NEBRASKA ADMINISTRATIVE CODE

TITLE 229 - DEPARTMENT OF LABOR

CHAPTER 2 - MINIMUM CONSTRUCTION STANDARDS FOR BOILERS AND PRESSURE VESSELS

001. This chapter is adopted pursuant to *Neb. Rev. Stat.* ' ' 48-726 and 48-727.

002. <u>ASME Code</u>

A. All new boilers and hot water heaters, unless otherwise exempt, to be operated in this jurisdiction shall be designed, constructed, inspected, stamped and installed in accordance with the ASME Code and these rules and regulations. Boilers for which an ASME Manufacturer's Data Report is required shall bear the manufacturer's "NB" number registered with the National Board. A copy of the Manufacturer's Data Report, signed by the manufacturer's representative and the National Board authorized inspector, shall be filed with the National Board and with the chief inspector of the jurisdiction. A copy of the Manufacturer’s/Installing Contractor Report for ASME CSD-1 shall be filed with the chief inspector of the jurisdiction.

B. All new pressure vessels, unless otherwise exempt, to be operated in this jurisdiction shall be designed, constructed, inspected, stamped and installed in accordance with the ASME Code and these rules and regulations. Pressure vessels for which an ASME Manufacturer's Data Report is required shall bear the manufacturer's "NB" number registered with the National Board. A copy of the Manufacturer's Data Report, signed by the manufacturer's representative and the National Board authorized inspector, shall be filed with the National Board. A copy of the ASME Manufacturer's Data Report, signed by the manufacturer's representative and the authorized inspector, shall be submitted to the chief inspector of the jurisdiction.

003. State Special - if, due to a valid impediment to compliance with the original code of construction, a boiler or pressure vessel cannot bear the required construction code and National Board stamping, details in the English language and United States customary units of the proposed construction, material specifications and calculations, approved by a registered professional engineer experienced in boiler and pressure vessels design, shall be submitted to the chief inspector by the owner or operator. Approval as a AState Special@ may be given where the chief inspector finds the boiler or pressure vessel to be in compliance with acceptable standards and approval is obtained from the Commissioner before construction is started.

004. Before a secondhand boiler or pressure vessel is installed or reinstalled, application for permission to install it shall be filed by the owner or user with the chief inspector and his/her approval obtained.

005. Minimum clearance for pressure vessels at sides and back wall shall be one and one-half feet, or at the discretion of the inspector, the manufacturers recommended

clearances may be used if they allow sufficient room for inspection. Where a pressure vessel manufacturer identifies in the Installation Manual or any other document that the unit requires more than one and one-half feet clearance, those dimensions shall be followed. Pressure vessels having man ways shall have five feet of clearance between the man way opening and any wall, ceiling or piping that will prevent a person from entering the pressure vessel. Clearance in front of the pressure vessel shall be sufficient for operation, maintenance and repair and not less than two (2) feet. The Chief Inspector may, for good cause shown, waive the clearance requirements of this section if there remains adequate clearance for a thorough inspection of the pressure vessel. Clearances outlined in the National Fire Protection Association (NFPA) Code, incorporated by reference in § 010 (J) of these regulations, shall be followed, due to the contents of the pressure vessel or the proximity of other hazards.

006. Minimum clearances ~~at sides and back wall of boilers shall be one and one-half feet~~ for power boilers and heating boilers shall be in accordance with Appendix I of the National Board Inspection Code (NBIC), incorporated by reference in § 010 (I) of these regulations~~,~~ . ~~or~~ A~~a~~t the discretion of the inspector, the manufacturers recommended clearances may be used, if they allow sufficient room for inspection. Where a boiler manufacturer identifies in the Installation Manual or any other document that the unit requires more than ~~one and one-half feet~~ the clearances outlined in Appendix I of the NBIC, incorporated by reference in § 010 (I) of these regulations, those dimensions shall be followed. ~~Boiler manholes shall have five feet of clearance between the manhole opening and any wall, ceiling or piping that will prevent a person from entering the boiler.~~ Clearance in front of the boiler shall be sufficient for operation, maintenance and repair and not less than ~~two (2)~~ three (3) feet. Water heaters and small electric boilers shall have a minimum of eighteen (18) inches clearance on all sides or between adjoining units and a minimum of three (3) feet in the front of the unit. At the discretion of the inspector, the manufacturers recommended clearances may be used, if they allow sufficient room for inspection. Where a water heater manufacturer identifies in the Installation Manual or any other document that the unit requires more that eighteen (18) inches clearance, those dimensions shall be followed. The Chief Inspector may, for good cause shown, waive the clearance requirements of this section if there remains adequate clearance for a thorough inspection of the boiler.

007. Hydrostatic Testing

A. For all newly installed boilers built to ASME Section I, when the boiler is completed in the Manufacturer=s shop without boiler external piping or the boiler external piping was not hydrostatically tested at the shop, subsequent hydrostatic testing of the boiler external piping shall be the responsibility of any holder of a valid AS@, AA@, or APP@ stamp. The test shall be conducted in accordance with ASME Section I, PG-99.

B. All new field assembled boilers built to ASME Section IV that are to be AH@ stamped shall meet the requirements in ASME Section IV, HG-532 and HG-533, incorporated by reference in § 010 (A) of these regulations. All field assembled Cast Iron boilers that did not have a final hydrostatic test in the manufacturer's shop shall be hydrostatically tested in accordance with ASME Section IV, HC-410, incorporated by reference in § 010 (A) of these regulations. All Cast Iron boilers that are disassembled in order to place them in the boiler room and then

reassembled shall be hydrostatically tested to 80% of the maximum allowable working pressure stamped on the boiler. This test shall be documented on the State of Nebraska NE-R-1 Report of Non-Welded Repairs and Hydrostatic Tests.

C. All boilers and pressure vessels that require further field fabrication of the pressure boundary parts by welding shall be completed, hydrostatically tested and code stamped in accordance with the original code of construction.

008. For purposes of *Neb. Rev. Stat.* ' 48-726, the application of heat from an indirect or direct source is not considered to include those processes that use ambient air or the natural environment.

009. Boilers and pressure vessels ~~Exemptions~~ exempted from the Boiler Inspection Act ~~as of September 4, 2005~~ under *Neb. Rev. Stat.* ' 48-726 are as follows:
~~Note: 229 NAC 2 § 009: "as of September 4, 2005" only applies to § 009 (L).~~

A. Boilers of railway locomotives subject to federal inspection.

B. Boilers operated and regularly inspected by railway companies operating in interstate commerce.

C. Boilers under the jurisdiction and subject to regular periodic inspection by the United States Government. Pressure vessels used for transportation and storage of compressed or liquefied gases, when constructed in compliance with specifications of the U.S. Department of Transportation or Food and Drug Administration, and when charged with gas, marked, maintained and periodically requalified for use, as required by appropriate regulations of the U.S. Department of Transportation or Food and Drug Administration, are ~~considered to be~~ exempt from inspection under the Act, ~~under the exception~~ as provided ~~for at~~ by ~~*Neb. Rev. Stat.*~~ ' 48-726(3).

D. Boilers used exclusively for agricultural purposes.

E. Steam heating boilers in single-family residences and apartment houses with four or less units, using a pressure of less than fifteen pounds per square inch, and having a safety valve set at no~~t~~ higher than fifteen pounds pressure per square inch.

F. Heating boilers using water in single-family residences and apartment houses with four or less units, using a pressure of less than thirty pounds per square inch, and having a safety valve set at not higher than thirty pounds pressure per square inch.

G. Fire engine boilers brought into the state for temporary use in times of emergency.

H. Boilers of a miniature locomotive or boat or tractor or stationary engine constructed and maintained as a hobby and not for commercial use and having a diameter of less than ten inches inside diameter and a grate area not in excess of one and one-half square feet and that are properly equipped with a safety valve.

I. Hot water supply boilers, if none of the following limitations is exceeded:

(1) Two hundred thousand British thermal units of input;
(2) One hundred twenty gallons of nominal capacity; or
(3) T~~t~~wo hundred and ten degrees Fahrenheit output.

J. Unfired pressure vessels not exceeding

(1) Five cubic feet in volume; or
(2) A pressure of two hundred and fifty pounds per square inch.

K. Unfired pressure vessels that are owned and maintained by a district or corporation organized under the provisions of Chapter 70, article 6.

L. Unfired pressure vessels

(1) Not exceeding a maximum allowable working pressure of five hundred pounds per square inch,
(2) That contain carbon dioxide, helium, oxygen, nitrogen, argon, hydrofluorocarbon refrigerant, or any other nonflammable gas determined by the commissioner not to be a risk to the public,
(3) That are manufactured and repaired in accordance with applicable American Society of Mechanical Engineers standards, and
(4) That are installed in accordance with the manufacturer's specifications.

010. The following codes have been adopted by reference and incorporated into the Boiler Safety Code, as provided in these regulations:

A. The following sections of the 2004 Edition, including the 2005 Addenda, of the ASME Boiler and Pressure Vessel Code, ~~and any edition or addenda~~ published by ~~ASME~~ the American Society of Mechanical Engineers ~~on or before January 1, 2005~~:
(1) ASME Section I, Rules for Construction of Power Boilers
(2) ASME Section II Part A, Ferrous material Specifications
(3) ASME Section II Part B, Nonferrous Material Specifications
(4) ASME Section II Part C, Specifications for Welding Rods, Electrodes, and Filler Metals
(5) ASME Section II Part D, Properties
~~(3)~~ (6) ASME Section IV Rules for Construction of Heating Boilers, including subsections HG-532, HG-533 and HC-410
~~(4)~~ (7) ASME Section V Nondestructive Examination
~~(5)~~ (8) ASME Section VI, Recommended Guidelines for the Care and Operation of Heating Boilers
~~(6)~~ (9) ASME Section VII, Recommended Guidelines for the Care of Power Boilers
~~(7)~~ (10) ASME Section VIII Division 1, Rules for the Construction of Pressure Vessels
~~(8)~~ (11) ASME Section VIII Division 2, Alternative Rules for the Construction of Pressure Vessels
~~(9)~~ (12) ASME Section VIII Division 3, Alternative Rules for the Construction of High Pressure Vessels
~~(10)~~ (13) ASME Section IX, Welding and Brazing Qualifications
~~(11)~~ (14) ASME Section X, Fiber-Reinforced Plastic Pressure Vessels

~~(12)~~ (15) ASME Section XII, Rules for Construction and Continued Service of Transport Tanks

B. ASME CSD-1, Controls and Safety Devices for Automatically Fired Boilers, ~~1998~~ 2004 Edition, ~~with the 1999 Addenda and the 1999 Errata and any edition or addenda~~ published by the American Society of Mechanical Engineers ~~ASME on or before January 1, 2005~~.

C. ASME B31.1, Power Piping, 2004 Edition, including the 2005 Addenda, ~~and any edition or addenda~~ published by the American Society of Mechanical Engineers ~~ASME on or before January 1, 2005~~.

D. ASME B31.3, Process Piping, 2002 Edition and any edition or addenda published by the American Society of Mechanical Engineers ~~ASME on or before January 1, 2005~~.

E. ASME B31.4, Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids, 2002 Edition, ~~and any edition or addenda~~ published by the American Society of Mechanical Engineers ~~ASME on or before January 1, 2005~~.

F. ASME B31.5, Refrigeration Piping, 2001 Edition, ~~and any edition or addenda~~ published by the American Society of Mechanical Engineers ~~ASME on or before January 1, 2005~~.

G. ASME B31.8, Gas Transmission and Distribution P~~p~~iping Systems, 2003 Edition, ~~and any edition or addenda~~ published by the American Society of Mechanical Engineers ~~ASME on or before January 1, 2005~~.

H. ASME B31.9, Building Services P~~p~~iping, 1996 Edition, ~~and any edition or addenda~~ published by the American Society of Mechanical Engineers ~~ASME on or before January 1, 2005~~.

I. National Board Inspection Code (NBIC-23), 2004 Edition, including the 2005 Addenda, ~~and any edition or addenda~~ published by the National Board of Boiler and Pressure Vessel Inspectors ~~on or before January 1, 2005~~.

J. The following National Fire Protection Association (NFPA) Codes, published by the National Fire Protection Association ~~on or before January 1, 2005~~:

(1) NFPA-30, Flammable and Combustible Liquids Code, 1996 Edition.
(2) NFPA-31, Standard for the Installation of Oil-Burning Equipment, 2006 Edition.
(3) NFPA-54, National Fuel Gas Code, 2006 Edition.
(4) NFPA-55, Standard for the Storage, Use, and Handling of Compressed ~~and Liquified~~ Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders, and Tanks, 2005 Edition.
(5) NFPA-58, Liquefied Petroleum ~~LP~~ Gas Code, 2004 Edition.
(6) NFPA-85, Boiler and Combustion Systems Hazards Code, 2004 Edition.
(7) NFPA-86, Standard for Ovens and Furnaces, 2003 Edition.

K. The following American Petroleum Institute (API) Codes, published by the American

Petroleum Institute ~~on or before January 1, 2005~~.

(1) API-510, Pressure Vessel Inspection Code: Maintenance Inspection, Rating, Repair, and Alteration, Eighth Edition, including Addendums 1 through 4, ~~and any edition or Addendum published on or before January 1, 2005~~
(2) API-579, Fitness for Service, First Edition ~~and any Edition or Addendum published on or before January 1, 2005~~.

L. Any additional codes referenced in the codes that have been adopted herein.

011. ASME Code Cases and Interpretations

A. Proposed Code Cases to the ASME Boiler & Pressure Vessel Code Sections will be reviewed by the chief inspector. If during the review he/she determines that the proposed Code Case does not meet the safety requirements outlined in the Nebraska Boiler Inspection act, he/she shall forward the proposed Code Case to the Boiler Safety Code Advisory Board for review and their recommendation. The Boiler Safety Code Advisory Board's recommendation will be forwarded to the Commissioner of Labor for final approval. If the Commissioner of Labor determines that the proposed Code Case will not be allowed to be used in the construction of boilers or pressure vessels to be installed in the state, he/she shall post a notice on the agency web site. Unless otherwise noted, Code Cases issued by ASME can be used upon their approval by the ASME Boiler and Pressure Vessel Committee.

B. Interpretations of the ASME Code can be used as issued unless there is a disagreement in the applicability between the manufacturer and the Authorized Inspection Agency. The chief inspector shall be contacted for resolution and acceptance of any interpretation when there is a disagreement between the manufacturer and the inspection agency.

C. The chief inspector shall use the latest edition/addenda or any previous edition/addenda, including previous interpretations, of the ASME code, ANSI codes, the Machinery=s Handbook, Engineering Formulas, Welding Research Council Bulletins or other such standards or publications for guidance in making a determination if a question arises in the use of a Code Case or an ASME interpretation. If a resolution cannot be found, the Boiler Safety Code Advisory Board shall be contacted for a recommendation and forwarded to the Commissioner of Labor for a final resolution.

012. All newly constructed units to be installed in the State of Nebraska shall be built to appropriate ASME Code of Construction. All documentation including the Manufacturers' Data Report, drawings, parts lists, Installation Manuals, Operating Manuals and all other documentation supplied for the unit shall be in English and all measurements shall be in U.S. customary units indicating inches, feet, pounds per square inch, etc. All pressure gages, thermometers and other controls and safety devices shall also be in U.S. customary units.

013. All power boiler external and non-external piping shall meet the requirements of ASME B31.1 Power Piping. All other boiler or pressure vessel piping shall meet the requirements

of the applicable piping codes.

014. Effective January 1, 2006 the installation of boilers in new buildings, when there is a structural renovation of over 50% of an existing boiler room, or replacement of equipment in the room, shall meet the installation requirements outlined in the National Board Inspection Code. If the new installation cannot meet the requirements outlined in the NBIC, the chief inspector shall be notified prior to the installation of a new unit to request a variance from the requirements. The request shall detail the problem on what conditions cannot be met and any drawings or other documentation outlining the conditions shall be provided so that a solution to the conditions can be made.

015. Combustion air and dilution air shall meet the requirements of the following (incorporated by reference in § 010 (J) of these regulations): NFPA-31, NFPA-54, ~~or~~ NFPA-58, or NFPA-85, as well as ASME CSD-1 [incorporated by reference in § 010 (B) of these regulations], as appropriate. Engineered installations shall be approved by the Chief Inspector. Venting of combustion byproducts shall meet the requirements of NFPA-31, NFPA-54, NFPA-58 or NFPA-85 for the exhaust stack configuration. Manual dampers installed in the exhaust stack that are used as baffles to help configure the flow of exhaust gases when multiple units are tied into one main stack shall be locked in the correct position and sealed to prevent movement of the damper.

016. Effective January 1, 2007 new boiler rooms shall meet the requirements of the building and mechanical codes adopted by the local jurisdiction. Where there is no local jurisdiction, or the local jurisdiction has not adopted a building or mechanical code, the requirements of the International Building and Mechanical Codes ~~should~~ shall be used as a guide.