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supporting structure shall be analyzed to verify its adequacy.

(b) In all cases where the tanks are mechanically stress relieved in place in the ship or barge and the tanks are designed to carry cargoes with a specific gravity less than 1.05, the ship or barge shall be shown to have adequate stability and buoyancy, as well as strength to carry the excess weight of the tank during the stress relief procedure.

## PART 56—PIPING SYSTEMS AND APPURTENANCES

### Subpart 56.01—General

- Sec.
- 56.01-1 Scope (replaces 100.1).
- 56.01-2 Incorporation by reference.
- 56.01-3 Power boiler external piping (Replaces 100.1.1, 100.1.2, 111.6, 122.1, 132 and 133).
- 56.01-5 Adoption of ANSI (American National Standards Institute) Code B31.1 for pressure and power piping, and other standards.
- 56.01-10 Plan approval.

### Subpart 56.04—Piping Classification

- 56.04-1 Scope.
- 56.04-2 Piping classification according to service.
- 56.04-10 Other systems.

### Subpart 56.07—Design

- 56.07-5 Definitions (modifies 100.2).
- 56.07-10 Design conditions and criteria (modifies 101—104.7).

### Subpart 56.10—Components

- 56.10-1 Selection and limitations of piping components (replaces 105 through 108).
- 56.10-5 Pipe.

### Subpart 56.15—Fittings

- 56.15-1 Pipe joining fittings.
- 56.15-5 Fluid-conditioner fittings.
- 56.15-10 Special purpose fittings.

### Subpart 56.20—Valves

- 56.20-1 General.
- 56.20-5 Marking (reproduces 107.2).
- 56.20-7 Ends.
- 56.20-9 Valve construction.
- 56.20-15 Valves employing resilient material.
- 56.20-20 Valve bypasses.

### Subpart 56.25—Pipe Flanges, Blanks, Flange Facings, Gaskets, and Bolting

- 56.25-5 Flanges.
- 56.25-7 Blanks.
- 56.25-10 Flange facings.
- 56.25-15 Gaskets (reproduces 108.4).
- 56.25-20 Bolting.

### Subpart 56.30—Selection and Limitations of Piping Joints

- 56.30-1 Scope (replaces 110 through 118).
- 56.30-3 Piping joints (reproduces 110).
- 56.30-5 Welded joints.
- 56.30-10 Flanged joints (modifies 104.5.1 (a)).
- 56.30-15 Expanded or rolled joints.
- 56.30-20 Threaded joints.
- 56.30-25 Flared, flareless, and compression fittings.
- 56.30-27 Caulked joints.
- 56.30-30 Brazed joints.
- 56.30-35 Gasketed mechanical couplings.
- 56.30-40 Flexible pipe couplings of the compression or slip-on type.

### Subpart 56.35—Expansion, Flexibility and Supports

- 56.35-1 Pipe stress calculations (replaces 119.7).
- 56.35-10 Nonmetallic expansion joints (replaces 119.5.1).
- 56.35-15 Metallic expansion joints (replaces 119.5.1).

### Subpart 56.50—Design Requirements Pertaining to Specific Systems

- 56.50-1 General (replaces 122.6 through 122.10).
- 56.50-10 Special gaging requirements.
- 56.50-15 Steam and exhaust piping.
- 56.50-20 Pressure relief piping.
- 56.50-25 Safety and relief valve escape piping.
- 56.50-30 Boiler feed piping.
- 56.50-35 Condensate pumps.
- 56.50-40 Blowoff piping (replaces 102.2.5 (d)).
- 56.50-45 Circulating pumps.
- 56.50-50 Bilge and ballast piping.
- 56.50-55 Bilge pumps.
- 56.50-57 Bilge piping and pumps, alternative requirements.
- 56.50-60 Systems containing oil.
- 56.50-65 Burner fuel-oil service systems.
- 56.50-70 Gasoline fuel systems.
- 56.50-75 Diesel fuel systems.
- 56.50-80 Lubricating-oil systems.
- 56.50-85 Tank-vent piping.
- 56.50-90 Sounding devices.
- 56.50-95 Overboard discharges and shell connections.
- 56.50-96 Keel cooler installations.
- 56.50-97 Instrument, control and sampling piping (modifies 122.3).
- 56.50-103 Fixed oxygen-acetylene distribution piping.

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- 56.50-105 Low-temperature piping.
- 56.50-110 Diving support systems.

### Subpart 56.60—Materials

- 56.60-1 Acceptable materials and specifications (replaces 123 and Table 126.1 in ANSI-B31.1).
- 56.60-2 Limitations on materials.
- 56.60-3 Ferrous materials.
- 56.60-5 Steel (High temperature applications).
- 56.60-10 Cast iron and malleable iron.
- 56.60-15 Ductile iron.
- 56.60-20 Nonferrous materials.
- 56.60-25 Nonmetallic materials.

### Subpart 56.65—Fabrication, Assembly and Erection

- 56.65-1 General (replaces 127 through 135.4).

### Subpart 56.70—Welding

- 56.70-1 General.
- 56.70-3 Limitations.
- 56.70-5 Material.
- 56.70-10 Preparation (modifies 127.3).
- 56.70-15 Procedure.
- 56.70-20 Qualification, general.

### Subpart 56.75—Brazing

- 56.75-5 Filler metal.
- 56.75-10 Joint clearance (reproduces 128.2.2).
- 56.75-15 Heating (reproduces 128.2.3).
- 56.75-20 Brazing qualification.
- 56.75-25 Detail requirements.
- 56.75-30 Pipe joining details.

### Subpart 56.80—Bending and Forming

- 56.80-5 Bending.
- 56.80-10 Forming (reproduces 129.2).
- 56.80-15 Heat treatment of bends and formed components.

### Subpart 56.85—Heat Treatment of Welds

- 56.85-5 Heating and cooling method (reproduces 131.1).
- 56.85-10 Preheating.
- 56.85-15 Postheat treatment.

### Subpart 56.90—Assembly

- 56.90-1 General.
- 56.90-5 Bolting procedure.
- 56.90-10 Threaded piping (reproduces 135.4).

### Subpart 56.95—Inspection

- 56.95-1 General (replaces 136).
- 56.95-5 Rights of access of marine inspectors.
- 56.95-10 Type and extent of examination required.

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### Subpart 56.97—Pressure Tests

- 56.97-1 General (replaces 137).
- 56.97-5 Pressure testing of nonstandard piping system components.
- 56.97-25 Preparation for testing (reproduces 137.3).
- 56.97-30 Hydrostatic tests (reproduces 137.4).
- 56.97-35 Pneumatic tests (replaces 137.5).
- 56.97-38 Initial service leak test (reproduces 137.7).
- 56.97-40 Installation tests.

AUTHORITY: 33 U.S.C. 1321(j), 1509; 43 U.S.C. 1333; 46 U.S.C. 3306, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; E.O. 12777, 56 FR 54757, 3 CFR, 1991 Comp., p. 351; 49 CFR 1.46.

SOURCE: CGFR 68-82, 33 FR 18843, Dec. 18, 1968, unless otherwise noted.

### Subpart 56.01—General

NOTE: See § 50.15-10 for general adoption of standards of the ANSI (American National Standards Institute). The printing of portions of the "American National Standard Code for Pressure Piping, Power Piping," ANSI-B31.1, is with the permission of the publisher, The American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, N.Y. 10017. The adoption of this standard ANSI-B31.1 for pressure piping and power piping is subject to specific limitations or modifications as described in this part. Those requirements in ANSI-B31.1 which are not referred to in this part are adopted without change. Table 56.01-5(a) sets forth a general reference to various paragraphs in ANSI-B31.1 which are limited, modified, or replaced by regulations in this part.

#### § 56.01-1 Scope (replaces 100.1).

(a) This part contains requirements for the various ships' and barges' piping systems and appurtenances.

(b) The respective piping systems installed on ships and barges shall have the necessary pumps, valves, regulation valves, safety valves, relief valves, flanges, fittings, pressure gages, liquid level indicators, thermometers, etc., for safe and efficient operation of the vessel.

(c) Piping for industrial systems on mobile offshore drilling units need not fully comply with the requirements of

this part but must meet Subpart 58.60 of this subchapter.

[CGFR 68-82, 33 FR 18843, Dec. 18, 1968, as amended by CGD 73-251, 43 FR 56799, Dec. 4, 1978]

#### § 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, 800 North Capitol Street, NW., suite 700, 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); 11 West 42nd Street, New York, NY 10036:		
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 (re-affirmed 1982) Dryseal Pipe Threads (Inch).	56.60-1	
ANSI B16.1-75 Cast Iron 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 Butt welding Fittings.	56.60-1	
ANSI B16.10-86 Face-to-Face and End-to-End Dimensions of Ferrous 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 Lock-nuts 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 Flantion 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; 56.0-1	
ANSI B16.24-79 Bronze Pipe Flanges and Flanged Fittings, Class 150 and 300.	56.60-1	
ANSI B16.25-86 Butt-welding Ends.	56.60-1; 56.30-5; 56.70-10	
ANSI B16.28-86 Wrought Steel Butt welding 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.	56.25-20; 56.60-1	

ANSI B31.1-86 Power Piping.	56.01-5	ASTM A 139-84 Electric-Fusion (Arc)-Welded Steel Pipe (Sizes 4 in. and over).	56.60-1
ANSI B36.10M-85 Welded and Seamless Wrought Steel Pipe.	56.07-5; 56.30-20; 56.60-1	ASTM A 178-84a Electric-Resistance-Welded Carbon Steel Boiler Tubes.	56.60-1
ANSI B36.19M-85 Stainless Steel Pipe.	56.07-5; 56.60-1	ASTM A 179-84 Seamless Cold-Drawn Low-Carbon Steel Heat-Exchanger and Condenser Tubes.	56.60-1
American Society of Mechanical Engineers (ASME); United Engineering Center, 345 East 47th Street, New York, NY 10017:		ASTM A 182-84c Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service.	56.50-105
Boiler and Pressure Vessel Code:		ASTM A 192-84a Seamless Carbon Steel Boiler Tubes for High-Pressure Service.	56.60-1
Section I, Power Boilers, 1986 with addenda.	56.15-5; 56.15-10; 56.60-1; 56.60-1; 56.70-15; 56.95-10 56.15-1	ASTM A 194-84a Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service.	56.50-105
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	ASTM A 197-79 Cupola Malleable Iron.	56.60-1
Section IX, Welding and Brazing Qualifications, 1986 with addenda.	56.70-5; 56.70-20; 56.75-20; 56.85-10	ASTM A 199-84 Seamless Cold-Drawn Intermediate Alloy-Steel Heat-Exchanger and Condenser Tubes.	56.60-1
American Society for Testing and Materials (ASTM), ASTM International Headquarters, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959:		ASTM A 210-84a Seamless Medium-Carbon Steel Boiler and Superheater Tubes.	56.60-1
ASTM A 36-84a Structural Steel.	56.30-10	ASTM A 213-84b Seamless Ferritic and Austenitic Alloy-Steel Boiler, Superheater, and Heat-Exchanger Tubes.	56.60-1
ASTM A 47-84 Malleable Iron Castings.	56.60-1	ASTM A 214-84a Electric-Resistance-Welded Carbon Steel Heat-Exchanger and Condenser Tubes.	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 226-84a Electric-Resistance-Welded Carbon Steel Boiler and Superheater Tubes for High-Pressure Service.	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 234-84a Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures.	56.60-1	ASTM A 352-84a Steel Castings, Ferritic and Martensitic, for Pressure-Containing Parts Suitable for Low-Temperature Service.	56.50-105
ASTM A 249-84b Welded Austenitic Steel Boiler, Superheater, Heat-Exchanger, and Condenser Tubes.	56.60-1	ASTM A 358-84b Electric-Fusion-Welded Austenitic Chromium-Nickel Alloy Steel Pipe for High-Temperature Service.	56.60-1
ASTM A 268-84a Seamless and Welded Ferritic Stainless Steel Tubing for General 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 276-84a Stainless and Heat-Resisting Steel Bars and Shapes.	56.60-2	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 307-84 Carbon Steel Externally Threaded Standard Fasteners.	56.25-20	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 312-84c Seamless and Welded Austenitic Stainless Steel Pipe.	56.50-105; 56.60-1	ASTM A 403-84a Wrought Austenitic Stainless Steel Piping Fittings.	56.60-1
ASTM A 320-84a Alloy-Steel Bolting Materials for Low-Temperature Service.	56.50-105	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 333-84b Seamless and Welded Steel Pipe 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 334-84b Seamless and Welded Carbon and Alloy-Steel Tubes for Low Temperature Service.	56.50-105; 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 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 522-81 Forged or Rolled 8 and 9% Nickel Alloy Steel Flanges, Fittings, Valves, and Parts for Low-Temperature Service.	56.50-105	ASTM B 165-81 Nickel- Copper Alloy (UNS N04400) Seam- less Pipe and Tube.	56.60-1
ASTM A 575-81 Steel Bars, Carbon, Mer- chant Quality, M- Grades.	56.60-2	ASTM B 167-80 Nickel- Chromium-Iron Alloy (UNS N06600- N06690) Seamless Pipe and Tube.	56.60-1
ASTM A 576-81 Steel Bars, Carbon, Hot- Wrought, Special Quality.	56.60-2	ASTM B 171-85a Cop- per-Alloy Condenser Tube Plates.	56.60-2
ASTM B 16-85 Free- Cutting Brass Rod, Bar, and Screw Ma- chines.	56.60-2	ASTM B 210-82a Alu- minum-Alloy Drawn Seamless Tubes.	56.60-1
ASTM B 21-83b Naval Brass Rod, Bar, and Shapes.	56.60-2	ASTM B 234-85 Alu- minum-Alloy Drawn Seamless Tubes for Condens- ers and Heat Ex- changers.	56.60-1
ASTM B 26-84 Alu- minum-Alloy Sand Castings.	56.60-2	ASTM B 241-83a Alu- minum-Alloy Seam- less Pipe and Seam- less Extruded Tube.	56.60-1
ASTM B 42-84 Seam- less Copper Pipe, Standard Sizes.	56.60-1	ASTM B 280-83 Seam- less Copper Tube for Air Conditioning and Refrigeration Field Service.	56.60-1
ASTM B 43-84 Seam- less Red Brass Pipe, Standard Sizes.	56.60-1	ASTM B 283-83b Cop- per and Copper- Alloy Die Forgings (Hot-Pressed).	56.60-2
ASTM B 68-83 Seam- less Copper Tube, Bright Annealed.	56.60-1	ASTM B 315-85 Seam- less Copper-Alloy Pipe and Tube.	56.60-1
ASTM B 75-84 Seam- less Copper Tube.	56.60-1	ASTM B 361-81 Fac- tory-Made Wrought Aluminum and Alu- minum-Alloy Weld- ing Fittings.	56.60-1
ASTM B 85-84 Alu- minum-Alloy Die Castings.	56.60-2	ASTM B 858M-95 Standard Test Method for Deter- mination of Suscep- tibility to Stress Corrosion Cracking in Copper Alloys Using an Ammonia Vapor Test.	56.60-2(a)
ASTM B 88-83a Seam- less Copper Water Tube.	56.60-1	ASTM D 635-81 Rate of Burning and/or Extent and Time of Burning of Self- Supporting Plastics in a Horizontal Po- sition.	56.60-25
ASTM B 96-84a Cop- per Silicon Alloy Plate and Sheet, Strip, and Rolled Bar for General Purposes and Pres- sure Vessels.	56.60-2	ASTM D 1785-83 Poly(Vinyl Chlo- ride)(PVC) Plastic Pipe, Schedules 40, 80, and 120.	56.60-25
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, Mer- curous Nitrate Test for Copper and Cop- per Alloy.	56.60-2		
ASTM B 161-81 Nickel Seamless Pipe and Tube.	56.60-1		

ASTM D 2241-84 Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR-Series).	56.60-25	ASTM F 1123-87 Non-Metallic Expansion Joints for Use in Marine Piping Applications.	56.60-1
ASTM D 2464-76 Threaded Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.	56.60-25	ASTM F 1139-88 Steam Traps and Drains.	56.60-1
ASTM D 2466-78 Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.	56.60-25	ASTM F 1172-88 Fuel Oil Meters of the Volumetric Positive Displacement Type.	56.60-1
ASTM D 2467-76a Socket-Type Poly(Vinyl Chloride)(PVC) Plastic Pipe Fittings, Schedule 80.	56.60-25	ASTM F 1173-95 Epoxy Resin Fiberglass Pipe and Fittings to be Used for Marine Applications.	56.60-1; 56.60-25
ASTM D 2665-82 Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.	56.60-25	ASTM F 1199-88 Cast and Welded Pipe Line Strainers.	56.60-1
ASTM D 2863-77 Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index).	56.60-25	ASTM F 1200-88 Fabricated (Welded) Pipe Line Strainers.	56.60-1
ASTM E 23-82 Notched Bar Impact Testing of Metallic Materials.	56.50-105	ASTM F 1201-88 Fluid Conditioner Fittings in Piping Applications Above 0° F.	56.60-1
ASTM F 682-82a Wrought Carbon Steel Sleeve-Type Pipe Couplings.	56.60-1	ASTM F 1387-93 Standard Specification for Performance of Mechanically Attached Fittings, including supplementary requirements and annex.	56.30-25
ASTM F 1006-86 Entrainment Separators for Use in Marine Piping Applications.	56.60-1	ASTM F 1476-93 Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications, including annex.	56.30-35
ASTM F 1007-86 Pipe-Line Expansion Joints of the Packed Slip Type for Marine Application.	56.60-1	ASTM F 1548-94 Standard specification for Performance of Fittings for Use with Gasketed Mechanical Couplings for Use in Piping Applications.	56.30-35
ASTM F 1020-86 Line-Blind Valves for Marine Applications.	56.60-1	Expansion Joint Manufacturers Association Inc. (EJMA) 25 North Broadway, Tarrytown, NY 10591:	
ASTM F 1120-87 Circular Metallic Bellows Type Expansion Joints for Use in Marine Piping.	56.60-1	Standards of the Expansion Joint Manufacturers Association, 1980.	56.60-1



<p>International Maritime Organization (IMO), Publications Section, 4 Albert Embankment, London, SE1 7SR United Kingdom. Resolution A.753(18) Guidelines for the Application of Plastic Pipes on Ships</p> <p>Fluid Controls Institute Inc. (FCI) 31 South Street, Suite 303, Morristown, NJ 07960:</p> <p>FCI 69-1 Pressure Rating Standard for Steam Traps.</p> <p>Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS) 127 Park Street NE, Vienna, VA 22180:</p> <p>SP-6-85 Standard Finishes for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valves and Fittings.</p> <p>SP-9-87 Spot Facing for Bronze, Iron and Steel Flanges.</p> <p>SP-25-88 Standard Marking System for Valves, Fittings, Flanges and Unions.</p> <p>SP-44-85 Steel Pipe Line Flanges.</p> <p>SP-45-87 Bypass and Drain Connection Standard.</p> <p>SP-51-86 Class 150LW Corrosion Resistant Cast Flanges and Flanged Fittings.</p> <p>SP-53-85 Quality Standard for Steel Castings and Forgings for Valves, Flanges and Fittings and Other Piping Components—Magnetic Particle Examination Method.</p> <p>SP-55-85 Quality Standard for Steel Castings for Valves, Flanges and Fittings and Other Piping Components—Visual Method.</p> <p>SP-58-83 Pipe Hangers and Supports—Materials, Design and Manufacture.</p>	<p>56.60-25</p> <p>56.60-1</p> <p>56.60-1</p> <p>56.25-10; 56.60-1</p> <p>56.60-1</p> <p>56.15-1; 56.20-5; 56.60-1</p> <p>56.60-1</p> <p>56.20-20; 56.60-1</p> <p>56.60-1</p> <p>56.60-1</p> <p>56.60-1</p> <p>56.60-1</p>	<p>SP-61-85 Pressure Testing of Steel Valves.</p> <p>SP-67-83 Butterfly Valves.</p> <p>SP-69-83 Pipe Hangers and Supports—Selection and Application.</p> <p>SP-72-87 Ball Valves with Flanged or Butt-Welding Ends for General Service.</p> <p>SP-73-86 Brazing Joints for Wrought and Cast Copper Alloy Solder Joint Pressure Fittings.</p> <p>SP-83-87 Steel Pipe Unions, Socket-Welding and Threaded.</p> <p>Society of Automotive Engineers (SAE), 400 Commonwealth Drive, Warrendale, Pa 15096:</p> <p>J1475-84 Hydraulic Hose Fittings for Marine Applications.</p> <p>J1942-89 Hose and Hose Assemblies for Marine Applications.</p>	<p>56.60-1</p> <p>56.60-1</p> <p>56.60-1</p> <p>56.60-1</p> <p>56.60-1</p> <p>56.60-25</p> <p>56.60-25</p>
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[CGD 77-140, 54 FR 40599, Oct. 2, 1989; 55 FR 39968, Oct. 1, 1990, as amended by CGD 88-032, 56 FR 35822, July 29, 1991; CGD 95-012, 60 FR 48049, Sept. 18, 1995; CGD 95-027, 61 FR 26000, May 23, 1996; CGD 96-041, 61 FR 50728, Sept. 27, 1996; CGD 97-057, 62 FR 51044, Sept. 30, 1997; CGD 95-028, 62 FR 51200, Sept. 30, 1997]

EFFECTIVE DATE NOTE: By CGD 95-028, 62 FR 51200, Sept. 30, 1997, in § 56.01-2, paragraph (b) was amended by removing the entry "ASTM B 154-82"; by removing the words "ASTM F 1173-88" and adding in their place the words "ASTM F 1173-95"; by removing the Philadelphia address for ASTM and adding a new address in its place; and by adding two new incorporation by reference standards, effective Oct. 30, 1997.

**§ 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.

[CGD 77-140, 54 FR 40602, Oct. 2, 1989; 55 FR 39968, Oct. 1, 1990]

**§ 56.01-5 Adoption of ANSI (American National Standards Institute) Code B31.1 for pressure and power piping, and other standards.**

(a) Piping systems for ships and barges shall be designed, constructed, and inspected in accordance with B31.1, the "Code for Pressure Piping, Power Piping," of the ANSI (American National Standards Institute), as limited, modified, or replaced by specific requirements in this part. The provisions in the appendices to ANSI-B31.1 are adopted and shall be followed when the requirements in ANSI-B31.1 or the regulations in this part make them mandatory. For general information Table 56.01-5(a) lists the various paragraphs, etc., in ANSI-B31.1 which are limited, modified, replaced, or reproduced by regulations in this part.

**TABLE 56.01-5(a)—LIMITATIONS AND MODIFICATIONS IN THE ADOPTION OF ANSI-B31.1 CODE FOR PRESSURE AND POWER PIPING**

Section or paragraph in ANSI-B31.1, and disposition	Unit in this part
100.1 replaced by .....	56.01-1.
100.2 modified by .....	56.07-6.
101 through 104.7 modified by .....	56.07-10.
101.2 modified by .....	56.07-10(a), (b).
101.5 replaced by .....	56.07-10(c).
102.2 modified by .....	56.07-10(d).
102.2.5(d) replaced by .....	56.50-40.
102.3 and 104.1.2 modified by .....	56.07-10(e).
104.3 modified by .....	56.07-10(f).
104.4 modified by .....	56.07-10(e).
104.5.1 modified by .....	56.30-10.
105 through 108 replaced by .....	56.10-1 through 56.25-20.
110 through 118 replaced by .....	56.30-1 through 56.30-35.
119.5.1 replaced by .....	56.35-10, 56.35-15, 56.35-35.
119.7 replaced by .....	56.35-1.
122.3 modified by .....	56.50-97.
122.6 through 122.10 replaced by .....	56.50-1 through 56.50-80.
123 replaced by .....	56.60-1.
Table 126.1 is replaced by .....	56.30-5(c)(3), 56.60-1.
127 through 135.4 replaced by .....	56.65-1, 56.70-1 through 56.90-10.
136 replaced by .....	56.95-1 through 56.95-10.
137 replaced by .....	56.97-1 through 56.97-40.

(b) When a section or paragraph of the regulations in this part relates to material in ANSI-B31.1 Code (American National Standard Code for Pressure Piping, Power Piping), the relationship with this code will be shown immediately following the heading of the section or at the beginning of the paragraph as follows:

(1) (Modifies ———.) This indicates that the material in the ANSI-B31.1 so numbered for identification is generally applicable but is being altered, amplified or augmented.

(2) (Replaces ———.) This indicates that the material in the ANSI-B31.1 so numbered for identification does not apply.

(3) (Reproduces ———.) This indicates that the material in the ANSI-B31.1 so numbered for identification is being identically reproduced for convenience, not for emphasis.

(c) As stated in § 50.15-10 of this chapter, the standards of the ANSI (American National Standards Institute) specifically referred to in this part shall be the governing requirements for the subject matters covered unless specifically limited, modified or replaced by other regulations in this subchapter. See § 56.60-1(b) for the other adopted commercial standards applicable to piping systems which also form a part of this subchapter.

[CGFR 68-82, 33 FR 18843, Dec. 18, 1968, as amended by CGFR 69-127, 35 FR 9978, June 17, 1970; CGFR 72-59R, 37 FR 6189, Mar. 25, 1972; CGD 73-254, 40 FR 40164, Sept. 2, 1975; CGD 77-140, 54 FR 40602, Oct. 2, 1989]

**§ 56.01-10 Plan approval.**

(a) Plans and specifications for new construction and major alterations showing the respective piping systems shall be submitted, as required by subpart 50.20 of this subchapter.

(b) Piping materials and appliances, such as pipe, tubing, fittings, flanges, and valves, except safety valves and safety relief valves covered in part 162 of subchapter Q (Specifications) of this chapter, are not required to be specifically approved by the Commandant, but shall comply with the applicable requirements for materials, construction, markings, and testing. These materials and appliances shall be certified

as described in part 50 of this subchapter. Drawings listing material specifications and showing details of welded joints for pressure-containing appurtenances of welded construction shall be submitted in accordance with paragraph (a) of this section.

(c)(1) Prior to installation aboard ship, diagrams of the following systems shall be submitted for approval:

- (i) Steam and exhaust piping.
- (ii) Boiler feed and blowoff piping.
- (iii) Safety valve escape piping.
- (iv) Fuel oil service, transfer and filling piping. (Service includes boiler fuel and internal combustion engine fuel piping.)
- (v) Fire extinguishing systems including fire main and sprinkler piping, inert gas and foam.
- (vi) Bilge and ballast piping.
- (vii) Tank cleaning piping.
- (viii) Condenser circulating water piping.
- (ix) Vent, sound and overflow piping.
- (x) Sanitary drains, soil drains, deck drains, and overboard discharge piping.
- (xi) Internal combustion engine exhaust piping. (Refer to part 58 of this subchapter for requirements.)
- (xii) Cargo piping.
- (xiii) Hot water heating systems if the temperature is greater than 121°C(250 °F).
- (xiv) Compressed air piping.
- (xv) Fluid power and control systems (hydraulic, pneumatic). (Refer to subpart 58.30 of this subchapter for specific requirements.)
- (xvi) Lubricating oil piping.
- (xvii) Refrigeration and air conditioning piping. (Refer to part 58 of this subchapter for specific requirements.)

(2) Arrangement drawings of the following systems shall also be submitted prior to installation:

- (i) All Classes I, I-L, and II-L systems.
- (ii) All Class II firemain, foam, sprinkler, bilge and ballast, vent sounding and overflow systems.
- (iii) Other Class II systems only if specifically requested or required by regulations in this subchapter.

(d)(1) The drawings or diagrams shall include a list of material, furnishing pipe diameters, wall thicknesses, design pressure, fluid temperature, applicable ASTM material or ANSI compo-

nent specification, type, size, design standard, and rating of valves, flanges, and fittings.

(2) Pump rated capacity and pump shutoff head shall appear on piping diagrams. Pump characteristic curves shall be submitted for all pumps in the firemain and foam systems. These curves need not be submitted if the following information is shown on the drawing:

- (i) Rated capacity and head at rated capacity.
  - (ii) Shutoff head.
  - (iii) Head at 150 percent rated capacity.
- (3) Standard drawings of the following fabrication details shall be submitted:

- (i) Welding details for piping connections.
- (ii) Welding details for nonstandard fittings (when appropriate).

(d-1) Plans of piping for industrial systems on mobile offshore drilling units must be submitted under subpart 58.60 of this subchapter.

(e) Where piping passes through watertight bulkheads and/or fire boundaries, plans of typical details of piping penetrations shall be submitted.

(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.

[CGFR 68-82, 33 FR 18843, Dec. 18, 1968, as amended by CGFR 69-127, 35 FR 9978, June 17, 1970; CGFR 72-59R, 37 FR 6189, Mar. 25, 1972; CGD 73-251, 43 FR 56799, Dec. 4, 1978, CGD 77-140, 54 FR 40602, Oct. 2, 1989; CGD 95-012, 60 FR 48049, Sept. 18, 1995]

**Subpart 56.04—Piping Classification**

[CGD 72-206R, 38 FR 17229, June 29, 1973, as amended by CGD 77-140, 54 FR 40602, Oct. 2, 1989; CGD 95-012, 60 FR 48049, Sept. 18, 1995]

**§ 56.04-1 Scope.**

Piping shall be classified as shown in Table 56.04-1.

**§ 56.04-2 Piping classification according to service.**

The designation of classes according to service is found in Table 56.04-2.

TABLE 56.04-1—PIPING CLASSIFICATIONS

Service	Class	Section in this part
Normal .....	I, II .....	56.04-2
Low temperature .....	I-L, II-L .....	56.50-105

TABLE 56.04-2—PRESSURE PIPING CLASSIFICATION

Service	Class <sup>1</sup>	Pressure (p.s.i.g.)	Temp. (°F)	
Class B and C poisons <sup>2</sup> .....	I .....	any .....	and .....	0 and above.
	I-L .....	any .....	and .....	below 0.
	II .....	( <sup>2</sup> ) .....	( <sup>2</sup> ) .....	( <sup>2</sup> )
	II-L .....	( <sup>2</sup> ) .....	( <sup>2</sup> ) .....	( <sup>2</sup> )
Gases and vapors <sup>2</sup> .....	I .....	above 150 .....	or .....	above 650.
	I-L .....	above 150 .....	and .....	below 0.
	II .....	150 and below .....	and .....	0 to 650.
	II-L .....	150 and below .....	and .....	below 0.
Liquefied flammable gases <sup>2</sup> .....	I .....	above 150 .....	and .....	0 and above. <sup>1</sup>
	I-L .....	above 150 .....	and .....	below 0.
	II .....	150 and below .....	and .....	0 and above.
	II-L .....	150 and below .....	and .....	below 0.
Molten sulphur .....	I .....	above 225 .....	or .....	above 330.
	II .....	225 and below .....	and .....	330 and below.
Cargo liquids Grades A through D <sup>2</sup> .....	I .....	above 225 .....	or .....	above 150.
	I-L .....	above 225 .....	and .....	below 0.
	II .....	225 and below .....	and .....	0 to 150.
	II-L .....	225 and below .....	and .....	below 0.
Cargo liquids Grade E .....	I .....	above 225 .....	or .....	above 400.
	I-L .....	above 225 .....	and .....	below 0.
	II .....	225 and below .....	and .....	0 to 400.
	II-L .....	225 and below .....	and .....	below 0.
Water .....	I .....	above 225 .....	or .....	above 350.
	II .....	225 and below .....	and .....	350 and below.
Fuels (Bunker, diesel, gasoline, etc.) .....	I .....	above 150 .....	or .....	above 150.
	II .....	150 and below .....	and .....	150 and below.
Lubricating oil .....	I .....	above 225 .....	or .....	above 400.
	II .....	225 and below .....	and .....	400 and below.
Asphalt .....	I .....	above 225 .....	or .....	above 400.
	II .....	225 and below .....	and .....	400 and below.
Heat transfer oil .....	I .....	above 225 .....	or .....	above 400.
	II .....	225 and below .....	and .....	400 and below.
Hydraulic fluid .....	I .....	above 225 .....	or .....	above 400.
	II .....	225 and below .....	and .....	400 and below.

Flammable or combustible dangerous cargoes. .... Refer to specific requirements of part 40 of this chapter.  
 Other dangerous cargoes. .... Refer to specific requirements of part 98 of this chapter.

<sup>1</sup> Where doubt exists as to proper classification, refer to the Commandant for resolution.  
<sup>2</sup> For definitions, see 46 CFR parts 30, 151, and 154. Note that the category "B and C" poisons is not used in the rules applying to self-propelled vessels (46 CFR part 153).