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. 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 as registered with the National Board. A copy of the Manufacturer's Data Report, signed by the manufacturer's representative and the National Board Commissioned authorized inspector, shall be filed with the National Board and with the chief inspector of the jurisdiction. A copy of the Manufacturers/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 as registered with the National Board. A copy of the Manufacturer's Data Report, signed by the manufacturer's representative and the National Board Commissioned 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 prior to the boiler or pressure vessel being installed in Nebraska. Approval as a "State 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 or installation 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.

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005. Minimum clearance for pressure vessels at sides and back wall shall be three feet. Where a pressure vessel manufacturer identifies in the Installation Manual or any other document that the unit requires more than three 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 but not less than three feet. The Chief Inspector may waive the minimum clearance requirements of this section if the following requirements have been met:

A. The installer of the pressure vessel shall make written request to, and obtain written approval from, the owner and the owner's insurance company or Authorized Inspection Agency to use the proposed minimum clearances; and

B. The installer shall make a written request to the Chief Inspector to use the agreed upon minimum clearances. This request shall include copies of the approvals noted in 229NAC005.A above; and

C. There remains adequate clearance for inspection, maintenance, operation and repair of the pressure vessel.

006. Minimum clearance at sides and back wall of boilers shall be three feet. Where a boiler manufacturer identifies in the Installation Manual or any other document that the unit requires more than three feet clearance, 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 but not less than three feet. The Chief Inspector may waive the minimum clearance requirements of this section if the following requirements have been met:

A. The installer of the boiler shall make written request to, and obtain written approval from, the owner and the owner's insurance company or Authorized Inspection Agency to use the proposed minimum clearances; and,

B. The installer shall make a written request to the Chief Inspector to use the agreed upon minimum clearances. This request shall include copies of the approvals noted in 229NAC005.A above; and,

C. There remains adequate clearance for inspection, maintenance, operation and repair of the boiler.

007. 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 ASME Certification Mark with the "S", "A", or "PP" designator. The hydrostatic test shall be conducted in accordance with the requirements of ASME Section I, PG-99.

B. All new field assembled boilers built to ASME Section IV that bear the "H" designator shall meet the requirements in ASME Section IV, HG-532 and HG-533. All field assembled Cast Iron boilers shall be hydrostatically tested in accordance with ASME Section IV, HC-410. 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 certified 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.

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009. Exemptions under *Neb. Rev. Stat.* §48-726 for:

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 provided for at *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 not 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) two hundred ten degrees Fahrenheit output.

J. Unfired pressure vessels not exceeding

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

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

L. Exemptions, as of September 4, 2005, for unfired pressure vessels

(1) Not exceeding a maximum allowable working pressure of five hundred pounds per square inch,

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(2) That contain carbon dioxide, helium, oxygen, nitrogen, argon, hydroflourocarbon 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:

A. The following sections of the 2015 Edition of the ASME Boiler and Pressure Vessel Code and any edition or addenda published by ASME on or before July 1, 2015:

(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) ASME Section IV Rules for Construction of Heating Boilers;
(4) ASME Section V Nondestructive Examination;
(5) ASME Section VI, Recommended Guidelines for the Care and Operation of Heating Boilers;
(6) ASME Section VII, Recommended Guidelines for the Care of Power Boilers;
(7) ASME Section VIII Division 1, Rules for the Construction of Pressure Vessels;
(8) ASME Section VIII Division 2, Alternative Rules for the Construction of Pressure Vessels;
(9) ASME Section VIII Division 3, Alternative Rules for the Construction of High Pressure Vessels;
(10) ASME Section IX, Welding and Brazing Qualifications;
(11) ASME Section X, Fiber-Reinforced Plastic Pressure Vessels; and
(12) ASME Section XII, Rules for Construction and Continued Service of Transport Tanks.

B. ASME CSD-1, Controls and Safety Devices for Automatically Fired Boilers, 2012 Edition and any edition or addenda published by ASME on or before July 1, 2012.

C. ASME B31.1, Power Piping, 2014 Edition and any edition or addenda published by ASME on or before July 1, 2014, or as referenced in Appendix A-360 of ASME Section I, Power Boilers.

D. ASME B31.3, Process Piping, 2012 Edition and any edition or addenda published by ASME on or before July 1, 2012.

E. ASME B31.4, Pipeline Transportation Systems for Liquids and Slurries, 2012 Edition and any edition or addenda published by ASME on or before July 1, 2012.

F. ASME B31.5, Refrigeration Piping and Heat Transfer Components, 2010 Edition and any edition or addenda published by ASME on or before July 1, 2010.

G. ASME B31.8, Gas Transmission and Distribution piping Systems, 2010 Edition and any edition or addenda published by ASME on or before July 1, 2010.

H. ASME B31.9, Building Services Ppiping, 2011 Edition and any edition or addenda published by ASME on or before July 1, 2011.

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I. National Board Inspection Code. 2015 Edition and any edition or addenda published on or before July 1, 2015.

J. The following NFPA Codes published on or before July 1, 2013:

(1) NFPA-30, Flammable and Combustible Liquids Code, 2012 Edition;
(2) NFPA-31, Standard for the Installation of Oil Burning Equipment, 2011 Edition;
(3) NFPA-54, National Fuel Gas Code, 2012 Edition;
(4) NFPA-55, Compressed and Gases and Cryogenic Fluids Code, 2013 Edition;
(5) NFPA-58, Liquefied Petroleum Gas Code, 2011 Edition; and
(6) NFPA-85, Boiler and Combustion Systems Hazards Code, 2011 Edition.

K. The following API Codes, published on or before July 1, 2009.

(1) API-510- Pressure Vessel Inspection Code, Ninth Edition and any edition or Addendum published on or before July 1, 2009; and
(2) API-579, Fitness for Service, Second Edition and any Edition or Addendum published on or before July 1, 2009.

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

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 or any previous edition/addenda, including previous interpretations, of the ASME code, ANSI codes, 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 the appropriate Edition of the ASME Boiler and Pressure Vessel Code. All documentation, including the Manufacturers' Data Report, data plates, 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

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gauges, thermometers and other controls and safety devices shall also be provided in U.S. customary units.

013. All power boiler external and non-boiler 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 Part 1 of 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 NFPA-31, NFPA-54 or NFPA-58 as appropriate. Engineered installations shall be approved by the Chief Inspector.

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 be used as a guide.

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