§16 VAC 25-50-20 Minimum construction standards for boilers and pressure vessels.

A. Boilers and pressure vessels to be installed for operation in this Commonwealth shall be designed, constructed, inspected, stamped and installed in accordance with the applicable ASME Boiler and Pressure Vessel Code including all addenda and applicable code case(s), other international construction standards which are acceptable to the chief inspector, and this chapter.

B. Boilers and pressure vessels shall bear the National Board stamping, except cast iron boilers and UM vessels. A copy of the Manufacturers' Data Report, signed by the manufacturer's representative and the National Board commissioned inspector, shall be filed by the owner or user with the chief inspector prior to its operation in the Commonwealth.

C. Pressure piping - (including welded piping) - Piping external to power boilers extending from the boiler to the first stop valve of a single boiler, and to the second stop valve in a battery of two or more boilers is subject to the requirements of ASME Power Boiler Code, Section I, and the design, fabrication, installation and testing of the valves and piping shall be in conformity with the applicable paragraphs of ASME code. Applicable ASME data report forms for this piping shall be furnished by the owner to the chief inspector. Construction rules for materials, design, fabrication, installation and testing both for the boiler external piping and the power piping beyond the valve or valves required by ASME Power Boiler Code, Section I, are referenced in ANSI B31.1, Power piping, and the code.

D. Boilers and pressure vessels brought into the Commonwealth and not meeting code requirements shall not be operated unless the owner/user is granted a variance in accordance with § 40.1-51.19 of the Act.

The request for variance shall include all documentation related to the boiler or pressure vessel that will provide evidence of equivalent fabrication standards, i.e., design specification, calculations, material specifications, detailed construction drawings, fabrication and inspection procedures and qualification records, examination, inspection and test records, and any available manufacturers' data report.

In order to facilitate such a variance approval, the submission of documentation, in the English language and in current U.S. standard units of measure would be helpful. The following list of documents, while not all inclusive, would be useful in providing evidence of safety equivalent to ASME Code construction:

1. List of materials used for each pressure part;

2. The design calculations to determine the maximum allowable working pressure in accordance with the ASME Boiler and Pressure Vessel Code, applicable section, edition and addenda;

3. The design code used and the source of stress values for the materials used in the design calculations;

4. The welding procedures used and the qualification records for each procedure;

5. The material identification for each type of welding material used;

6. The performance qualification records for each welder or welding operator used in the construction of the boiler or pressure vessel;

7. The extent of any non-destructive examination (NDE) performed and the qualification records of NDE operators;

8. Record of final pressure test signed by a third party inspector;

9. Name and organization of the third party inspection agency;

10. A certification from a licensed professional engineer stating that the boiler or pressure vessel has been constructed to a standard providing equivalent safety to that of the ASME Boiler and Pressure Vessel Code. A signature, date and seal of the certifying engineer is required;

11. Where applicable, a matrix of differences between the actual construction of the boiler or pressure vessel for which a variance is requested and a similar boiler or pressure vessel that is code stamped; and

12. Where applicable, a letter from an insurance company stating that it will insure the boiler or pressure vessel.

After notification of a violation of these rules and regulations an owner/user desiring a variance shall submit a request for variance within 30 days.

The chief inspector shall respond to any request for a variance within 30 days of receipt of all required documentation, and shall submit a recommendation to the commissioner, who will make the decision on the variance.

E. Before secondhand equipment is installed, application for permission to install shall be filed by the owner or user with the chief inspector and approval obtained.

F. Electric boilers, subject to the requirements of the Act and this chapter, shall bear the Underwriters' Laboratories label on the completed unit or assembly by the manufacturer. This label shall be in addition to the code symbol stamping requirements of the ASME and the

National Board.

~~G. Replica or model boilers of historical nature; preserved, restored or maintained for hobby use; not intended for commercial use; and having an inside diameter less than or equal to 10 inches and a grate area less than or equal to 1 ½ square feet and equipped with an ASME safety valve of adequate size, a water level indicator and a pressure gauge may have a certificate inspection every two years, provided the owner provides a certification of safety valve testing annually~~.

§ 16 VAC 25-50-30 Frequency of inspections of boilers and pressure vessels.

A. Power boilers and high-pressure, high-temperature water boilers shall receive an annual internal inspection for certification. Such boilers shall also receive, where possible, an annual external inspection, given while under representative operating conditions.

B. Heating boilers shall receive a certificate inspection biennially.

1. Steam boilers shall receive an internal inspection where construction permits.

2. Water boilers shall receive an external inspection with an internal inspection at the discretion of the inspector where construction permits.

C. Except as provided for in subsection E <u>and H</u> of this section, pressure vessels subject to internal corrosion shall receive a certificate inspection biennially. This inspection shall be an internal inspection conducted at the discretion of the inspector where construction permits.

D. Except as provided for in subsection E <u>and H</u> of this section, pressure vessels not subject to internal corrosion shall receive a certificate inspection biennially. This inspection shall be an external inspection, with an internal inspection conducted at the discretion of the inspector where construction permits.

E. Pressure vessels that are under the supervision of an authorized owner-user inspection agency shall be inspected at intervals in a manner as agreed upon between the Commissioner and that agency.

F. Boiler and pressure vessel components of nuclear power plants, that are included in the Act, shall be inspected as provided by Section XI of the ASME Boiler and Pressure Vessel Code.

G. Based upon documentation of such actual service conditions by the owner or user of the operating equipment, the Commissioner may permit variations in the inspection requirements as provided in the Act.

<u>H. Air compressor tanks may be inspected every three years. Pressure vessels containing noncorrosive, non toxic, refrigerants, oxygen, nitrogen, or carbon dioxide may be inspected</u>

every five years.

§16 VAC 25-50-150 Inspection certificate and inspection fees.

A. Upon the inspection and determination that a boiler or pressure vessel is suitable and conforms to this chapter, the owner or user shall remit the payment for an inspection certificate in one of the following forms and amounts for each item required to be inspected under the Act.

1. Payment of $20 may be ~~mailed~~ sent from the owner or user to the chief inspector by check, credit card or money order. Payment of inspection certificate fees should be made payable to the Treasurer of Virginia, or,

2. Payment may be presented to a special inspector, where the inspector is authorized to collect and forward such fees on the department's behalf. The commissioner may authorize special inspectors to collect and forward to the chief inspector $ 16 for each inspection certificate. Pursuant to § 40.1-51.10:1 of the Code of Virginia, special inspectors may charge owners or users a fee not exceeding $ 4.00 for collecting and forwarding inspection certificate fees.

   An inspection certificate will not be issued to the owner or user until payment is received by either the department, or if previously authorized, by a special inspector.

B. The chief inspector may extend an inspection certificate for up to three additional months beyond a two month grace period following the expiration of a certificate. Such extension is subject to a satisfactory external inspection of the boiler or pressure vessel and receipt of a fee of $20 for each month of extension.

C. When the chief inspector determines that no contract fee inspectors are available to inspect a regulated uninsured boiler or pressure vessel in a timely manner, a commonwealth inspector may be directed to conduct a certification inspection. Contract fee inspection service shall be determined unavailable where (i) at least two contract fee inspectors contacted will not agree to provide inspection services to the owner or user within at least 21 days from the request, and (ii) the owner's or user's inspection certificate will expire within that same period.

The following rates per inspected object, in addition to inspection certificate fees, shall apply for certification inspections conducted by a commonwealth inspector:

1.	Power boilers and high pressure, high temperature water boilers	$135
2.	Heating boilers	$70
3.	Pressure vessels	$50

D. The review of a manufacturer's or repair organization's facility for the purpose of national accreditation will be performed by the chief inspector or his qualified designee for an additional fee of $800 per review or survey.

E. The owner or user who causes a boiler or pressure vessel to be operated without a valid certificate shall be subject to the penalty as provided for in § 40.1-51.12 of the Act.

F. Inspection certificates are not required for unfired pressure vessels inspected by an authorized owner-user inspection agency. However, the agency shall keep on file in its office in the establishment where the equipment is located a true record or copy of the report of the latest of each inspection signed by the inspector who made the inspection.

§ 16 VAC 25-50-330 Operation.

~~The Recommended Rules for Care of Power Boilers, Section VII, and the~~ The Recommended Rules for Care of Heating Boilers, Section VI, of the ASME Code, shall be used as a guide for proper and safe operating practices.

§ 16 VAC 25-50-340 Burner controls and safety devices.

~~Gas fired~~ Fired burner installations shall conform to the requirements of the following nationally recognized standards ~~including~~ the American Gas Association, Underwriters Laboratories, Part CW (Steam and Waterside Control) of ANSI/ASME-CSD-1 or National Fire Protection Association (NFPA) No. 85 series as applicable.

§16 VAC 25-50-440 Automatic low-water fuel cutoff and/or water-feeding device.

A. Each automatically fired and unattended steam or vapor system boiler, except miniature boilers, shall be equipped with at least ~~one~~ two automatic low-water fuel ~~cutoff~~ cutoffs located so as to cut off the fuel or energy supply automatically when the surface of the water falls to the lowest safe water line. ~~Power boilers, except miniature boilers, shall have two automatic low-water fuel cutoffs~~. Functioning of the lower of the two controls shall cause safety shutdown and lockout. The manual reset may be incorporated in the lower cutoff control. If a water-feeding device is installed, it shall be constructed so that the water inlet valves cannot feed water into the boiler through the float chamber and located so as to supply requisite feedwater. The lowest safe water line should be not lower than the lowest visible part of the water glass.

B. The fuel cutoff or water feeding device shall be attached directly to a boiler or in the tapped openings available for attaching a water glass directly to a boiler, provided the connections are made to the boiler with nonferrous tees or Y's not less than ½-inch pipe size between the boiler and the water glass so that the water glass is attached directly and as close as possible to the boiler; the run of the tee or Y shall take the water glass fittings, and the side outlet or branch of

the tee or Y shall take the fuel cutoff or water feeding device. The ends of all nipples shall be reamed to full-size diameter.

C. Fuel cutoffs and water feeding devices embodying a separate chamber shall have a vertical drain pipe and a blowoff valve not less than ¾-inch pipe size, located at the lowest point in the water equalizing pipe connections so that the chamber and the equalizing pipe can be flushed and the device tested.

D. A forced circulation coil or water tube type boiler, with a heat input greater than 400,000 BTU's per hour shall have a flow sensing device installed to cut off the fuel supply at a minimum water circulation flow rate in the boiler. The boiler manufacturer's specifications for the safe minimum flow rate, setting, and location of the flow sensing device shall be utilized.

E Each automatically fired steam boiler or system of commonly connected steam boilers shall have at least one steam pressure control device that will shut off the fuel supply to each boiler or system of commonly connected boilers when the steam pressure reaches a preset maximum operating pressure. In addition, each individual automatically fired steam boiler shall have a high steam pressure limit control with a manual reset that will prevent generation of steam pressure in excess of the maximum allowable working pressure and can cause safety shutdown and lockout.

Documents Incorporated by Reference

~~1998~~ 2001 Boiler and Pressure Vessel Code, ASME Code, American Society of Mechanical Engineers.

National Board Bylaws, National Board of Boiler and Pressure Vessel Inspectors, August 8, 1996.

ANSI/NB 23, ~~1998~~ 2001 National Board Inspection Code, National Board of Boiler and Pressure Vessel Inspectors.

ASME B 31.1, ASME Code for Pressure Piping, American National Standards Institute, ~~1995 and Addenda through 1997~~ 1998.

~~NFPA 85C, Standards for the Prevention of Furnace Explosions/Implosions in Multiple Burner Boiler-Furnaces, 1991 Edition,~~ NFPA 85 Boiler and Combustion Systems Hazards, 2001 Edition, National Fire Protection Association.

Part CW (Steam and Waterside Control) and Part CF (Combustion Side Control) Flame Safeguard of ANSI/ASME CSD-1, Controls and Safety Devices for Automatically Fired Boilers, ~~1992~~, 1998 American Society of Mechanical Engineers.

"Boiler Blowoff Equipment," National Board of Boiler and Pressure Vessel Inspectors, Rules and Recommendations for the Design and Construction of Boiler Blowoff Systems, 1991.

API510, Pressure Vessel Inspection Code, Maintenance Inspection, Rating, Repair and Alteration, Sixth Edition, June 1989, American Petroleum Institute.