Resistance-Welded Carbon Steel Boiler Tubes.	56.60-1
ASTM A 179-84 Seamless Cold-Drawn Low-Carbon Steel Heat-Exchanger and Condenser Tubes.	56.60-1
ASTM A 182-84c Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service.	56.50-105
ASTM A 192-84a Seamless Carbon Steel Boiler Tubes for High-Pressure Service.	56.60-1
ASTM A 194-84a Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service.	56.50-105
ASTM A 197-79 Cupola Malleable Iron.	56.60-1
ASTM A 199-84 Seamless Cold-Drawn Intermediate Alloy-Steel Heat-Exchanger and Condenser Tubes.	56.60-1
ASTM A 210-84a Seamless Medium-Carbon Steel Boiler and Superheater Tubes.	56.60-1
ASTM A 213-84b Seamless Ferritic and Austenitic Alloy-Steel Boiler, Superheater, and Heat-Exchanger Tubes.	56.60-1
ASTM A 214-84a Electric-Resistance-Welded Carbon Steel Heat-Exchanger and Condenser Tubes.	56.60-1
ASTM A 226-84a Electric-Resistance-Welded Carbon Steel Boiler and Superheater Tubes for High-Pressure Service.	56.60-1
ASTM A 234-84a Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures.	56.60-1
ASTM A 249-84b Welded Austenitic Steel Boiler, Superheater, Heat-Exchanger, and Condenser Tubes.	56.60-1
ASTM A 268-84a Seamless and Welded Ferritic Stainless Steel Tubing for General Service.	56.60-1
ASTM A 276-84a Stainless and Heat-Resisting Steel Bars and Shapes.	56.60-2
ASTM A 307-84 Carbon Steel Externally Threaded Standard Fasteners.	56.25-20
ASTM A 312-84c Seamless and Welded Austenitic Stainless Steel Pipe.	56.50-105; 56.60-1
ASTM A 320-84a Alloy-Steel Bolting Materials for Low-Temperature Service.	56.50-105
ASTM A 333-84b Seamless and Welded Steel Pipe for Low-Temperature Service.	56.50-105; 56.60-1
ASTM A 334-84b Seamless and Welded Carbon and Alloy-Steel Tubes for Low Temperature Service.	56.50-105; 56.60-1
ASTM A 335-84a Seamless Ferritic Alloy Steel Pipe for High-Temperature Service.	56.60-1
ASTM A 350-84a Forgings, Carbon and Low-Alloy Steel, Requiring Notch Toughness Testing for Piping Components.	56.50-105
ASTM A 351-84a Steel Castings, Austenitic, for High-Temperature Service.	56.50-105
ASTM A 352-84a Steel Castings, Ferritic and Martensitic, for Pressure-Containing Parts Suitable for Low-Temperature Service.	56.50-105
ASTM A 358-84b Electric-Fusion-Welded Austenitic Chromium-Nickel Alloy Steel Pipe for High-Temperature Service.	56.60-1
ASTM A 369-84 Carbon and Ferric Alloy Steel Forged and Bored Pipe for High Temperature Service.	56.60-1
ASTM A 376-84 Seamless Austenitic Steel Pipe for High-Temperature Central-Station Service.	56.07-10; 56.60-1; 56.60-2
ASTM A 395-80 Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures.	56.60-1; 56.50-60; 56.60-15
ASTM A 403-84a Wrought Austenitic Stainless Steel Piping Fittings.	56.60-1
ASTM A 420-84 Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service.	56.50-105; 56.60-1
ASTM A 430-84a Austenitic Steel, Forged and Bored Pipe for High-Temperature Service.	56.60-1
ASTM A 520-72 Supplementary Requirements for Seamless and Electrical-Resistance-Welded Carbon Steel Tubular Products for High-Temperature Service Conforming to ISO Recommendations for Boiler Construction.	56.60-1
ASTM A 522-81 Forged or Rolled 8 and 9% Nickel Alloy Steel Flanges, Fittings, Valves, and Parts for Low-Temperature Service.	56.50-105
ASTM A 575-81 Steel Bars, Carbon, Merchant Quality, M-Grades.	56.60-2
ASTM A 576-81 Steel Bars, Carbon, Hot-Wrought, Special Quality.	56.60-2
ASTM B 16-85 Free-Cutting Brass Road, Bar, and Shapes for Use in Shapes for Use in Screw Machines.	56.60-2
ASTM B 21-83b Naval Brass Rod, Bar, and Shapes.	56.60-2
ASTM B 26-84 Aluminum-Alloy Sand Castings.	56.60-2
ASTM B 42-84 Seamless Copper Pipe, Standard Sizes.	56.60-1
ASTM B 43-84 Seamless Red Brass Pipe, Standard Sizes.	56.60-1

ASTM B 68–83 Seamless Copper Tubes, Bright Annealed. 56.60–1
ASTM B 75–84 Seamless Copper Tube. 56.60–1
ASTM B 85–84 Aluminum-Alloy Die Castings. 56.60–2
ASTM B 88–83a Seamless Copper Water Tube. 56.60–1
ASTM B 96–84a Copper Silicon Alloy Plate and Sheet, Strip, and Rolled Bar for General Purposes and Pressure Vessels. 56.60–2
ASTM B 111–85 Copper and Copper-Alloy Seamless Condenser Tubes and Ferrule Stock. 56.60–1
ASTM B 124–84 Copper and Copper-Alloy Forging Rod, Bar, and Shapes. 56.60–2
ASTM B 154–82 Mercurous Nitrate Test for Copper and Copper Alloys. 56.60–2
ASTM B 161–81 Nickel Seamless Pipe and Tube. 56.60–1
ASTM B 165–81 Nickel-Copper Alloy (UNS N04400) Seamless Pipe and Tube. 56.60–1
ASTM B 167–80 Nickel-Chromium-Iron Alloy (UNS N06600–N06690) Seamless Pipe and Tube. 56.60–1
ASTM B 171–85a Copper-Alloy Condenser Tube Plates. 56.60–2
ASTM B 210–82a Aluminum-Alloy Drawn Seamless Tubes. 56.60–1
ASTM B 234–85 Aluminum-Alloy Drawn Seamless Tubes for Condensers and Heat Exchangers. 56.60–1
ASTM B 241–83a Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube. 56.60–1
ASTM B 280–83 Seamless Copper Tube for Air Conditioning and Refrigeration Field Service. 56.60–1
ASTM B 283–83b Copper and Copper-Alloy Die Forgings (Hot-Pressed). 56.60–2
ASTM B 315–85 Seamless Copper-Alloy Pipe and Tube. 56.60–1
ASTM B 361–81 Factory-Made Wrought Aluminum and Aluminum-Alloy Welding Fittings. 56.60–1
ASTM D 635–81 Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position. 56.60–25
ASTM D 1785–83 Poly(Vinyl Chloride)(PVC) Plastic Pipe, Schedules 40, 80, and 120. 56.60–25
ASTM D 2241–84 Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR-Series). 56.60–25
ASTM D 2464–76 Threaded Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80. 56.60–25
ASTM D 2466–78 Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40. 56.60–25
ASTM D 2467–76a Socket-Type Poly(Vinyl Chloride)(PVC) Plastic Pipe Fittings, Schedule 80. 56.60–25
ASTM D 2665–82 Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings. 56.60–25
ASTM D 2863–77 Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastic (Oxygen Index). 56.60–25
ASTM E 23–82 Notched Bar Impact Testing of Metallic Materials. 56.50–105
ASTM F 682–82a Wrought Carbon Steel Sleeve-Type Pipe Couplings. 56.60–1
ASTM F 1006–86 Entrainment Separators for Use in Marine Piping Applications. 56.60–1
ASTM F 1007–86 Pipe-Line Expansion Joints of the Packed Slip Type for Marine Application. 56.60–1
ASTM F 1020–86 Line-Blind Valves for Marine Applications. 56.60–1
ASTM F 1120–87 Circular Metallic Bellows Type Expansion Joints for Piping. 56.60–1
ASTM F 1123–87 Non-Metallic Expansion Joints. 56.60–1
ASTM F 1139–88 Steam Traps and Drains. 56.60–1
ASTM F 1172–88 Fuel Oil Meters of the Volumetric Positive Displacement Type. 56.60–1
ASTM F 1173–88 Epoxy Resin Fiberglass Pipe and Fittings to be Used for Marine Applications. 56.60–1; 56.60–25
ASTM F 1199–88 Cast (All Temperatures and Pressures) and Welded Pipe Line Strainers (150 psig and 150°F Maximum. 56.60–1
ASTM F 1200–88 Fabricated (Welded) (Pipe Line Strainers (Above 150 psig and 150°F). 56.60–1
ASTM F 1201–88 Fluid Conditioner Fittings in Piping Applications Above 0°F. 56.60–1

Expansion Joint Manufacturers Association Inc. (EJMA) 25 North Broadway, Tarrytown, NY 10591:
Standards of the Expansion Joint Manufacturers Association, 1980. 56.60–1

Fluid Controls Institute Inc. (FCI) 31 South Street, Suite 303, Morristown, NY 07960:
FCI 69–1 Pressure Rating Standard for Steam Traps. 56.60–1

Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS) 127 Park Street NE, Vienna, VA 22180:
SP–6–85 Standard Finishes for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valves and Fittings. 56.25–10; 56.60–1
SP–9–87 Spot Facing for Bronze, Iron and Steel Flanges. 56.60–1
SP–25–88 Standard Marking System for Valves, Fittings, Flanges and Unions. 56.15–1; 56.20–5; 56.60–1
SP–44–85 Steel Pipe Line Flanges. 56.60–1
SP–45–87 Bypass and Drain Connection Standard. 56.20–20; 56.60–1
SP–51–86 Class 150LW Corrosion Resistant Cast Flanges and Flanged Fittings. 56.60–1
SP–53–85 Quality Standard for Steel Castings and Forgings for Valves, Flanges and Fittings and Other Piping Components—Magnetic Particle Examination Method. 56.60–1
SP–55–85 Quality Standard for Steel Castings for Valves, Flanges and Fittings and Other Piping Components—Visual Method. 56.60–1
SP–58–83 Pipe Hangers and Supports—Materials, Design and Manufacture. 56.60–1
SP–61–85 Pressure Testing of Steel Valves. 56.60–1
SP–67–83 Butterfly Valves. 56.60–1
SP–69–83 Pipe Hangers and Supports—Selection and Application. 56.60–1
SP–72–87 Ball Valves with Flanged or Butt-Welding Ends for General Service. 56.60–1
SP–73–86 Brazing Joints for Wrought and Cast Copper Alloy Solder Joint Pressure Fittings. 56.60–1
SP–83–87 Steel Pipe Unions, Socket-Welding and Threaded. 56.60–1

Society of Automotive Engineers (SAE), 400 Commonwealth Drive, Warrendale, Pa 15096:
J343–80 Tests and Procedures for SAE 100R Series Hydraulic Hose and Hose Assemblies. 56.60–25

J1475–84 Hydraulic Hose Fittings for Marine Applications.	56.60–25

18. Section 56.01–3 is revised to read as follows:

§ 56.01–3 Power boiler external piping (Replaces 100.1.1, 100.1.2, 111.6, 122.1, 132 and 133).

(a) Power boiler external piping and components must meet the requirements of this part and §§ 52.01–105, 52.01–110, 52.01–115, and 52.01–120 of this chapter.

(b) Specific requirements for power boiler external piping and appurtenances, as defined in §§ 100.1.1 and 100.1.2, appearing in the various paragraphs of ANSI B31.1, are not adopted unless specifically indicated elsewhere in this part.

19. In Table 56.01–5(a), the entry "Table 126.1 modified by * * * 56.30–5(c)(3), 56.60–1." is revised to read "Table 126.1 replaced by * * * 56.60–1."

§ 56.01–6 [Removed]

20. Section 56.01–6 is removed.

21. Section 56.01–10 is amended by revising paragraphs (c)(1)(vii) and (c)(1)(xiii), removing paragraph (c)(1)(xviii), and adding a new paragraph (f) to read as follows:

§ 56.01–10 Plan approval.

* * * * *

(c)(1) * * *

(vii) Tank cleaning piping.

* * * * *

(xiii) Hot water heating systems if the temperature is greater than 121°C(250°F).

* * * * *

(xviii) [Removed]

* * * * *

(f) Arrangement drawings specified in paragraph (c)(2) of this section are not required if—

(1) The location of each component for which there is a location requirement (i.e., shell penetration, fire station, foam monitor, etc.) is indicated on the piping diagram;

(2) The diagram includes, or is accompanied by and makes reference to, a material schedule which describes components in sufficient detail to substantiate their compliance with the regulations of this subchapter;

(3) A thermal stress analysis is not required; and

(4) A dynamic analysis is neither required nor elected in lieu of allowable stress reduction.

22. In Table 56.04–1 of § 56.04–1, remove the number "5" after the word "subchapter".

23. Section 56.04–10 is revised to read as follows:

§ 56.04–10 Other systems.

Piping systems and appurtenances not requiring plan approval may be accepted by the marine inspector if:

(a) The system is suitable for the service intended,

(b) There are guards, shields, insulation and similar devices where needed for protection of personnel,

(c) Failure of the systems would not hazard the vessel, personnel or vital systems, and

(d) The system is not manifestly unsafe.

24. Section 56.07–5 is amended by revising paragraph (e) and adding paragraphs (f) and (g) to read as follows:

§ 56.07–5 Definitions (modifies 100.2).

* * * * *

(e) *Nonstandard fittings.* "Nonstandard fitting" means a component of a piping system which is not fabricated under an adopted industry standard.

(f) *Vital system.* A "vital system" is one which is essential to the safety of the vessel, its passengers and crew.

(g) *Plate flange.* The term "plate flange," as used in this Subchapter, means a flange made from plate material, and may have a raised face and/or a raised hub.

25. Section 56.07–10 is amended by revising paragraphs (c), (d)(1) and (d)(2), and the first sentence of paragraph (e) to read as follows:

§ 56.07–10 Design conditions and criteria (modifies 101–104.7).

* * * * *

(c) *Ship motion dynamic effects (replaces 101.5.3).* (1) In Class I, I–L, and II–L systems, the full allowable stress permitted by these regulations may be used only if:

(i) The effects of ship motion and flexure, including collision, weight, yaw, sway, roll, pitch, heave and vibration, are taken into account by either calculations or model testing acceptable to the Coast Guard; and

(ii) Additional nondestructive testing that provides complete volumetric examination of the material (e.g., Supplemental Requirement S6.1 to ASTM A376 for ultrasonics or other forms of nondestructive examination acceptable to the Coast Guard) is performed.

(2) Otherwise, 80% or less of the allowable stress permitted must be used in Class I, I–L and II–L systems. This reduction in allowable stress is not intended to take into account impact loading inside the piping system, such as water or steam hammer and hydraulic shock.

(3) For Class II systems the full allowable stress may be used without the requirements of paragraphs (c)(1)(i) and (c)(1)(ii) of this section.

(d) * * *

(1) The details of components not having specific ratings as described in 102.2.2 of ANSI B31.1 must be furnished to the Marine Safety Center for approval.

(2) Boiler blowoff piping must be designed in accordance with § 56.50–40 of this part.

(e) Materials for use in piping systems must be selected as described in § 56.60–1(a) of this part. * * *

* * * * *

26. Section 56.10–5 is amended by revising paragraph (b) to read as follows:

§ 56.10–5 Pipe.

* * * * *

(b) *Ferrous pipe.* ASTM Specification A53 furnace welded pipe shall not be used for combustible or flammable liquids within machinery spaces. (See §§ 30.10–15 and 30.10–22 of this chapter.)

* * * * *

27. Subpart 56.15 is revised to read as follows:

Subpart 56.15—Fittings

§ 56.15–1 Pipe joining fittings.

(a) Pipe joining fittings certified in accordance with Subpart 50.25 of this subchapter are acceptable for use in piping systems.

(b) Threaded, flanged, socket-welding, buttwelding, and socket-brazing pipe joining fittings, made in accordance with the applicable standards in Tables 56.60–1(a) and 56.60–1(b) of this part and of materials complying with Subpart 56.60 of this part, may be used in piping systems within the material, size, pressure, and temperature limitations of those standards and within any further limitations specified in this subchapter. Fittings must be designed for the maximum pressure to which they may be subjected, but in no case less than 50 pounds per square inch gage.

(c) Pipe joining fittings not accepted for use in piping systems in accordance with paragraph (b) of this section must meet the following:

(1) All pressure-containing materials must be accepted in accordance with § 56.60–1 of this part.

(2) Fittings must be designed so that the maximum allowable working pressure does not exceed one-fourth of the burst pressure or produce a primary stress greater than one-fourth of the ultimate tensile strength of the material for Class II systems and for all Class I,

I–L, and II–L systems receiving ship motion dynamic analysis and nondestructive examination. For Class I, I–L, or II–L systems not receiving ship motion dynamic analysis and nondestructive examination under § 56.07–10(c) of this part, the maximum allowable working pressure must not exceed one-fifth of the burst pressure or produce a primary stress greater than one-fifth of the ultimate tensile strength of the material. The maximum allowable working pressure may be determined by—

(i) Calculations comparable to those of ANSI B31.1 or Section VIII of the ASME Code;

(ii) Subjecting a representative model to a proof test or experimental stress analysis described in paragraph A–22 of Section I of the ASME Code; or

(iii) Other means specifically accepted by the Marine Safety Center.

(3) Fittings must be tested in accordance with § 56.97–5 of this part.

(4) If welded, fittings must be welded in accordance with Subpart 56.70 of this part and Part 57 of this chapter or by other processes specifically approved by the Marine Safety Center. In addition, for fittings to be accepted for use in piping systems in accordance with this paragraph, the following requirements must be met:

(i) For fittings sized three inches and below—

(A) The longitudinal joints must be fabricated by either gas or arc welding;

(B) One fitting of each size from each lot of 100 or fraction thereof must be flattened cold until the opposite walls meet without the weld developing any cracks;

(C) One fitting of each size from each lot of 100 or fraction thereof must be hydrostatically tested to the pressure required for a seamless drawn pipe of the same size and thickness produced from equivalent strength material, as determined by the applicable pipe material specification; and

(D) If a fitting fails to meet the test in paragraph (c)(4)(i)(B) or (c)(4)(i)(C) of this section, no fitting in the lot from which the test fitting was chosen is acceptable.

(ii) For fittings sized above three inches—

(A) The longitudinal joints must be fabricated by arc welding;

(B) For pressures exceeding 150 pounds per square inch, each fitting must be radiographically examined as specified in Section VIII of the ASME Code;

(C) For pressures not exceeding 150 pounds per square inch, the first fitting from each size in each lot of 20 or fraction thereof must be examined by radiography to ensure that the welds are of acceptable quality;

(D) One fitting of each size from each lot of 100 or fraction thereof must be hydrostatically tested to the pressure required for a seamless drawn pipe of the same size and thickness produced from equivalent strength material, as determined by the applicable pipe material specification; and

(E) If a fitting fails to meet the test in paragraph (c)(4)(ii)(C) or (c)(4)(ii)(D) of this section, no fitting in the lot from which the test fitting was chosen is acceptable.

(d) Single welded butt joints without the use of backing strips may be employed in the fabrication of pipe joining fittings of welded construction provided radiographic examination indicates that complete penetration is obtained.

(e) Each pipe joining fitting must be marked in accordance with MSS Standard SP–25.

§ 56.15–5 Fluid conditioner fittings.

(a) Fluid conditioner fittings certified in accordance with subpart 50.25 of this subchapter are acceptable for use in piping systems.

(b) Fluid conditioner fittings, not containing hazardous materials as defined in § 150.115 of this chapter, which are made in accordance with the applicable standards listed in Table 56.60–1(b) of this part and of materials complying with subpart 56.60 of this part, may be used within the material, size, pressure, and temperature limitations of those standards and within any further limitations specified in this subchapter.

(c) The following requirements apply to nonstandard fluid conditioner fittings which do not contain hazardous materials as defined in § 150.115 of this chapter:

(1) The following nonstandard fluid conditioner fittings must meet the applicable requirements in § 54.01–5 (c)(3), (c)(4), and (d) of this chapter or the remaining provisions in Part 54 of this chapter, except that Coast Guard shop inspection is not required:

(i) Nonstandard fluid conditioner fittings that have a net internal volume greater than 0.04 cubic meters (1.5 cubic feet) and that are rated for temperatures and pressures exceeding those specified as minimums for Class I piping systems.

(ii) Nonstandard fluid conditioner fittings that have an internal diameter exceeding 15 centimeters (inches) and that are rated for temperatures and pressures exceeding those specified as minimums for Class I piping systems.

(2) All other nonstandard fluid conditioner fittings must meet the following:

(i) All pressure-containing materials must be accepted in accordance with § 56.60–1 of this part.

(ii) Nonstandard fluid conditioner fittings must be designed so that the maximum allowable working pressure does not exceed one-fourth of the burst pressure or produce a primary stress greater than one-fourth of the ultimate tensile strength of the material for Class II systems and for all Class I, I–L, and II–L systems receiving ship motion dynamic analysis and nondestructive examination. For Class I, I–L, or II–L systems not receiving ship motion dynamic analysis and nondestructive examination under § 56.07–10(c) of this part, the maximum allowable working pressure must not exceed one-fifth of the burst pressure or produce a primary stress greater than one-fifth of the ultimate tensile strength of the material. The maximum allowable working pressure may be determined by—

(A) Calculations comparable to those of ANSI B31.1 or Section VIII of the ASME Code;

(B) Subjecting a representative model to a proof test or experimental stress analysis described in paragraph A–22 of Section I of the ASME Code; or

(C) Other means specifically accepted by the Marine Safety Center.

(iii) Nonstandard fluid conditioner fittings must be tested in accordance with § 56.97–5 of this part.

(iv) If welded, nonstandard fluid conditioner fittings must be welded in accordance with Subpart 56.70 of this part and Part 57 of this chapter or by other processes specifically approved by the Marine Safety Center.

(d) All fluid conditioner fittings that contain hazardous materials as defined in § 150.115 of this chapter must meet the applicable requirements of part 54 of this chapter, except subpart 54.10.

(e) Heat exchangers having headers and tubes and brazed boiler steam air heaters are not considered fluid conditioner fittings and must meet the requirements in part 54 of this chapter regardless of size. For brazed boiler steam air heaters, see also § 56.30–30(b)(1) of this part.

§ 56.15–10 Special purpose fittings.

(a) Special purpose fittings certified in accordance with Subpart 50.25 of this subchapter are acceptable for use in piping systems.

(b) Special purpose fittings made in accordance with the applicable standards listed in Table 56.60–1(b) of this part and of materials complying

with subpart 56.60 of this part, may be used within the material, size, pressure, and temperature limitations of those standards and within any further limitations specified in this subchapter.

(c) Nonstandard special purpose fittings must meet the requirements of §§ 56.30–25, 56.30–40, 56.35–10, 56.35–15, or 56.35–35 of this part, as applicable.

28. Section 56.20–1 is revised to read as follows:

§ 56.20–1 General.

(a) Valves certified in accordance with subpart 50.25 of this subchapter are acceptable for use in piping systems.

(b) Non-welded valves complying with the standards listed in § 56.60–1 of this part may be used within the specified pressure and temperature ratings of those standards, provided the limitations of § 56.07–10(c) of this part are applied. Materials must comply with subpart 56.60 of this part. Welded valves complying with the standards and specifications listed in § 56.60–1 of this part may be used in Class II systems only unless they meet paragraph (c) of this section.

(c) All other valves must meet the following:

(1) All pressure-containing materials must be accepted in accordance with § 56.60–1 of this part.

2. Valves must be designed so that the maximum allowable working pressure does not exceed one-fourth of the burst pressure or produce a primary stress greater than one-fourth of the ultimate tensile strength of the material for Class II systems and for all Class I, I–L, and II–L systems receiving ship motion dynamic analysis and nondestructive examination. For Class I, I–L, or II–L systems not receiving ship motion dynamic analysis and nondestructive examination under § 56.07–10(c) of this part, the maximum allowable working pressure must not exceed one-fifth of the burst pressure or produce a primary stress greater than one-fifth of the ultimate tensile strength of the material. The maximum allowable working pressure may be determined by—

(i) Calculations comparable to those of ANSI B31.1 or Section VIII of the ASME Code, if the valve shape permits this;

(ii) Subjecting a representative model to a proof test or experimental stress analysis described in paragraph A–22 of Section I of the ASME Code; or

(iii) Other means specifically accepted by the Marine Safety Center.

(3) Valves must be tested in accordance with § 56.97–5 of this part.

(4) If welded, valves must be welded in accordance with subpart 56.70 of this part and part 57 of this chapter or by other processes specifically approved by the Marine Safety Center.

(d) Where liquid trapped in any closed valve can be heated and an uncontrollable rise in pressure can result, means must be provided in the design, installation, and operation of the valve to ensure that the pressure in the valve does not exceed that allowed by this part for the attained temperature. (For example, if a flexible wedge gate valve with the stem installed horizontally is closed, liquid from testing, cleaning, or condensation can be trapped in the bonnet section of the closed valve.) Any resulting penetration of the pressure wall of the valve must meet the requirements of this part and those for threaded and welded auxiliary connections in ANSI B16.34.

29. Section 56.20–9 is amended by revising paragraph (a), (b) and (c) to read as follows:

§ 56.20–9 Valve construction.

(a) All valves must close with a right-hand (clockwise) motion of the handwheel or operating lever when facing the end of the valve stem. Gate, globe and angle valves must generally be of the rising-stem type, preferably with the stem threads external to the valve body. Where operating conditions will not permit such installations, the use of nonrising-stem valves will be permitted. Nonrising-stem valves, lever operated valves, and any other valve where, due to design, the position of the disc or closure mechanism is not obvious shall be fitted with indicators to show whether the valve is opened or closed. Such indicators are not required for valves located in tanks or similar inaccessible spaces where indication is provided at the remote valve operator. Operating levers of the quarter-turn (rotary) valves must be parallel to the fluid flow in the open position and perpendicular to the fluid flow in the closed position.

(b) Valves of Class I piping systems (for restrictions in other classes refer to sections on nuclear and low temperature service), having diameters exceeding 2 inches must have bolted, pressure seal, or breech lock bonnets and flanged or welding ends, except that socket type welding ends shall not be used where prohibited by § 56.30–5(c) of this part, § 56.30–10(b)(4) of this part for the same pressure class, or elsewhere in this part. For diameters not exceeding 2 inches, screwed union bonnet or bolted bonnet, or bonnetless valves of a type which will positively prevent the stem from screwing out of the body may be employed. Outside screw and yoke design must be used for valves 3 inches and larger for pressures above 600 pounds per square inch gage. Cast iron valves with screwed-in or screwed-over bonnets are prohibited. Union bonnet type cast iron valves must have the bonnet ring made of steel, bronze, or malleable iron.

(c) Valves must be designed for the maximum pressure to which they may be subjected, but in no case shall the design pressure be less than 50 pounds per square inch gage. The use of wafer type resilient seated valves is not permitted for shell connections unless they are so arranged that the piping immediately inboard of the valve can be removed without affecting the watertight integrity of the shell connection. Refer also to § 56.20–15(b)(2)(ii) of this part. Large fabricated ballast manifold connecting lines exceeding 8 inches nominal pipe size must be designed for a pressure of not less than 25 pounds per square inch gage.

* * * * *

30. Section 56.20–15 is amended by revising the introductory sentence to paragraph (b) and paragraph (b)(2)(ii) and adding a new paragraph (c) to read as follows:

§ 56.20–15 Valves employing resilient material.

* * * * *

(b) Valves employing resilient material shall be divided into three categories: Category A, Category B, and positive shut-off.

* * * * *

(2) * * *

(ii) Category B valves may be used in any piping system, except: In any location in a fixed fire extinguishing system or bilge system; as the positive closure for any opening in the shell of a vessel; in a position in which the valve serves as the positive shutoff valve required by § 56.50–60(d) of this part for systems subject to internal head pressure from tanks containing flammable, combustible, or hazardous materials; or as otherwise prohibited under this subchapter.

(c) Valves employing resilient material will be determined to be qualified as Category A, Category B, or positive shut-off as follows:

(1) Category A—The closed valve must pass less than the greater of five percent or $15\%/\sqrt{[NPS]}$ of its fully open flow rate through the line after complete removal of all resilient seating material or equivalent and testing at full rated pressure. (Note.—"NPS" is nominal pipe size.)

(2) Positive shutoff—The closed valve must pass less than 10 ml/hour (0.34 fluid oz/hour) of liquid or 3 liters/hour

(0.11 standard cubic feet/hour) of gas per inch nominal size through the line after removal of all resilient seating material or equivalent and testing at full rated pressure. Packing material must be fire resistant. This valve type will be considered suitable for internal head pressure from tanks (positive shutoff) as well as a Category A valve.

(3) If a valve designer elects to use either calculations or actual fire testing in lieu of material removal and pressure testing, the proposed calculation method or test plan must be accepted by the Commandant (G-MTH).

(4) Category B—Valves containing resilient seating or packing material, nonmetallic composition discs, or similar components and which have not passed one of the above tests are considered Category B valves.

31. Section 56.25-5 is revised to read as follows:

§ 56.25-5 Flanges.

Flanges must conform to the design requirements of the applicable standards of Table 56.60-1(b) of this part of Appendix 2 of section VIII of the ASME Code. Plate flanges must meet the requirements of § 56.30-10(b)(5) of this part and the material requirements of § 56.60-1(a) of this part. Flanges may be integral or may be attached to pipe by threading, welding, brazing, or other means within the applicable standards specified in Table 56.60-1(b) of this part and the requirements of this subpart. For flange facing gasket combinations other than those specified above, calculations must be submitted indicating that the gaskets will not result in a higher bolt loading or flange moment than for the acceptable configurations.

32. Section 56.25-10 is amended by revising paragraph (b) to read as follows:

§ 56.25-10 Flange facings.

* * * * *

(b) When bolting class 150 standard steel flanges to flat face cast iron flanges, the steel flange must be furnished with a flat face, and bolting must be in accordance with § 56.25-20 of this part. Class 300 raised face steel flanges may be bolted to class 250 raised face cast iron flanges with bolting in accordance with § 56.25-20(b) of this part.

33. Section 56.25-20 is amended by revising paragraphs (a), (b), (c), and (d) to read as follows:

§ 56.25-20 Bolting.

(a) *General.* (1) Bolts, studs, nuts, and washers must comply with applicable standards and specifications listed in § 56.60-1 of this part. Unless otherwise specified, bolting must be in accordance with ANSI B16.5.

(2) Bolts and studs must extend completely through the nuts.

(3) See § 58.30-15(c) of this chapter for exceptions on bolting used in fluid power and control systems.

(b) Carbon steel bolts or bolt studs may be used if expected normal operating pressure does not exceed 300 pounds per square inch gage and the expected normal operating temperature does not exceed 400 °F. Carbon steel bolts must have heavy hexagon heads in accordance with ANSI B18.2.1 and must have heavy semifinished hexagonal nuts in accordance with ANSI B18.2.2, unless the bolts are tightly fitted to the holes and flange stress calculations taking the bolt bending stresses into account are submitted. When class 250 cast iron flanges are used or when class 125 cast iron flanges are used with ring gaskets, the bolting material must be carbon steel conforming to ASTM Specification A307, Grade B.

(c) Alloy steel stud bolts must be threaded full length or, if desired, may have reduced shanks of a diameter not less than that at the root of the threads. They must have heavy semifinished hexagonal nuts in accordance with ANSI B18.2.2.

(d) All alloy bolts or bolt studs and accompanying nuts are recommended to be threaded in accordance with ANSI B1.1, Class 2A external threads, and Class 2B internal threads (8-thread series 8UN for 1 inch and larger).

* * * * *

34. Section 56.30-5 is amended by revising paragraphs (b)(3), (c), and (d) to read as follows:

§ 56.30-5 Welded joints.

* * * * *

(b) * * *

(3) Consumable insert rings must be used. Commonly used types of butt welding end preparations are shown in ANSI B16.25.

* * * * *

(c) *Socket welds (modifies 127.3.3A).* (1) Socket welds must conform to ANSI B16.11, applicable standards listed in Table 56.60-1(b) of this part, and Figure 127.4.4C in ANSI B31.1 as modified by § 56.30-10(b)(4) of this part. A gap of approximately one-sixteenth inch between the end of the pipe and the bottom of the socket must be provided before welding. This may best be provided by bottoming the pipe and backing off slightly before tacking.

(2) Socket welds must not be used where severe erosion or crevice corrosion is expected to occur. Restrictions on the use of socket welds appear in § 56.70-15(d)(3) of this part for Class I service and in § 56.50-105 of this part for low temperature service. These sections should be checked when designing for these systems. See § 56.70-15(d)(4) of this part for Class II service.

(3) (Reproduces 111.3.4.) Drains and bypasses may be attached to a valve of fitting by socket welding provided the socket depth, bore diameter, and shoulder thickness conform to ANSI B16.11.

(d) *Fillet welds.* Fillet welds may vary from convex to concave. The size of a fillet weld is determined as shown in Figure 127.4.4A of ANSI B31.1. Fillet weld details for socket-welding components must meet § 56.30-5(c) of this part. Fillet weld details for flanges must meet § 56.30-10 of this part. See also § 56.70-15(d)(3) and (d)(4) of this part for applications of fillet welds.

* * * * *

35. Section 56.30-10 is amended by adding the sentence "Fillet weld leg size need not exceed the thickness of the applicable ANSI hub." to the end of the Note in Figure 56.30-10(b), and revising paragraphs (a), (b), and (b)(1) through (b)(5) to read as follows:

§ 56.30-10 Flanged joints (modifies 104.5.1(a)).

(a) Flanged or butt-welded joints are required for Classes I and I-L piping for nominal diameters exceeding 2 inches, except as otherwise specified in this subchapter.

(b) Flanges may be attached by any method shown in Figure 56.30-10(b) or by any additional means that may be approved by the Marine Safety Center. Pressure temperature ratings of the appropriate ANSI standard must not be exceeded.

(1) *Figure 56.30-10(b), Method 1.* Flanges with screw threads may be used in accordance with Table 56.30-20(c) of this part.

(2) *Figure 56.30-10(b), Method 2.* ANSI B16.5 class 150 and class 300 low-hubbed flanges with screw threads, plus the addition of a strength fillet weld of the size as shown, may be used in Class I systems not exceeding 750 °F or 4 NPS, in Class II systems without diameter limitations, and in Class II-L systems not exceeding 1 NPS. If 100 percent radiography is required by § 56.95-10 of this part for the class, diameter, wall thickness, and material of pipe being joined, the use of the threaded flanges is not permitted and buttwelding flanges must be provided. For Class II piping systems, the size of the strength fillet may be limited to a maximum of 0.525 inch instead of 1.4T.

(3) *Figure 56.30–10(b), Method 3.* ANSI B16.5 slip-on flanges may be used in Class I, Class II, or Class II–L systems not to exceed the service pressure-temperature ratings for the class 300 and lower class flanges, within the temperature limitations of the material selected for use, and not to exceed 4 NPS in Class I and Class II–L systems. If 100 percent radiography is required by § 56.95–10 of this part for the class, diameter, wall thickness, and material of the pipe being joined, the use of slip-on flanges is not permitted and a butt welding flange must be provided. The configuration in Figure 127.4.4B(b) of ANSI B31.1, utilizing a face and backweld may be preferable in those applications where it is desirable to eliminate void spaces. For Class II piping systems, the size of the strength fillet may be limited to a maximum of 0.525 inch instead of 1.4T and the distance from the face of the flange to the end of the pipe may be a maximum of three-eighths inch. Restrictions on the use of slip-on flanges appear in § 56.50–105 of this part for low temperature piping systems.

(4) *Figure 56.30–10(b), Method 4.* ANSI B16.5 socket welding flanges may be used in Class I or II–L systems not exceeding 3 NPS for class 600 and lower class flanges and 2½ NPS for class 900 and class 1500 flanges within the service pressure-temperature ratings of the standard. Whenever full radiography is required by § 56.95–10 for the class, diameter, and wall thickness of the pipe being joined, the use of socket welding flanges in not permitted and a butt weld type connection must be provided. For Class II piping, socket welding flanges may be used without diameter limitation, and the size of the fillet weld may be limited to a maximum of 0.525 inch instead of 1.4T. Restrictions on the use of socket welds appear in § 56.50–105 for low temperature piping systems.

(5) *Figure 56.30–10(b), Method 5.* Flanges fabricated from steel plate meeting the requirements of Part 54 of this chapter may be used for Class II piping for pressures not exceeding 150 pounds per square inch and temperatures not exceeding 450 °F. Plate material listed in UCS–6(b) Section VIII of the ASME Code may not be used in this application, except that material meeting ASTM Specification A36 may be used. The fabricated flanges must conform at least to the American National Standard class 150 flange dimensions. The size of the strength fillet weld may be limited to a maximum of 0.525 inches instead of 1.4T and the distance from the face of the flange to the end of the pipe may be a maximum of three-eighths inch.

* * * * *

36. Section 56.30–20 is amended by revising the heading, paragraphs (a), (b), (c), and (d), footnotes 1 and 2 of Table 56.30–20(c), and relocating Table 56.30–20(c) to follow paragraph (c), to read as follows:

§ 56.30–20 Threaded joints.

(a) Threaded joints may be used within the limitations specified in subpart 56.15 of this chapter and within other limitations specified in this section.

(b) (Reproduces 114.1.) All threads on piping components must be taper pipe threads in accordance with the applicable standard listed in Table 56.60–1(b). Threads other than taper pipe threads may be used for piping components where tightness of the joint depends on a seal weld or a seating surface other than the threads, and where experience or test has demonstrated that such threads are suitable.

(c) Threaded joints may not be used where severe erosion, crevice corrosion, shock, or vibration is expected to occur; or at temperatures over 925 °F. Size limitations are given in Table 56.30–20(c) of this section.

* * * * *

[1] Further restrictions on the use of threaded joints appear in the low temperature piping section.

[2] Threaded joints in hydraulic systems are permitted above the pressures indicated for the nominal sizes shown when commercially available components such as pumps, valves and strainers may only be obtained with threaded connections.

(d) Pipe with a wall thickness less than that of standard weight of ANSI B36.10 steel pipe must not be threaded regardless of service. For additional threading limitations for pipe used in steam service over 250 pounds per square inch or water service over 100 pounds per square inch and 200 °F, see part 104.1.2(c)(1) of ANSI B31.1. Restrictions as to the use of threaded joints appear for low temperature piping and should be checked when designing for these systems.

37. Section 56.30–25 is amended by revising paragraphs (a), (d), and (f)(2) to read as follows:

§ 56.30–25 Flared, flareless, and compression joints.

(a) Flared, flareless, and compression type tubing fittings may be used for tube sizes not exceeding 2-inch outside diameter within the limitations of applicable standards and specifications listed in § 56.60–1 of this part and as specified in this section.

* * * * *

(d) Threads must be either American National Standard taper pipe threads or Dryseal American National Standard taper pipe threads. Threads other than taper pipe threads may be used for piping components where tightness of the joint depends on a seating surface other than the threads and where experience or testing has demonstrated that the threads are suitable.

* * * * *

(f) * * *

(2) Grip-type fittings that are tightened in accordance with the manufacturers' instructions need not be disassembled for checking. For fluid services (other than hydraulic systems) using a combustible fluid as defined in § 30.10–15 of this chapter and for fluid services using a flammable fluid as defined in § 30.10–22 of this chapter, flared fittings must be used; except that flareless fittings of the nonbite type may be used when the tubing system is of steel, nickel copper, or copper nickel alloy. When using copper or copper zinc alloys, flared fittings are required. See also § 56.50–70 of this part for gasoline fuel systems and § 56.50–75 of this part for diesel fuel systems. In the case of hydraulic systems, flareless fittings of the bite type may be used where experience or testing has demonstrated that the fittings are suitable.

38. Section 56.30–27 is revised to read as follows:

§ 56.30–27 Caulked joints.

Caulked joints may not be used in marine installations.

39. Section 56.30–40 is amended by revising paragraphs (a), (b), (e), and (f) to read as follows:

§ 56.30–40 Flexible pipe couplings of the compression or slip-on type.

(a) Flexible pipe couplings of the compression or slip-on type must not be used as expansion joints. To ensure that the maximum axial displacement (approximately ⅜" maximum) of each coupling is not exceeded, positive restraints must be included in each installation.

(b) Positive means must also be provided to prevent the coupling from "creeping" on the pipe and uncovering the joint. Bite type devices do not provide positive protection against creeping and are not generally accepted for this purpose unless other means are also incorporated. Machined grooves or centering pins are considered positive

means, and other positive means will be considered

* * * * *

(e) Flexible couplings made in accordance with the applicable standards listed in Table 56.60–1(b) of this part and of materials complying with subpart 56.60 of this part may be used within the material, size, pressure, and temperature limitations of those standards and within any further limitations specified in this subchapter. Flexible couplings fabricated by welding must also comply with part 57 of this chapter.

(f) Flexible couplings must not be used in cargo holds or in any other space where leakage, undetected flooding, or impingement of liquid on vital equipment may disable the ship, or in tanks where the liquid conveyed in the piping system is not compatible with the liquid in the tank. Where flexible couplings are not allowed by this subpart, joints may be threaded, flanged and bolted, or welded.

* * * * *

40. Section 56.35–1 is amended by revising paragraphs (a) and (b) to read as follows:

§ 56.35–1 Pipe stress calculations (replaces 119.7).

(a) A summary of the results of pipe stress calculations for the main and auxiliary steam piping where the design temperatures exceed 800 °F shall be submitted for approval. Calculations shall be made in accordance with one of the recognized methods of stress analysis acceptable to the Marine Safety Center to determine the magnitude and direction of the forces and movements at all terminal connections, anchor and junction points, as well as the resultant bending stress, longitudinal pressure stress, torsional stress, and combined expansion stress at all such points. The location of the maximum combined stress shall be indicated in each run of pipe between anchor points.

(b) Special consideration will be given to the use of the full tabulated value of S in computing S_h and S_c where all material used in the system is subjected to additional nondestructive testing as specified by the Marine Safety Center, and where the calculations prescribed in 119.6.4 and 102.3.2 of ANSI–B31.1 and § 56.07–10 are performed. The nondestructive testing procedures and method of stress analysis shall be approved by the Marine Safety Center prior to the submission of computations and drawings for approval.

41. Section 56.35–10 is revised to read as follows:

§ 56.35–10 Nonmetallic expansion joints (replaces 119.5.1).

(a) Nonmetallic expansion joints certified in accordance with subpart 50.25 of this subchapter are acceptable for use in piping systems.

(b) Nonmetallic expansion joints must conform to the standards listed in Table 56.60–1(b) of this part. Nonmetallic expansion joints may be used within their specified pressure and temperature rating in vital and nonvital machinery sea connections inboard of the skin valve. These joints must not be used to correct for improper piping workmanship or misalignment. Joint movements must not exceed the limits set by the joint manufacturer.

42. Section 56.35–15 is revised to read as follows:

§ 56.35–15 Metallic expansion joints (replaces 119.5.1).

(a) Metallic expansion joints certified in accordance with subpart 50.25 of this subchapter are acceptable for use in piping systems.

(b) Metallic expansion joints must conform to the standards listed in Table 56.60–1(b) of this part and may be used within their specified pressure and temperature rating.

43. Section 56.50–1 is amended by revising paragraphs (c), (g)(1), (g)(2)(iii), (g)(3), and (l) to read as follows:

§ 56.50–1 General (Replaces 122.6 through 122.10).

* * * * *

(c) Valves and cocks not forming part of a piping system are not permitted in watertight subdivision bulkheads, however, sluice valves or gates in oiltight bulkheads of tankships may be used if approved by the Marine Safety Center.

* * * * *

(g)(1) Power actuated valves in systems other than as specified in § 56.50–60 of this part may be used if approved for the system by the Marine Safety Center. All power actuated valves required in an emergency to operate the vessel's machinery, to maintain its stability, and to operate the bilge and firemain systems must have a manual means of operation.

(2) * * *

(iii) Remote valve controls, except reach rods, must be fitted with indicators that show whether the valves they control are open or closed. Valve position indicating systems must be independent of valve control systems.

* * * * *

(3) Air operated remote control valves must be provided with self-indicating lines at the control boards which indicate the desired valve positions, i.e., open or closed.

* * * * *

(l) Where pipes are run through dry cargo spaces they must be protected from mechanical injury by a suitable enclosure or other means.

§ 56.50–5 [Removed]

44. Section 56.50–5 is removed.

45. Section 56.50–15 is amended by revising paragraph (h) to read as follows:

§ 56.50–15 Steam and exhaust piping.

* * * * *

(h)(1) Steam piping, with the exception of the steam heating system, must not be led through passageways, accommodation spaces, or public spaces unless the arrangement is specifically approved by the Marine Safety Center.

(2) Steam pressure in steam heating systems must not exceed 150 pounds per square inch gage, except that steam pressure for accommodation and public space heating must not exceed 45 pounds per square inch gage.

(3) Steam lines and registers in non-accommodation and non-public spaces must be suitably lcoated and/oı shielded to minimize hazards to any personnel within the space. Where hazards in a space cannot be sufficiently minimized, the pressure in the steam line to that space must be reduced to a maximum of 45 pounds per square inch gage.

(4) High temperature hot water for heating systems may not exceed 375 °F.

* * * * *

46. Section 56.50–20 is amended by revising paragraphs (a) and (c) to read as follows:

§ 56.50–20 Pressure relief piping.

(a) *General.* There must be no intervening stop valves between the vessel or piping system being protected and its protective device or devices, except as specifically provided for in other regulations or as specifically authorized by the Marine Safety Center.

* * * * *

(c) *Stop valves.* Stop valves between the safety or relief valve and the point of discharge are not permitted, except as specifically provided for in other regulations or as specifically approved by the Marine Safety Center.

* * * * *

47. Section 56.50–25 is amended by adding a sentence at the end of paragraph (d) to read as follows:

§ 56.50–25 Safety and relief valve escape piping.

* * * * *

(d) * * * Back pressure must be calculated with all relief valves which discharge to a common escape pipe relieving simultaneously at full capacity.

48. Section 56.50–50 is amended by revising paragraphs (c)(1), (d)(1), Note 1 of paragraph (d)(2), the introductory text of paragraph (f), and paragraphs (f)(3), (h), and (k) to read as follows:

§ 56.50–50 Bilge and ballast piping.

* * * * *

(c)(1) Bilge suctions must be led from manifolds except as otherwise approved by the Marine Safety Center. Insofar as practicable, manifolds must be located in, or be capable of remote operation from, the same space as the bilge pump which normally takes suction on that manifold. In either case, the manifolds must be capable of being locally controlled from above the floorplates, and be easily accessible at all times. Bilge overboard discharge valves must comply with the location and accessibility requirements for suction manifolds insofar as practicable. Except as otherwise permitted by paragraph (h) of this section for Great Lakes cargo vessels employing a common bilge and ballast system for the cargo spaces, bilge manifold valves controlling bilge suctions from various compartments must be of the stop-check type.

* * * * *

(d) * * *

(1) For suctions to each main bilge pump:

$$d=1+\sqrt{L(B+D)/2500}\ (1)(4)(5)$$

(2) * * *

Note 1. For tank vessels, "L" may be reduced by the combined length of the cargo oil tanks.

* * * * *

(f) *Emergency bilge suctions.* In addition to the independent bilge suction(s) required by paragraph (e) of this section, an emergency bilge suction must be provided in the machinery space for all self-propelled vessels as described in the following subparagraphs. Emergency suctions must be provided from pumps other than those required by § 56.50–55(a) of this part. Such suctions must have nonreturn valves, and must meet the following criteria as appropriate:

* * * * *

(3) Vessels over 180 feet in length which are not passenger vessels and which operate on international voyages or in ocean, coastwise, or Great Lakes service, must be provided with a direct emergency bilge suction from any pump in the machinery space, except that a required bilge pump may not be used. The discharge capacity of the pump selected must exceed the capacity of the required main bilge pump and the area of the suction inlet is to be equal to the full suction inlet of the pump.

* * * * *

(h) Pipes for draining cargo holds or machinery spaces must be separate from pipes which are used for filling or emptying tanks where water or oil is carried. Bilge and ballast piping systems must be so arranged as to prevent oil or water from the sea or ballast spaces from passing into cargo holds or machinery spaces, or from passing from one compartment to another, whether from the sea, water ballast, or oil tanks, by the appropriate installation of stop and non-return valves. The bilge and ballast mains must be fitted with separate control valves at the pumps. The requirements of this paragraph do not apply to bilge and ballast systems on Great Lakes cargo vessels which may employ a common line for the bilge and ballast system for the cargo spaces.

* * * * *

(k) Where bilge and ballast piping is led through tanks, except ballast piping in ballast tanks, means must be provided to minimize the risk of flooding of other spaces due to pipe failure within the tanks. In this regard, such piping may be in an oiltight or watertight pipe tunnel, or the piping may be of Schedule 80 pipe wall thickness, fitted with expansion bends, and all joints within the tanks are welded. Alternated designs may be installed as approved by the Marine Safety Center. Where a pipe tunnel is installed, the watertight integrity of the bulkheads must be maintained. No valve or fitting may be located within the tunnel if the pipe tunnel is not of sufficient size to afford easy access. These requirements need not be met provided the contents of the tank and piping system are chemically compatible and strength and stability calculations are submitted showing that crossflooding resulting from a pipe, the tank, and the spaces through which the piping passes will not seriously affect the safety of the ship, including the launching of lifeboats due to the ship's listing. Bilge lines led through tanks without a pipe tunnel must be fitted with nonreturn valves at the bilge suctions.

* * * * *

49. Section 56.50–55 is amended by revising Table 56.50–55(b)(1) and paragraphs (c) and (e)(1) to read as follows:

§ 56.50–55 Bilge pumps.

* * * * *

TABLE 56.50–55(b)(1)—Bilge Pumps Required for Nonself-Propelled Vessels

Type of vessel	Waters navigated	Power pumps [1]	Hand pumps
Sailing	Ocean and coastwise	Two	[2]
Manned barges	....do	Two	[2]
Manned barges	Other than ocean and coastwise	[3]	[3]
Unmanned barges	All waters	[3]	[3]
Mobile offshore drilling units	All waters	Two	None.

[1] Where power is always available, independent power bilge pumps shall be installed as required and shall be connected to the bilge main.
[2] Efficient hand pumps connected to the bilge main may be substituted for the power pumps. Where there is no common bilge main, one hand pump will be required for each compartment.
[3] Suitable hand or power pumps or siphons, portable or fixed, carried either on board the barge or on the towing vessel shall be provided.

* * * * *

(c) *Capacity of independent power bilge pump.* Each power bilge pump must have the capacity to develop a suction velocity of not less than 400 feet per minute through the size of bilge main piping required by § 56.50–50(d)(1) of this part under ordinary conditions; except that, for vessels of less than 65 feet in length not engaged on international voyages, the pump must have a minimum capacity of 25 gallons per minute and need not meet the velocity requirement of this paragraph.

* * * * *

(e) *Location.* (1) For self-propelled vessels, if the engines and boilers are in two or more watertight compartments,

the bilge pumps must be distributed throughout these compartments. On other self-propelled vessels and mobile offshore drilling units, the bilge pumps must be in separate compartments to the extent practicable. When the location of bilge pumps in separate watertight compartments is not practical, alternative arrangements may be submitted for consideration by the Marine Safety Center.

* * * * *

50. Section 56.50–60 is amended by revising the section heading, paragraphs (a), (c), (d) introductory text, (d)(1), (d)(2), (d)(3) introductory text, (d)(3)(i), and (d)(4), and adding new paragraphs (h), (i), (j), (k) and (l) to read as follows:

§ 56.50–60 Systems containing oil.

(a)(1) Oil-Piping systems for the transfer or discharge of cargo or fuel oil must be separate from other piping systems as far as practicable, and positive means shall be provided to prevent interconnection in service.

(2) Fuel oil and cargo oil systems may be combined if the cargo oil systems contain only Grade E oils and have no connection to cargo systems containing grades of oil with lower flash points or hazardous substances.

(3) Pumps used to transfer oil must have no discharge connections to fire mains, boiler feed systems, or condensers unless approved positive means are provided to prevent oil from being accidentally discharged into any of the aforementioned systems.

* * * * *

(c) Filling pipes may be led directly from the deck into the tanks or to a manifold in an accessible location permanently marked to indicate the tanks to which they are connected. A shutoff valve must be fitted at each filling end. Oil piping must not be led through accommodation spaces, except that low pressure fill piping not normally used at sea may pass through accommodation spaces if it is of steel construction, all welded, and not concealed.

(d) Piping subject to internal head pressure from oil in the tank must be fitted with positive shutoff valves located at the tank.

(1) Valves installed on the outside of the oil tanks must be made of steel, ductile cast iron ASTM A395, or a ductile nonferrous alloy having a melting point above 1,700 °F and must be arranged with a means of manual control locally at the valve and remotely from a readily accessible and safe location outside of the compartment in which the valves are located.

(2) If valves are installed on the inside of the tank, they may be made of cast iron and arranged for remote control only. Additional valves for local control must be located in the space where the system exits from the tank or adjacent tanks. Valves for local control outside the tanks must be made of steel, ductile cast iron ASTM A395, or a ductile nonferrous alloy having a melting point above 1,700 °F.

(3) Power operated valves installed to comply with the requirements of this section must meet the following requirements:

(i) Valve actuators must be capable of closing the valves under all conditions, except during physical interruption of the power system (e.g., cable breakage or tube rupture). Fluid power actuated valves, other than those opened against spring pressure, must be provided with an energy storage system which is protected, as far as practicable, from fire and collision. The storage system must be used for no other purpose and must have sufficient capacity to cycle all connected valves from the initial valve position to the opposite position and return. The cross connection of this system to an alternate power supply will be given special consideration by the Marine Safety Center.

* * * * *

(4) Remote operation for shutoff valves on small independent oil tanks will be specially considered in each case where the size of tanks and their location may warrant the omission of remote operating rods.

* * * * *

(h) Oil piping must not run through feed or potable water tanks. Feed or potable water piping must not pass through oil tanks.

(i) Where flooding equalizing cross-connections between fuel or cargo tanks are required for stability considerations, the arrangement must be approved by the Marine Safety Center.

(j) Piping conveying oil must be run well away from hot surfaces wherever possible. Where such leads are unavoidable, only welded joints are to be used, or alternatively, suitable shields are to be fitted in the way of flanged or mechanical pipe joints when welded joints are not practicale. Piping that conveys fuel oil or lubricating oil to equipment and is in the proximity of equipment or lines having an open flame or having parts operating above 500 °F must be of seamless steel. (See § 56.50–65 of this part.)

(k) Oil piping drains, strainers and other equipment subject to normal oil leakage must be fitted with drip pans or other means to prevent oil draining into the bilge.

(l) Where oil piping passes through a non-oil tank and stop valves complying with paragraph (d) of this section are not provided at all penetrations, the piping must comply with § 56.50(k) of this part.

51. Section 56.50–65 is amended by revising the section heading and paragraphs (a), (b), and (d) to read as follows:

§ 56.50–65 Burner fuel oil service systems.

(a) All discharge piping from the fuel oil service pumps to burners must be seamless steel with a thickness of at least Schedule 80. If required by § 56.07–10(e) of this part or paragraph 104.1.2 of ANSI B31.1, the thickness must be greater than Schedule 80. Short lengths of steel, or annealed copper nickel, nickel copper, or copper pipe and tubing may be used between the fuel oil burner front header manifold and the atomizer head to provide flexibility. All material used must meet the requirements of subpart 56.60 of this part. The use of non-metallic materials is prohibited. The thickness of the short lengths must not be less than the larger of 0.9 mm (0.35 inch) or that required by § 56.07–10(e) of this part. Flexible metallic tubing for this application may be used when approved by the Marine Safety Center. Tubing fittings must be of the flared type except that flareless fittings of the nonbite type may be used when the tubing is steel, nickel copper or copper nickel.

(b)(1) All vessels having oil fired boilers must have at least two fuel service pumps, each of sufficient capacity to supply all the boilers at full power, and arranged so that one may be overhauled while the other is in service. At least two fuel oil heaters of approximately equal capacity must be installed and so arranged that any heater may be overhauled while the other(s) is (are) in service. Suction and discharge strainers must be of the duplex or other type capable of being cleaned without interrupting the oil supply.

(2) All auxiliary boilers, except those furnishing steam for vital equipment and fire extinguishing purposes other than duplicate installations, may be equipped with a single fuel oil service pump and a single fuel oil heater. Such pumps need not be fitted with discharge strainers.

(3) Strainers must be located so as to preclude the possibility of spraying oil on the burner or boiler casing, or be provided with spray shields. Coamings, drip pans, etc., must be fitted under fuel oil service pumps, heaters, etc., where

necessary to prevent oil drainage to the bilge.

(4) Boilers burning fuel oils of low viscosity need not be equipped with fuel oil heaters, provided acceptable evidence is furnished to indicate that satisfactory combustion will be obtained without the use of heaters.

* * * * *

(d) If threaded-bonnet valves are employed, they shall be of the union-bonnet type capable of being packed under pressure.

* * * * *

52. Section 56.50–75 is amended by revising the last sentence in paragraph (a)(1) to read as follows:

§ 56.50–75 Diesel fuel systems.

(a) * * *

(1) * * * Fuel oil service or unit pumps shall be equipped with controls to comply with § 58.01–25 of this subchapter.

* * * * *

53. Section 56.50–85 is amended by revising the introductory text of paragraph (a), removing paragraph (a)(4–a), revising paragraphs (a)(4) and (a)(5), redesignating existing paragraphs (a)(6) through (a)(12) as paragraphs (a)(7) through (a)(13), adding a new paragraph (a)(6), revising paragraphs (a)(8) and (a)(10), as redesignated, and adding a new paragraph (b) to read as follows:

§ 56.50–85 Tank vent piping.

(a) This section applies to vents for all independent, fixed, non-pressure tanks or containers or for spaces in which liquids, such as fuel, ship's stores, cargo, or ballast, are carried.

* * * * *

(4) Tank vents must extend above the weather deck, except vents from fresh water tanks, bilge oily-water holding tanks, bilge slop tanks, and tanks containing Grade E combustible liquids, such as lubricating oil, may terminate in the machinery space, provided—

(i) The vents are arranged to prevent overflow on machinery, electrical equipment, and hot surfaces;

(ii) Tanks containing combustible liquids are not heated; and

(iii) The vents terminate above the deep load waterline if the tanks have boundaries in common with the hull.

(5) Vents from oil tanks must terminate not less than three feet from any opening into living quarters.

(6) Vents extending above the freeboard deck or superstructure deck from fuel oil and other tanks must be at least Schedule 40 in wall thickness. Except for barges in inland service and for Great Lakes vessels, the height from the deck to any point where water may gain access through the vent to below deck must be at least 30 inches (760mm) on the freeboard deck and 17½ inches (450mm) on the superstructure deck. On Great Lakes vessels, the height from the deck to any point where water may gain access through the vent to below deck must be at least 30 inches (760mm) on the freeboard deck, 24 inches (610mm) on the raised quarterdeck, and 12 inches (305mm) on other superstructure decks. Where the height of vents on Great Lakes vessels may interfere with the working of the vessel, a lower height may be approved by the Marine Safety Center provided the vent cap is properly protected from mechanical damage. For barges in inland service, the vents must extend at least six inches above the deck. A lesser amount may be approved by the Marine Safety Center if evidence is provided that a particular vent has proven satisfactory in service.

* * * * *

(8) Vent outlets from all tanks which may emit flammable or combustible vapors, such as bilge slop tanks and contaminated drain tanks, must be fitted with a single screen of corrosion-resistant wire of at least 30 by 30 mesh, or two screens of at least 20 by 20 mesh spaced not less than one-half inch (13mm) nor more than 1½ inches (38mm) apart. The clear area through the mesh must not be less than the internal unobstructed area of the required pipe.

* * * * *

(10) The diameter of each vent pipe must not be less than 1½ inches nominal pipe size for fresh water tanks, 2 inches nominal pipe size for water ballast tanks, and 2½ inches nominal pipe size for fuel oil tanks, except that small independent tanks need not have a vent more than 25% greater in cross-sectional area than the fill line.

* * * * *

(b) Tank vents must remain within the watertight subdivision boundaries in which the tanks they vent are located. Where the structural configuration of a vessel makes meeting this requirement impracticable, the Marine Safety Center may permit a tank vent to penetrate a watertight subdivision bulkhead. All tank vents which penetrate watertight subdivision bulkheads must terminate above the weather deck.

54. Section 56.50–95 is amended by revising paragraphs (a)(1), (b)(1), (c) and (e)(3), and adding a new paragraph (i) to read as follows:

§ 56.50–95 Overboard discharges and shell connections.

(a)(1) All inlets and discharges led through the vessel's side shall be fitted with efficient and accessible means, located as close to the hull penetrations as is practicable, for preventing the accidental admission of water into the vessel either through such pipes or in the event of fracture of such pipes.

* * * * *

(b)(1) Scuppers and discharge pipes originating at any level and pentrating the shell either more than 17½ inches (450mm) below the freeboard deck or less than 23½ inches (600mm) above the summer load waterline must be provided with an automatic nonreturn valve at the shell. This valve, unless required by paragraph (b)(2) of this section, may be omitted if the piping is not less than Schedule 80 in wall thickness for nominal pipe sizes through 8 inches, Schedule 60 for nominal pipe sizes above 8 inches and below 16 inches, and Schedule 40 for nominal pipe sizes 16 inches and above.

* * * * *

(c) Overflow pipes which discharge through the vessel's side must be located as far above the deepest load line as practicable and fitted with valves as required by paragraph (b) of this section. Two automatic nonreturn valves must be used unless it is impracticable to locate the inboard valve in an accessible position, in which case a nonreturn valve with a positive means of closure from a position above the freeboard deck will be acceptable. Overflows which extend at least 30 inches above the freeboard deck before discharging overboard may be fitted with a single automatic nonreturn valve at the vessel's side. Overflow pipes which serve as tank vents must not be fitted with positive means of closure without the specific approval of the Marine Safety Center. Overflow pipes may be vented to the weather.

* * * * *

(e) * * *

(3) The thickness of inlet and discharge connections outboard of the shutoff valves, and exclusive of seachests, must be not less than that of Schedule 80 for nominal pipe sizes through 8 inches, Schedule 60 for nominal pipe sizes above 8 inches and below 16 inches, and Schedule 40 for nominal pipe sizes 16 inches and above.

* * * * *

(i) Except as provided for in § 58.20–20(c) of this chapter, sea valves must not be held open with locks. Where it is necessary to hold a discharge or intake closed with a lock, either a locking valve may be located inboard of the sea valve, or the design must be such that there is sufficient freedom of motion to fully close the locked sea valve after an

event, such as fire damage to the seat, causes significant leakage through the valve. Valves which must be opened in and emergency, such as bilge discharges or fire pump suctions must not be locked closed, whether they are sea valves or not.

55. Section 56.50–96 is amended by revising paragraphs (a)(2)(ii) and (a)(2)(iv) to read as follows:

§ 56.50–96 Keel cooler installations.

(a) * * *

(2) * * *

(ii) The flexible connections and all openings internal to the vessel, such as expansion tank vents and fills, in the installation are above the deepest load line and all piping components are Schedule 80 or thicker below the deepest load line.

* * * * *

(iv) The forward end of the structure must be faired to the hull such that the horizontal length of the fairing is no less than four times the height of the structure, or be in a protected location such as inside a bow thruster trunk.

56. Section 56.50–102 is revised to read as follows:

§ 56.50–102 Liquefied petroleum gas for domestic services.

Requirements for liquefied petroleum gas systems for domestic services are in subpart 58.16 of this chapter.

57. Section 56.50–105 is amended by revising paragraph (a)(1)(iii), revising the title and heading of Table 56.50–105, and adding new footnotes 3 and 4 to Table 56.50–105 to read as follows:

§ 56.50–105 Low temperature piping.

(a) * * *

(1) * * *

(iii) Steels equivalent to those listed in Table 56.50–105 of this part, but not produced according to a particular ASTM specification, may be used only with the prior consent of the Marine Safety Center. Steels differing in chemical composition, mechanical properties or heat treatments from those specified may be specially approved by the Marine Safety Center. Similarly, aluminum alloys and other nonferrous materials not covered in Table 56.50–105 of this part may be specifically approved by the Marine Safety Center for service at any low temperature. There are restrictions on the use of certain materials in this part and in subchapter O of this chapter.

* * * * *

TABLE 56.50–105—ACCEPTABLE MATERIALS AND TOUGHNESS TEST CRITERIA [2]

Product form	ASTM specification [3]	Grade [4]	Minimum service temperature	Minimum avg Charpy V notch energy

* * * * *

[3] Any repair method must be acceptable to the Commandant (G–MTH), and welding repairs as well as fabrication welding must be in accordance with part 57 of this chapter.

[4] The acceptability of several alloys for low temperature service is not intended to suggest acceptable resistance to marine corrosion. The selection of alloys for any particular shipboard location must take corrosion resistance into account and be approved by the Marine Safety Center.

58. Section 56.60–1 is amended by revising the section heading and paragraphs (a)(2) and (b) to read as follows:

§ 56.60–1 Acceptable materials and specifications (replaces 123 and Table 126.1 in ANSI B31.1).

(a) (1) * * *

(2) Materials used in piping systems must be selected from the specifications which appear in Table 56.60–1(a) of this section or Table 56.60–2(a) of this part, or they may be selected from the material specifications of section I, III, or VIII of the ASME Code if not prohibited by a regulation of this subchapter dealing with the particular section of the ASME Code. Table 56.60–1(a) of this section contains only pipe, tubing, and fitting specifications. Determination of acceptability of plate, forgings, bolting, nuts, and castings may be made by reference to the ASME Code as previously described. Additionally, accepted materials for use as piping system components appear in Table 56.60–2(a) of this part. Materials conforming to specifications not described in this subparagraph must receive the specific approval of the Marine Safety Center before being used. Materials listed in Table 126.1 of ANSI B31.1 are not accepted unless specifically permitted by this paragraph.

(b) Components made in accordance with the commercial standards listed in Table 56.60–1(b) of this section and made of materials complying with paragraph (a) this section may be used in piping systems within the limitations of the standards and within any further limitations specified in this subchapter.

* * * * *

§ 56.60–1 [Amended]

59. In § 56.60–1, Table 56.60–1(a) is amended by revising the table heading, the table headnote, the line entry for "Pipe, centrifugally cast," and note 16, removing the entries for ASTM standards A72, A155 and A445, and adding footnote 19 to read as follows:

TABLE 56.60–(a)—ADOPTED SPECIFICATIONS AND STANDARD (REPLACES TABLE 126.1)

NOTE: Table 56.60–1(a) identifies the acceptable pipe, tubing, and fitting specifications intended for piping system use and replaces Table 126.1 in ANSI B31.1. Piping system applications will be considered if certification of mechanical properties is furnished. Without this certification, use is limited to applications inside heat exchangers that insure containment of the material inside a pressure shell.

* * * * *

Pipe, centrifugally cast:	(None applicable).....		(19)

* * * * *

[16] Copper pipe must not be used for hot oil systems except for short flexible connections at burners. Copper pipe must be annealed before installation in Class I piping systems. See also §§ 56.10–5(c) and 56.60–20.

* * * * *

[19] Centrifugally cast pipe must be specifically approved by the Marine Safety Center.

60. In § 56.60–1, Table 56.60–1(b) is amended by revising the heading, table entries, and footnote 2, removing and reserving footnote 1, ANSI standard B2.2 and B18.2, and MSS standards SP–37, SP–42, and SP–66, and adding ANSI standards B1.20.1, B1.20.3, B16.34, B16.42, B18.2.1, B18.2.2, ASTM standards F682, F1006, F1007, F1020, F1123, F1139, F1172, F1173, F1199, F1200, and F1201, EJMA standards, MSS standard SP–83, and footnotes 3 and 4 to read as follows:

TABLE 56.60–1(b)—ADOPTED STANDARDS APPLICABLE TO PIPING SYSTEMS (REPLACES TABLE 126.1)

ANSI Standards (American National Standards Institute), 1430 Broadway, New York, NY 10018.

* * * * *

B1.20.1—Pipe Threads, General Purpose.

B1.20.3—Dryseal Pipe Threads.

* * * * *

TABLE 56.60-1(b)—ADOPTED STANDARDS APPLICABLE TO PIPING SYSTEMS (REPLACES TABLE 126.1)—Continued

B16.1—C.I. Flanges and Fittings—Classes 125 and 250 Only.
B16.3—M.I. Threaded Fittings—Classes 150 and 300.
B16.4—C.I. Threaded Fittings—Classes 125 and 250.
B16.5—Steel Pipe Flanges and Flanged Fittings.[3]
B16.9—Steel Buttwelding Fittings.[3]
* * * * *
B16.14—Ferrous-Threaded Plugs, Bushings and Locknuts.[4]
B16.15—Cast Bronze Threaded Fittings—Classes 125 & 250.[4]
B16.18—Cast Brass Solder Joints.[4]
* * * * *
B16.22—Wrought Copper and Bronze Solder Joint Fittings.[4]
B16.23—Cast Bronze Solder-Joint Drainage Fittings.[4]
B16.24—Bronze Pipe Flanges and Flanged Fittings—Class 150 and 300.[3]
* * * * *
B16.28—Wrought Steel Buttwelding Short Radius Elbows and Returns.[4]
B16.29—Wrought Copper and Wrought-Copper Alloy Solder Joint Drainage Fittings.[4]
B16.34—Valves—Flanged, Threaded and Welding end.[3]
B16.42—Ductile Iron Pipe Flanges and Fittings.[3]
B18.2.1—Square and Hex Bolts and Screws, Inch series.
B18.2.2—Square and Hex Nuts.
* * * * *

ASTM Standards (American Society for Testing and Materials), 1916 Race St., Philadelphia, PA 19103.

F682—Wrought Carbon Steel Sleeve-Type Couplings.
F1006—Entrainment Separators for Use in Marine Piping Applications.[4]
F1007—Pipe Line Expansion Joints of the Packed Slip Type for Marine Applications.
F1020—Line Blind Valves for Marine Applications.[4]
F1120—Circular Metallic Bellows Type Expansion Joints.
F1123—Non-Metallic Expansion Joints.
F1139—Steam Traps and Drains.
F1172—Fuel Oil Meters of the Volumetric Positive Displacement Type.
F1173—Epoxy Resin Fiberglass Pipe and Fittings to be Used for Marine Applications.
F1199—Cast and Welded Pipe Line Strainers.
F1200—Fabricated (Welded) Pipe Line Strainers.
F1201—Fluid Conditioner Fittings in Piping Applications Above 0 °F.

EJMA Standards (Expansion Joint Manufacturers Association, Inc.), 25 North Broadway, Tarrytown, NY 10591

Standards of the Expansion Joint Manufacturers Association, Inc.

FCI Standards (Fluid Controls Institute, Inc.), 31 South Street, Suite 303, Morristown, NJ 07960.

FCI 69-1—Pressure Rating Standard for Steam Traps.[4]

MSS Standards (Manufacturers' Standardization Society of the Valve and Fittings Industry), 127 Park Street NE, Vienna, VA 22180.

* * * * *
SP-25—Standard Marking System for Valves, Fittings, Flanges and Unions.
SP-44—Steel Pipe Line Flanges.[4]
* * * * *

TABLE 56.60-1(b)—ADOPTED STANDARDS APPLICABLE TO PIPING SYSTEMS (REPLACES TABLE 126.1)—Continued

SP-51—Class 150LW Corrosion Resistant Cast Flanges and Flanged Fittings.[4]
* * * * *
SP-67—Butterfly Valves.[2] [4]
* * * * *
SP-72—Ball Valves with Flanged or Butt-Welding Ends for General Service.[4]
* * * * *
SP-83—Carbon Steel Pipe Unions Socket-Welding and Threaded.

[1] [Removed and Reserved]
[2] In addition, for bronze valves, adequacy of body shell thickness shall be satisfactory to the Marine Safety Center. Refer to § 56.60-10 of this part for cast iron valves.
[3] Mill or manufacturer's certification is not required, except where a needed portion of the required marking is deleted due to size or is absent due to age of existing stocks.
[4] Because this standard offers the option of several materials, some of which are not generally acceptable to the Coast Guard, compliance with the standard does not necessarily indicate compliance with these regulations. The marking on the component or the manufacturer or mill certificate must indicate the material specification and/or grade as necessary to fully identify the materials used. The material used must comply with the requirements in this subchapter relating to the particular application.

61. In § 56.60–2, table 56.60–2(a) is amended by revising footnotes (2), (3), (5), (9), and (14) to read as follows:

§ 56.60–2 Limitations on materials.

* * * * *

[2] Allowable stresses shall be the same as those listed in UCS23 of section VIII of the ASME Code for SA–675 material of equivalent tensile strength.

[3] Physical testing shall be performed as for material manufactured to ASME Specification SA–675, except that the bend test shall not be required.

* * * * *

[5] Limited to air and hydraulic service with a maximum design temperature of 150 °F. The material must not be used for salt water service or other fluids that may cause dezincification or stress corrosion cracking.

* * * * *

[9] A mercurous nitrate test, in accordance with ASTM B154, shall be performed on a representative model for each finished product design. Tension tests shall be performed to determine tensile strength, yield strength, and elongation. Minimum values shall be those listed in table 3 of ASTM B283.

* * * * *

[14] Tension tests shall be performed to determine tensile strength, yield strength, and elongation. Minimum values shall be those listed in table X–2 of ASTM B85.

* * * * *

62. Section 56.60–10 is amended by revising paragraphs (a) and (c) to read as follows:

§ 56.60–10 Cast iron and malleable iron.

(a) The low ductility of cast iron and malleable iron should be recognized and the use of these metals where shock loading may occur should be avoided. Cast iron and malleable iron components shall not be used at temperatures above 450 °F. Cast iron and malleable iron fittings conforming to the specifications of Table 56.60–1(a) of this part may be used at pressures not exceeding the limits of the applicable standards of Table 56.60–1(b) of this part at temperatures not exceeding 450 °F. Valves of either of these materials may be used if they conform to the standards for class 125 and class 250 flanges and flanged fittings in ANSI B16.1 and if their service does not exceed the rating as marked on the valve.

* * * * *

(c) Malleable iron and cast iron valves and fittings, designed and marked for Class 300 refrigeration service, may be used for such service provided the pressure limitation of 300 pounds per square inch is not exceeded. Malleable iron flanges of this class may also be used in sizes 4 inches and smaller (oval and square design).

* * * * *

63. Section 56.60–15 is revised to read as follows:

§ 56.60–15 Ductile iron.

(a) Ductile cast iron components made of material conforming to ASTM A395 may be used within the service restrictions and pressure-temperature limitations of UCD–3 of section VIII of the ASME Code.

(b) Ductile iron castings may be used in hydraulic systems at pressures in excess of 1000 pounds per square inch gage, provided:

(1) The castings receive a ferritizing anneal when the as-cast thickness does not exceed one inch;

(2) Large castings for components, such as hydraulic cylinders, are examined as specified for a casting quality factor of 90 percent in accordance with UG–24 of section VIII of the ASME Code; and

(3) The castings are not welded, brazed, plugged, or otherwise repaired.

(c) After machining, ductile iron castings must be hydrostatically tested to twice their maximum allowable working pressure and must show no leaks.

64. Section 56.60–20 is amended by revising paragraphs (a)(1), (a)(4), and (b) and removing footnote 2 to read as follows:

§ 56.60–20 Nonferrous materials.

(a) * * *

(1) The low melting points of many nonferrous metals and alloys, such as aluminum and aluminum alloys, must be recognized. These types of heat sensitive materials must not be used to conduct flammable, combustible, or dangerous fluids, or for vital systems

unless approved by the Marine Safety Center.

Note: For definitions of flammable or combustible fluids, see §§ 30.10–15 and 30.10–22 or parts 151–154 of this chapter. Dangerous fluids are those covered by regulations in part 98 of this chapter.

* * * * *

(4) The corrosion resistance of copper bearing aluminum alloys in a marine atmosphere is poor and alloys with copper contents exceeding 0.6 percent should not be used. Refer to Table 56.60–2(a) of this part for further guidance.

(b) An additional requirement for cast aluminum alloys in hydraulic fluid power systems is described in § 58.30–15(f) of this chapter.

65. Section 56.60–25 is amended by revising the introductory text of paragraph (a), the first sentence of (a)(1)(ii), paragraphs (a)(7)(i)(A), (a)(7)(i)(B), (a)(8), (a)(10), the first sentence of paragraph (b)(1), Table 56.60–25(c), paragraphs (c)(2) and (c)(5); adding new paragraphs (c)(7), (c)(8), (c)(9) and (c)(10); and, removing paragraph (e) and redesignating paragraph (f) as paragraph (e) to read as follows:

§ 56.60–25 Nonmetallic materials.

(a) *Plastic pipe-nonvital service.* Plastic pipe may be used for nonvital fresh and salt water service, including drains for waste and sewage services not involving treatment chemicals incompatible with the pipe, or flammable vapors from degenerating waste or other sources, subject to the following limitations:

(1) * * *

(ii) An acceptable metallic shutoff valve is installed adjacent to the spool piece. * * *

* * * * *

(7) * * *

(i) * * *

(A) *Pipe (PVC).*

ASTM D1785 (Schedule 40, 80, 120).
ASTM D2241 (Standard Dimension Ratio).
ASTM D2665.

(B) *Fittings (PVC).*

ASTM D2464 (Schedule 80 threaded).
ASTM D2466 (Schedule 40 socket).
ASTM D2467 (Schedule 80 socket).
ASTM D2665.

* * * * *

(8) In using PCV pipe, a schedule or Standard Dimension Ratio must be chosen so that the maximum value of hoop stress in service will not be more than 20 percent of the specified minimum burst stress as listed in the applicable specification. Pipe and fittings meeting ASTM D2665 are limited to drain, waste, and associated vent services.

* * * * *

(10) Materials, such as glass reinforced resins not meeting ASTM F1173 or other plastics, may be authorized by the Commandant (G–MTH) if full mechanical and physical properties and chemical description are furnished. Flammability of the material must be determined by the standard test methods ASTM D635 and ASTM D2863. The average extent of burning must be less than 0.394 inches (10mm), the average time of burning must be less than 50 seconds, and the limiting oxygen index must be greater than 21.

(b) * * *

(1) Vital machinery served by plastic pipe must be duplicated by equivalent machinery units served entirely by conventional metallic pipe, however, when such machines are in separate watertight compartments, or they are located or insulated such that damage to both a single localized fire is unlikely, both may be fitted with plastic pipe. * * *

(c) * * *

(1) * * *

TABLE 56.60–25(c)—INSTALLATION REQUIREMENTS FOR NONMETALLIC FLEXIBLE HOSE

Type of service	Maximum service pressure (psi)	Type cover required	Required hose reinforcement	Where permitted
Vital fresh and salt water	150	Flame resistant [1]	Wire or polyester	([2][3])
Nonvital fresh and salt water	150	do [1]	do	([4])
Nonvital water and pneumatic	50	do [1]	None	([4])
Do	150	do [1]	Fiber	([4])
Lube oil and fuel systems		do [1][5]	Wire	For flexibility only.[6]
Fluid power systems		do [1]	Wire or polyester	([7])

[1] The hose must be judged flame-resistant as detailed in § 56.60–25(c)(7) of this section.
[2] May be used in duplicate installations in accordance with § 56.60–25(b) of this section for plastic pipe or in reasonable lengths where flexibility is required at pressures not exceeding manufacturer's rating subject to the limitations of § 56.60–25(a) (1) through (6) for plastic pipe.
[3] Casualty control systems, such as firefighting and bilge systems, may utilize a flexibile connection only if the pump is flexibly supported and the flexible connection is located directly at the pump.
[4] May be used subject to the limitations of §§ 56.60–25(a) (1) through (6) of this section for plastic pipe.
[5] The hose assembly must be capable of withstanding the fire test detailed in § 56.60–25(c)(8) of this section.
[6] May only be used in reasonable lengths for the purpose of flexibility at pressures not exceeding manufacturer's rating.
[7] See § 58.30–20 of this chapter for installations permitted.

(2) Reinforced nonmetallic flexible hose must be fabricated with an inner tube and a cover of synthetic rubber or other suitable material and reinforced with wire or polyester braid, or an even number of oppositely laid layers of closely-packed spirally wound wire.

* * * * *

(5) Nonmetallic hose must be complete with factory-assembled end fittings requiring no further adjustment of the fittings on the hose, except that field attachable type fittings may be used. Hose end fittings must comply with SAE J1475, (Hydraulic Hose Fittings For Marine Applications). Field attachable fittings must be installed following the manufacturer's recommended practice (method). If special equipment is required, such as crimping machines, it must be of the type and design specified by the manufacturer. A hydrostatic test of each hose assembly must be conducted in accordance with § 56.97–5 of this part.

* * * * *

(7) Nonmetallic hose must pass the flame resistance test and be marked as required by 30 CFR 18.65 of this chapter.

(8) Nonmetallic hose for lube oil or fuel service must not leak during or after a 2½ minute exposure to a N-heptane fire under the following conditions.

(i) The hose must be pressurized to the maximum allowable working pressure during the test. (The use of water as the pressurizing medium is strongly recommended for safety purposes).

(ii) No fluid flow may occur in the hose during the test.

(iii) The hose length must be between 18 inches (46cm) and 24 inches (61cm).

(iv) The hose must be positioned 9 inches (23cm) above an open pan of N-heptane.

(v) At least one end fitting of the hose assembly must be engulfed in the fire.

(vi) The test must be witnessed by a Coast Guard inspector or performed by an independent testing laboratory accepted by the Commandant (G–MTH).

(vii) The hose must be burst at the end of the test after cool-down.

(viii) The results of testing must be submitted to the Commandant (G–MTH).

(9) Nonmetallic hose used in fluid power systems must be impulse tested at 125% of maximum allowable working pressure, using the fluid to be used in service, at a temperature of 93 °C (200 °F), for a minimum of 150,000 cycles in accordance with the test method in SAE J343, Tests and Procedures for SAE 100R Series Hydraulic Hose and Hose Assemblies. If acceptance for higher temperature service is desired, the test must be performed at the higher temperature.

(10) After hose assemblies have been impulse tested, fire tested, or tested for flame resistance, duplicate hose assemblies of the same materials, design, construction and size need not be so tested, but must be given a hydrostatic test as required in paragraph (c)(5) of this section.

* * * * *

66. Section 56.70–1 is revised to read as follows:

§ 56.70–1 General.

(a) The following generally applies to all types of welding, such as stud welding, casting repair welding and all processes of fabrication welding. Where the detailed requirements are not appropriate to a particular process, alternatives must be approved by the Marine Safety Center.

67. Section 56.70–10 is amended by revising the heading and paragraph (b) to read as follows:

§ 56.70–10 Preparation (modifies 127.3).

* * * * *

(b) *Fillet welds (modifies 127.3.2).* In making fillet welds, the weld metal must be deposited in such a way as to obtain adequate penetration into the base metal at the root of the weld. Piping components which are to be joined utilizing fillet welds must be prepared in accordance with applicable provisions and requirements of this section. For typical details, see Figures 127.4.4A and 127.4.4C of ANSI B31.1 and Figure 56.30–10(b) of this part. See § 56.30–5(d) of this part for additional requirements.

68. Section 56.70–15 is amended by revising paragraphs (b)(2), the heading of (b)(5), (b)(7), the first sentence of paragraph (c) and (d), removing detail A from Figure 56.70–15(g) and redesignating the remaining details "A" through "E", and revising the heading of Table 56.70–15 to read as follows:

§ 56.70–15 Procedure.

* * * * *

(b) * * *

(2) Girth butt welds in Class I, I–L, and II–L piping systems shall be double welded butt joints or equivalent single welded butt joints for pipe diameters exceeding three-fourth inch nominal pipe size. The use of a single welded butt joint employing a backing ring (note restrictions in paragraph (b)(3)(iv) of this section) on the inside of the pipe is an acceptable equivalent for Class I and Class II–L applications, but not permitted for Class I–L applications. Single welded butt joints employing either an inert gas for first pass backup or a consumable insert ring may be considered the equivalent of a double welded butt joint for all classes of piping and is preferable for Class I–L and II–L systems where double butt welds cannot be used. Appropriate welding procedure qualification tests shall be conducted as specified in part 57 of this subchapter. A first pass inert gas backup is intended to mean that the inside of the pipe is purged with inert gas and that the root is welded with the inert gas metal arc (mig) or inert gas tungsten arc (tig) processes. Classes I, I–L, and II–L piping are required to have the inside of the pipe machined for good fit up if the misalignment exceeds that specified in § 56.70–10(a)(3). In the case of Class II piping the machining of the inside of the pipe may be omitted. For single welded joints, where possible, the inside of the joint shall be examined visually to assure full penetration. Radiographic examination of at least 20 percent of single welded joints to check for penetration is required for all Class I and Class I–L systems regardless of size following the requirements of § 56.95–10. Ultrasonic testing may be utilized in lieu of radiographic examination if the procedures are approved.

* * * * *

(5) (Reproduces 127.2(c)). * * *

* * * * *

(7) The type and extent of examination required for girth butt welds is specified in § 56.95–10.

* * * * *

(c) *Longitudinal butt welds.* Longitudinal butt welds in piping components not made in accordance with the standards and specifications listed in 56.60–1 (a) and (b) must meet the requirements of paragraph 104.7 of ANSI–B31.1 and may be examined nondestructively by an acceptable method. * * *

(d) *Fillet welds.* (1) Fillet welds may vary from convex to concave. The size of a fillet weld is determined as shown in Figure 127.4.4A in ANSI B31.1. Fillet weld details for socket-welding components must meet § 56.30–5(c) of this part. Fillet weld details for flanges must meet § 56.30–10(c) of this part. Fillet weld details for flanges must meet § 56.30–10 of this part.

(2) The limitations on cracks and undercutting set forth in paragraph (b)(8) of this section for girth welds are also applicable to fillet welds.

(3) Class I piping not exceeding 3 inches nominal pipe size and not subject to full radiography by § 56.95–10 of this part may be joined by sleeves fitted over pipe ends or by socket type joints. Where full radiography is required, only butt type joints may be used. The inside diameter of the sleeve must not exceed the outside diameter of the pipe or tube by more than 0.080 inch. Fit between socket and pipe must conform to applicable standards for socket weld fittings. Depth of insertion of pipe or tube within the socket or sleeve must not be less than three-eighths inch. The fillet weld must be deposited in a minimum of two passes, unless specifically approved otherwise in a special procedure qualification. Requirements for joints employing socket weld and slip-on flanges are in § 56.30–10 of this part.

(4) Sleeve and socket type joints may be used in Class II piping systems without restriction as to size of pipe or tubing joined. Applicable standards must be followed on fit. The fillet welds must be deposited in a minimum of two passes, unless specifically approved otherwise in a special procedure qualification. Requirements for joints employing socket weld and slip-on flanges are in § 56.30–10 of this part.

* * * * *

TABLE 56.70-15 REINFORCEMENT OF GIRTH AND LONGITUDINAL BUTT WELDS

Thickness (in inches) of base metal	Maximum thickness (in inches of reinforcement for design temperature		
	Below 0 °F or above 750 °F	350° to 750 °F	0 °F and above but less than 350 °F

* * * * *

69. Section 56.75–5 is amended by revising paragraph (a) to read as follows:

§ 56.75–5 Filler metal.

(a) The filler metal used in brazing must be a nonferrous metal or alloy having a melting point above 1,000 °F. and below that of the metal being joined. The filler metal must meet and flow freely within the desired temperature range and, in conjunction with a suitable flux or controlled atmosphere, must wet and adhere to the surfaces to be joined. Prior to using a particular brazing material in a piping system, the requirements of § 56.60–20 of this part should be considered.

* * * * *

§ 56.85–10 [Amended]

70. In § 56.85–10, Table 56.85–10 is amended by removing the word "minimum" wherever it appears in the column under the heading "Minimum Temperature", and adding the word "inclusive" after the words "up to ¾ in." in the "Minimum Wall" column opposite "P–5(15) (less than 5 cr.)".

71. Section 56.95–10 is amended by removing Table 56.95–10 and revising paragraphs (a) and (c)(2) to read as follows:

§ 56.95–10 Type and extent of examination required.

(a) *General.* The types and extent of nondestructive examinations required for piping must be in accordance with this section and Table 136.4 of ANSI–B31.1. In addition, a visual examination shall be made.

(1) 100 percent radiography [1] is required for all Class I, I–L and II–L piping equal to or greater than 4 inches nominal diameter or 0.375 inches nominal wall thickness.

(2) Nondestructive examination is required for all Class II piping equal to or greater than 18 inches nominal diameter regardless or wall thickness. Any test method acceptable to the Officer in Charge, Marine Inspection may be used.

(3) Appropriate nondestructive examinations of other piping systems are required only when deemed necessary by the Officer in Charge, Marine Inspection. In such cases a method of testing satisfactory to the Officer in Charge, Marine Inspection must be selected from those described in this section.

* * * * *

(c) * * *

(2) *Random radiography.* Where random radiography [1] is required, one or more welds may be completely or partially radiographed. Random radiography is considered to be a desirable means of spot checking welder performance, particularly in field welding where conditions such as position, ambient temperatures, and cleanliness are not as readily controlled as in shop welding. It is to be employed whenever an Officer in Charge, Marine Inspection questions a pipe weld not otherwise required to be tested. The standards of acceptance are the same as for 100 percent radiography.

* * * * *

72. Section 56.97–5 is amended by revising paragraph (a) to read as follows:

§ 56.97–5 Pressure testing of nonstandard piping system components.

(a) All nonstandard piping system components such as welded valves and fittings, nonstandard fittings, manifolds, seacocks, and other appurtenances must be hydrostatically tested to twice the rated pressure stamped thereon, except that no component should be tested at a pressure causing stresses in excess of 90 percent of its yield strength.

* * * * *

PART 61—PERIODIC TESTS AND INSPECTIONS [AMENDED]

73. The authority citation for Part 61 continues to read as follows:

Authority: 43 U.S.C. 1333; 46 U.S.C. 3306, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 227; 49 CFR 1.46.

74. Subpart 61.15 is amended by adding a new § 61.15–2 to read as follows:

§ 61.15–12 Nonmetallic expansion joints.

(a) Nonmetallic expansion joints must be examined externally at each inspection for certification for signs of excessive wear, fatigue, deterioration, physical damage, misalignment, improper flange-to-flange spacing, and leakage. A complete internal examination must be conducted when an external examination reveals excessive wear or other signs of deterioration or damage.

(b) A nonmetallic expansion joint must be replaced ten years after its date of manufacture if it is located in a system which penetrates the vessel's side and both the penetration and the nonmetallic expansion joint are located below the deepest load waterline. The Officer in Charge, Marine Inspection may grant an extension of the ten year replacement to coincide with the vessel's next drydocking.

Dated: May 3, 1989.

J. D. Sipes,

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

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