

1.0 Scope General Provisions

1.1 Statement of Authority and Purpose

1.1.1 This regulation is enacted in accordance with 7 Del.C. Ch 60, Environmental Control, and 7 Del.C. Ch. 74B, Boiler Safety Program.

1.1.2 The General Assembly of the State of Delaware has determined that the general public should be protected from unsafe construction, operation, maintenance and repair of boilers, pressure vessels and nuclear installations. Authority has been granted to the Department to implement a Boiler Safety Program, maintain standards, and develop regulations to meet the objectives of the Program.

1.2 Applicability

1.2.1 The requirements of this regulation shall apply to all owners and users of boilers, pressure vessels and nuclear installations as defined in this regulation unless specifically exempted.

1.2.2 Any boiler or pressure vessel within the scope of these rules and installed in a place of public assembly, shall be subject to field-an inspection.

1.2.1.2.3 These regulations do not apply to the following types of equipment: The following boilers and pressure vessels are exempt from the requirements of this regulation:

1.2.41.2.3.1 Any boiler or pressure vessel which is subject to federal inspection and control;

1.2.21.2.3.2 Any pressure vessel used for the transport or storage of compressed gases and liquids under the control or regulation of the United States Department of Transportation;

1.2.31.2.3.3 Any air tank on any vehicle used for carrying passengers or freight and operated under the authority of any other state agency;

1.2.41.2.3.4 Any air tank installed on the right-of-way of railroads;

1.2.51.2.3.5 Any unfired pressure vessel not exceeding:

1.2.5.11.2.3.5.1 ~~Five~~ 5 cubic feet in volume and 250 psig design pressure;

1.2.5.21.2.3.5.2 ~~Three~~ 3 cubic feet in volume and 350 psig design pressure,

1.2.5.31.2.3.5.3 ~~One and one-half~~ 1.5 cubic feet in volume and 600 psig design pressure;

1.2.5.41.2.3.5.4 Vessels having an inside diameter, width, height, or cross section diagonal not exceeding 6 inch with no limitation on length of vessel or pressure.

1.2.61.2.3.6 Any unfired pressure vessel having an internal ~~and/or~~ external operating pressure not exceeding 15 psig;

1.2.71.2.3.7 Any unfired pressure vessel containing water at ambient temperature with a nominal water containing capacity of 120 gallons or less, including those with air or gas cushion, the compression of which serves only as a cushion;

1.2.81.2.3.8 Any water filter or softener containing water at ambient temperature when the pressure does not exceed 300 psig;

1.2.91.2.3.9 Any pressure vessel under the control of the State Fire Marshal;

1.2.101.2.3.10 High pressure breathing air cylinders used by emergency response organizations are exempt from inspection and certification provided they are installed, serviced, and maintained in accordance with the manufacturer's recommendations and the National Fire Prevention Association (NFPA) Standards, ~~and the~~ The owner or user of this equipment shall be responsible for maintaining, testing, and servicing this equipment and shall keep all records associated with these activities as required by ~~National Fire Protection Association~~ NFPA Standards. The failure of any person to so install, service, test and maintain these air cylinders and to keep such records shall constitute a violation of this Chapter.

1.2.111.2.3.11 Any water heater, directly fired with oil, gas or electricity, ~~which shall be~~ equipped with American Society of Mechanical Engineers (ASME) stamped safety relief valves and ~~which cannot do not~~ exceed any of the following limitations:

1.2.11.11.2.3.11.1 Heat input of 200,000 Btu/hr. or 58,600 watts;

1.2.11.21.2.3.11.2 Water temperature of 210 ~~degrees Fahrenheit~~ °F; or

1.2.11.31.2.3.11.3 Nominal water capacity of 120 gallons.

1.2.121.2.3.12 Any coil type hot water boiler without any steam space where water flashes into steam released through a manually operated nozzle unless 1 of the following limitations is exceeded:

1.2.12.11.2.3.12.1 A 3/4-inch diameter tubing or pipe size, with no drum or headers attached;

1.2.12.21.2.3.12.2 Nominal water containing capacity does not exceed 6 gallons;

1.2.12.31.2.3.12.3 Water temperature does not exceed 350 ~~degrees Fahrenheit~~ °F; or

1.2.12.41.2.3.12.4 Steam is not generated within the coil.

1.2.131.2.3.13 Any water heater, indirectly fired, which shall be equipped with ~~American Society of Mechanical Engineers (ASME)~~ ASME stamped safety relief valves and which cannot exceed any of the following limitations:

1.2.11.11.2.3.13.1 Heat input of 200,000 Btu/hr. or 58,600 watts;

1.2.11.21.2.3.13.2 Water temperature of 210 ~~degrees Fahrenheit~~ °F; or

1.2.11.31.2.3.13.3 Nominal water capacity of 120 gallons.

1.2.141.2.3.14 Hot water storage tanks or expansion tanks with a normal-nominal water containing capacity not exceeding 120 gallons.

~~1.2.15~~1.2.3.15 Sterilizers—~~Any self-contained~~self-contained type sterilizers having an integral heating ~~unit~~unit with an

~~1.2.15.1~~ Internal ~~internal~~ volume of less than ~~two (2)~~2 cubic feet. ~~Any electrically~~

~~1.2.15.2~~ Electrically heated type sterilizers are exempt provided that such sterilizers shall bear the Underwriter's Laboratory (UL) listing marking, ~~are exempt provided that such sterilizers bear the UL~~ label indicating the sterilizer meets the UL requirements. Possession or control of these sterilizers not bearing the UL label indicating the sterilizer meets the UL requirements shall constitute a violation of these regulations.

1.3 Any person who violates this regulation shall be subject to all appropriate legal sanctions including the provisions set forth in 7 Del.C. Ch. 74B, or 7 Del.C. Ch 60.

1.4 If any part of these rules and regulations are held invalid, unconstitutional, or otherwise contrary to law, then it shall be severable and the remaining portions hereof shall remain and continue in full force and effect.

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2.0 Definitions

The words and terms, when used in this regulation, have the following meaning unless the content clearly indicates otherwise:

"The Act" means 7 Del.C. ~~ch.~~Ch. 74B, Boiler Safety Program.

"Accident" means an unexpected event resulting from (a) unknown causes, (b) carelessness, (c) unawareness, causing injury, death or property damage.

"Alteration" means any change in the item described on the original Manufacturers' Data Report which affects the pressure containing capability of the pressure retaining item. Non-physical changes such as an increase in the maximum allowable working pressure (internal or external) increase in or design temperature, or a reduction in minimum temperature of a pressure retaining item shall be considered an alteration.

~~"ANSI": means American National Standards Institute.~~ **"American National Standards Institute"** or **"ANSI"** means the organization that oversees standards and conformity assessment activities in the United States.

"American Society of Mechanical Engineers" or **"ASME"** means the professional organization widely trusted to develop technical codes, standards and certifications.

"Antique Boiler" means boilers manufactured prior to January 1, 1924, and used solely for display and demonstration purposes.

"ASME Code" means the Boiler and Pressure Vessel Code published by the American Society of Mechanical Engineers.

"Authorized Inspection Agency" or "AIA" means

- New Construction: An Authorized inspection Agency is one that is accredited by the National Board meeting the qualification and duties of NB-360, *National Board Acceptance of Authorized Inspection Agencies (AIA) Accredited by the American Society of Mechanical Engineers (ASME)*.

- In-service: An Authorized inspection Agency is either:
 - A jurisdictional authority as defined in the National Board Constitution; or
 - An entity that is accredited by the National Board meeting NB 369, *Accreditation of Authorized Inspection Agencies (AIA) Performing In-service or Inspection Activities*; NB-371, *Accreditation of Owner-User Inspection Organizations (OUIO)* or NB-390, *Accreditation of Federal Inspection Agencies*.

~~"AI" means Authorized Inspector and includes the Chief Inspector, a Deputy Inspector or Special Inspector~~
"Authorized Inspector" or "AI" means an Inspector holding a current National Board Commission, with an "A" or "B" endorsement, and a Delaware Certificate of Competency.

~~"Antique Boiler" means boilers manufactured prior to January 1, 1924, and used solely for display and demonstration purposes.~~

~~"APA" means Administrative Procedures Act.~~

~~"ASME" mean American Society of Mechanical Engineers.~~

~~**"Authorized Inspection Agency" means**~~

- ~~New Construction: An Authorized Inspection Agency is one that is accredited by the National Board meeting the qualification and duties of NB-360, *Criteria for Acceptance of Authorized Inspection Agencies for New Construction*.~~
- ~~In-service: An Authorized Inspection Agency is either:~~
- ~~a jurisdictional authority as defined in the National Board Constitution; or~~
- ~~an entity that is accredited by the National Board meeting NB-369, *Qualifications and Duties for Authorized Inspection Agencies Performing In-service Inspection Activities and Qualifications for Inspectors of Boilers and Pressure Vessels*; N B-371, *Accreditation of Owner-User Inspection Organizations (OUIO)* or NB-390, *For Federal Inspection Agencies (FIAs) Performing In-service Inspection Activities*.~~

"Automatically Fired Boiler" means a boiler that cycles automatically in response to a control system with no operator.

"Boiler" means a closed vessel in which water is heated, steam is generated, steam is superheated, or any combination thereof, under pressure or vacuum for use externally to itself by the direct application of heat energy from the combustion of fuels, or from electricity, solar or nuclear energy. The term "boiler" shall include

fired units for heating or vaporizing liquids other than ~~water, where these units are separate from processing systems, and are complete within themselves.~~ water but does not include fired process heaters and systems. The term boiler shall include the apparatus by which heat is generated as well as all controls and safety devices associated with such apparatus or the closed vessels.

"Heating Boiler" means a steam boiler operating at pressures not exceeding 15 psi, or a hot water boiler operating at pressures not exceeding 160 psi or temperatures not exceeding 250 °F, which is supplied to an external heating system.

"High Temperature Water Boiler" means a water boiler operating at a pressure exceeding 160 psi ~~and/or~~ temperatures ~~in excess of more than~~ 250 degrees ° F.

~~"Heating Boiler" means a steam boiler operating at pressures not exceeding fifteen (15) psi, or a hot water boiler operating at pressures not exceeding 160 psi and/or temperatures not exceeding 250 degrees F, which is supplied to an external heating system.~~

"Hot Water Supply Boiler" means a vessel used to heat water for purposes other than space heating, where the water is used external to itself, at pressures not exceeding 160 psi, ~~and/or~~ temperatures not exceeding 250 degrees ° F. at or near the boiler outlet. ~~where ASME Stamping would be ASME Section IV, His "H" in accordance with ASME Code, Section IV.~~

"Jacketed Cooking Kettle" means a gas or electrically fired jacketed cooking kettle built and stamped ASME Section VIII, Division 1. ASME stamping ~~would be~~ is ~~U~~ "U" in accordance with ASME Code, Section VIII, Division 1.

"Miniature Boiler" means a power boiler having an internal shell diameter of 16 inches or less, a gross volume of 5 cubic feet or less, a heating surface of 20 square feet or less, not applicable to electric boilers, and not exceeding 100 psi, where ASME stamping is "M" in accordance with ASME Code, Section 1.

"Pool Heater" means an appliance designed for heating non-potable water stored at atmospheric pressure such as water in swimming pools, spas, hot tubs, and similar applications.

"Power Boiler" means a vessel in which steam or other vapor is generated at a pressure of more than ~~fifteen (15)~~ 15 PSIG ~~for use external to itself.~~

"Standard Boiler or Pressure Vessel" means a boiler or pressure vessel that bears the stamp of the ASME and is registered with the National Board. Such items shall bear the appropriate ASME Code Symbol Stamp and the NB Registration number.

"Thermal Fluid Heater" means a boiler used to heat an organic fluid for heating and or processing that does not vaporize in the process. ~~Object is considered a boiler in the State of Delaware and is required to be built to Section I or Section VIII of the ASME Construction Codes and registered with the National Board. Overpressure protection will be in accordance with ASME Section I Part PVG or ASME Section VIII as determined by the Department.~~

"Water Heater" means a closed vessel in which water is heated by gas, oil, electric, or some other fuel supply, and the water is used externally to itself for potable water supply, or used for potable water and space heating (as outlined in Section ~~14~~ 14.0 of these ~~Rules and Regulations~~ rules and regulations), operating at pressures not exceeding 160 psi and water temperatures not in excess of 210 degrees °F. ASME Stamping ~~would be~~ is ~~HLW" in accordance with ASME Code, Section IV,~~ HLW.

"British Thermal Unit per hour" or "BTU/hr." means the heat transfer rate over a 60-minute period.

"Certificate of Competency" means a certificate issued by the ~~Department's~~ Department's Boiler Safety Program to an inspector after passing the Delaware test for inservice inspections, or to an inspector holding a valid National Board Commission for ~~"New Construction Inspector". See Delaware Commission~~ AI Commission.

"Certificate of Inspection" means a printed document, issued by the ~~Department's~~ Department's Boiler Safety Program, signifying the object has met ~~Code regulatory~~ requirements after receipt of a report from a ~~State of Delaware inspector, or a~~ State of Delaware National Board Commissioned or Owner/User Inspector, stating the conditions of the object are satisfactory to issue a certificate. ~~The inspector will issue a current decal bearing a date of inspection. The certificate becomes valid upon payment of the required inspection and/or certificate fees.~~

"Chief Inspector": means a State of Delaware Employee who is commissioned by the National Board responsible for code enforcement and jurisdictional interpretations.

"Commission" means:

"Controls and Safety Devices (CSD-1)" means ASME Standard adopted by the Department's Boiler Safety Program in 1992 for controls on boilers with input capacity of less than 12,500,000 Btu/hr.

"Council" means the members of the Delaware Governor's Council on Boiler Safety in accordance with ~~7 Del.C.~~ 7 Del.C. Ch. 74B.

"Decal" means a sticker filled out by the inspector at the time of inspection providing contact information and time of the inspection that is applied to the boiler or pressure vessel notifying the owner that the object has been inspected.

~~**"National Board Commission"** means a certificate issued by the National Board to an individual that has taken and passed the National Board Commission Examination.~~

"Delaware Commission" means a Certificate of Competency issued by the Boiler Safety Program to a National Board Commissioned Inspector employed by the State of Delaware; an insurance company licensed to sell

boiler and machinery insurance in the State of Delaware; an ~~owner/user-inspector~~Owner/User Inspector employed by a recognized Delaware Owner/User Agency; or an inspector employed by a Non-traditional Inspection Agency accredited by *National Board- 369*.

~~“Controls and Safety Devices (CSD-1)”~~ means ~~ASME Standard adopted by the Boiler Safety Program in 1992 for controls on boilers with input capacity of less than 12,500,000 Btu/Hr.~~

~~“Council”~~ refers to ~~the members of the Governor’s “Council on Boiler Safety”. 7 Del.C. ch. 74B.~~

~~“Decal”~~ means ~~a report filled out by the inspector at time of inspection and left at the location, This is notification the object has been inspected.~~

“Department” means Department of Natural Resources and Environmental Control (DNREC).

“Division” means Division of ~~Boiler Safety~~Waste and Hazardous Substances.

~~“Deputy Inspector”~~ means ~~an inspector employed by the State of Delaware Boiler Safety Program.~~

“Existing Installations” means:

Any power or miniature boiler installed before January 1, 1924.

Any electrically heated pressure vessel installed before August 8, 1953.

Any steam heating, hot water supply or hot water heating boiler installed before May 11, 1954.

Any pressure vessel installed before June 30, 1974.

~~Controls and Safety Devices (CSD-1) was adopted for boilers installed after September 15, 1992.~~

~~Pressure Vessels for Human Occupancy (PVHO-1) was adopted on July 1, 2009.~~

“External Inspection” means an inspection of the exterior surfaces as defined in ~~NBIC~~the National Board Inspection Code, when a boiler or pressure vessel is connected for use and in operation.

“External Piping” means:

~~Power boilers~~ any pipe or fitting connected between the boiler and those limits defined in ASME B31.1.

~~“HLW”~~ means ~~part of ASME Code, Section IV, dealing with potable water heaters.~~

“Inservice Inspector”: means a ~~Deputy State of Delaware~~ Inspector, ~~Chief Inspector~~, Special Inspector, or an Owner/User Inspector.

“Internal Inspection” means an inspection of the interior surfaces of a boiler or pressure vessel, as ~~defined~~ described in the ~~NBIC~~National Board Inspection Code, with implementation of preparation and safety procedures.

“Jurisdictional Inspection” means an inspection pursuant to the requirements specific to the state or local jurisdiction where the boiler or pressure vessel resides.

~~“MTR”~~ means ~~Material Test Report.~~

~~“MAWP”~~: means ~~Maximum Allowable Working Pressure.~~ **“Maximum Allowable Working Pressure”** or **“MAWP”** means the highest pressure that an object is designed to safely withstand under normal operating conditions at a given temperature.

~~“Manager of the Boiler Safety Program”~~ means ~~a State of Delaware Employee responsible for the administration of Delaware’s Boiler Safety Program.~~

“Mechanical Assembly” means the work necessary to establish or restore a pressure retaining boundary, under supplementary materials, whereby pressure-retaining capability is established through a mechanical, chemical, or physical interface, as defined under the rules of the ~~NBIC~~National Board Inspection Code.

“Mechanical Repair Method” means a method of repair, ~~which that~~ restores a pressure retaining boundary to a safe and satisfactory operating condition, where the pressure retaining boundary is established by a method other than welding or brazing, as defined under the rules of the ~~NBIC~~National Board Inspection Code.

“National Board” or **“NB”** or **“NBBI”** means “The National Board of Boiler and Pressure Vessel Inspectors”.

“National Board Commission” means a certificate issued by the National Board to an individual who has successfully passed the National Board Commission Examination.

“National Board Commissioned Inspector” means an individual who holds a valid and current National Board Commission.

~~“National Board Inspection Code”~~ or **~~“NBIC”~~** means ~~National Board Inspection Code~~ the manual for boiler and pressure vessel inspectors, published by the National Board of Boiler and Pressure Vessel Inspectors. ~~The NBIC is recognized for Repairs and Alterations, and Antique (Historical) boilers only (Part 3 only). It is recognized as a national standard by the American National Standard Institute (ANSI) which governs and maintains rules for installation, inspection, repair and alterations, and pressure relief devices of Inservice pressure equipment.~~

~~“Non-Destructive Examination”~~ or **~~“NDE”~~** means ~~Non-Destructive Examination a group of testing methods used to evaluate the properties and integrity of a material, component, or system without damaging it.~~

“Non-traditional Inspection Agency” means ~~a~~ an Authorized Inspection Agency that provides boiler inspections beyond the standard jurisdictional requirements, potentially offering more in-depth analysis, specialized expertise in specific boiler types in accordance with *Accreditation of Authorized Inspection Agencies Performing Inservice Inspection Activities (NB-369)* ~~National Board-369 authorized inspection agency that and~~ is not a state agency, nor sells insurance.

“Object” means a boiler, pressure vessel, or nuclear installation subject to 7 Del.C. Ch. 74B and this regulation.

“Owner or User” means any person, firm, or corporation owning or operating any boiler, pressure vessel or nuclear installation within ~~this state~~Delaware.

"Owner/User Agency" means ~~An~~an organization that is recognized by the Department's Boiler Safety Program as having inspectors holding State of Delaware Owner/User Commissions ~~that-which~~ allow the inspectors to inspect pressure vessels owned and operated by the Delaware Owner/User Agency.

"Owner/User Inspector" means a Delaware Commissioned Inspector who has been issued a Delaware Certificate of Competency and works for a recognized Owner/User in the State of Delaware.

"Person" means an individual, trust, firm, joint stock company, federal agency, partnership, corporation (including a government corporation), association, state, municipality, commission, political subdivision of a state or any interstate body.

"Place of Public Assembly" means any establishment, building, location or any portion thereof within ~~this State~~Delaware intended and used for occupation by persons while employed therein for compensation of any kind, and any commercial structure ~~and/or~~ location to which the public has access. This shall include, ~~but not be limited to~~ apartment buildings, schools, day care centers, nursing homes, hospitals, theaters, houses of worship and sporting arenas.

~~"PSI" means pounds per square inch~~

~~"PSIG" means pounds per square inch gauge.~~

"Portable Boiler" means an internally fired boiler primarily intended for temporary location, and the construction and usage of which is ~~obviously~~ portable.

"Pounds Per Square Inch" or "PSI" means a unit of pressure that measures the force of one pound applied to an area of one square inch.

"Pounds Per Square Inch Gauge" or "PSIG" means a pressure measurement relative to the surrounding atmospheric pressure.

"Pressure Retaining Item (PRI) or "PRI" means any boiler, pressure vessel, piping, or material used for the containment of pressure, either internal or external. The pressure may be obtained from an external source, or by the application of heat from a direct source, or any combination thereof.

"Pressure Vessel" means containers for the containment of pressure, either internal or external. The pressure may be obtained from an external source or by the application of heat from a direct or indirect source, or any combination thereof.

"Repair" means the work necessary to restore ~~pressure retaining~~pressure-retaining items to a safe and satisfactory condition such that the existing design requirements are met.

"Secretary" means the Secretary of the Department of Natural Resources and Environmental Control.

"Shop Review" means a general survey and examination of a boiler or pressure vessel manufacturing or repair firm's facilities, methods and records. The examination is performed by a designee of the ASME, ~~and/or~~ the National Board.

"Special Inspector" means a National Board Commissioned Inspector ~~and/or~~ an Authorized Inspection Agency Inspector, employed by an insurance company authorized to write boiler and pressure vessel insurance in Delaware, or an inspector employed by a Non-traditional Inspection Agency.

~~"Standard Boiler or Pressure Vessel" means a boiler or pressure vessel which bears the stamp of the ASME and which are registered with the NB. Such items shall bear the appropriate ASME Code Symbol Stamp and the NB Registration number.~~

~~Note: Cast iron and cast aluminum boilers are exempted from National Board Registration.~~

"State of Delaware Inspector" means an inspector employed by the Department's Boiler Safety Program.

"State Special" means nonstandard design of a boiler or pressure vessel.

"State Special Number" means a Delaware Registration Number assigned to a boiler or pressure vessel of nonstandard design.

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3.0 Codes and Standards:

- 3.1 The ~~State of Delaware Boiler Safety Program has adopted the~~ ASME Boiler and Pressure Vessel Codes shall be used as reference for construction and stamping, including CSD-1 Control and Safety Devices for Automatically Fired Boilers (CSD-1) for controls and safety devices. Standards referenced by these rules are: ASME Code Sections I, II, III (all Sections), IV, V, VIII (Div. 1, 2 and 3), ~~XI IX~~, X, XI, PVHO-1, CSD-1, B31.1 (for boiler external piping), and Code Cases. ~~Interpretations are not part of the ASME and National Board Codes and will be handled on a case by case basis.~~
- 3.2 The National Board Inspection Code has been adopted for installation, inspection, repairs and alterations, and pressure release devices.
- 3.3 All Standards listed above refer to the latest accepted edition.
- 3.4 CSD-1 was adopted by the State of Delaware for boilers installed after September 15, 1992. CSD-1 addresses periodic testing and maintenance of boiler controls and safety devices such as temperature and pressure controls, water level controls, and pressure relief valves.
- 3.5 Pressure Vessels for Human Occupancy (PVHO-1) was adopted on July 1, 2009.
- 3.6 Boilers, pressure vessels and nuclear components must be stamped with the applicable ASME Code stamping, also known as ASME nameplate or data plate, and a National Board number. The stamping may also have the word "USER" which identifies the owner or operator involved in post-construction work.

~~3.6.1 The application of a NB number to a boiler or pressure vessel after it has been placed in service is not permitted without prior approval of the Department's Boiler Safety Program.~~

~~3.6.2 A nationally recognized testing agency, such as the Underwriters Laboratory (UL) must be additionally stamped on boilers, pressure vessels and nuclear components that are electronically heated.~~

~~3.6.3 Cast iron or cast aluminum boilers do not require a NB number.~~

~~3.6.4 All required stamping must be visible for inspection and not permanently covered.~~

~~3.7 Repairs and alterations to boilers and pressure vessel must comply with:~~

~~3.7.1 The original construction standard, or later editions of the construction standard;~~

~~3.7.2 The latest edition of the National Board Inspection Code, NB-23; and~~

~~3.7.3 This regulation.~~

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4.0 Administration

~~4.1 Duties of Inspectors and Insurance Companies:~~

~~4.1.1 Inspectors shall:~~

~~4.1.1.1 Submit completed boiler or pressure vessel reports to the Boiler Safety Program within 30 days of inspection. First time inspections shall be submitted on the National Board Form NB-7 or the Delaware First Inspection Report, or filed electronically. Electronic reporting does not require submission of hard copies.~~

~~4.1.1.2 Report immediately to the Chief Inspector of the Boiler Safety Program the name of the owner or user who is operating any boiler or pressure vessel (a) without a valid certificate of inspection, or, (b) in an unsafe condition.~~

~~4.1.1.3 Report to the Chief Inspector of the Boiler Safety Program all accidents involving boilers and pressure vessels when informed of such accidents by the owner/user.~~

~~4.1.2 It shall be the duty of the insurance company to notify the Boiler Safety Program of installations on which insurance is accepted, refused, cancelled, or suspended. Such reports shall give detailed account of any unsafe conditions and shall be submitted within 30 days of such insurance acceptance or refusal.~~

~~4.2 Shop Inspections:~~

~~4.2.1 The shop inspections required by any applicable section of the ASME Boiler & Pressure Vessel Code shall be made by an Inspector who holds a valid commission issued by the National Board of Boiler & Pressure Vessel Inspectors, and having a valid "A" or "B" endorsement. A Certificate of Competency card, issued by the Boiler Safety Program, is required for all inspectors. An AI inspecting nuclear components requires the "N" endorsement.~~

~~4.3 Shop Reviews:~~

~~4.3.1 ASME and National Board Shop reviews shall be conducted by an ASME representative, a National Board representative, or the Boiler Safety Program ASME Designee.~~

~~4.4 Conflict of interest:~~

~~4.4.1 An Inspector shall not engage in the sale of any services, article or device relating to boilers, pressure vessels, or their appurtenances.~~

~~4.5 Appeals:~~

~~4.5.1 The Manager of the Boiler Safety Program may suspend or revoke a Certificate of Competency or a Commission, after due investigation for willful falsification of any matter or statement contained in his application, or in a report of any inspection made by him/her, and for any other finding of improper conduct. Written notice of any such suspension or revocation as required by 29 Del.C. § 1031(c), shall be given by the Manager of the Boiler Safety Program to the inspector and his employer. An inspector whose Certificate of Competency or commission has been suspended or revoked shall be given ten days to appeal the decision to the Secretary of the Department of Natural Resources and Environmental Control. The notice of any proceedings shall conform to 29 Del.C. § 10122.~~

~~4.5.2 Appeal from decision of Inspectors. If the owner or user of any boiler, pressure vessel or nuclear installation disagrees with the Inspector, as to the necessity for shutting it down for making repairs or alterations to it, or taking any other measures for safety that may be requested by the Inspector, the owner or user may appeal the decision of the Inspector to the Manager of the Boiler Safety Program within an acceptable time limit as determined by the Manager of the Boiler Safety Program according to the severity of the violation. The owner/user will be notified of the time limit for appeal in the notice of violation. In case of a disagreement with the Manager of the Boiler Safety Program, an appeal may be filed with the Secretary, who will review the decision and may order another inspection, as the Secretary may deem necessary to decide the issue.~~

~~4.6 Accident. The owner or user shall notify the Boiler Safety Program when an accident occurs that renders a boiler or pressure vessel inoperative. In the case of a serious accident, as in a personal injury or an explosion, notice shall be given immediately by telephone. No boiler, pressure vessel, or parts thereof involved in the accident, shall be removed or disturbed before an investigation can be conducted, except for the purpose of conserving human life and limiting consequential damage.~~

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5.0 — Manufacturers

- ~~5.1 — Construction Standards. Boilers, pressure vessels, nuclear components and component parts to be installed for use in the State of Delaware, shall be designed, fabricated, inspected, stamped and installed in accordance with current applicable Sections of the ASME Boiler and Pressure Vessel Code, and these Rules and Regulations.~~
- ~~5.2 — Stamping. Boilers, pressure vessels and nuclear components shall be stamped with the applicable ASME Code stamping and a National Board number, or the ASME Code Symbol and the word ("USER"), and if electrically heated a nationally recognized testing agency, such as, but not limited to the Underwriters Laboratory. Note: Cast Iron or cast aluminum boilers do not require National Board Registration. The required stamping shall be visible for inspection and not permanently covered.~~
- ~~5.3 — State Special. If a boiler, pressure vessel or nuclear component is of special design and can not be built to the ASME Code, and have the ASME Code Symbol, and National Board or USER stampings, a permit for a State Special must be applied for in writing by the Delaware user. Blueprints, design data, calculations and specifications shall be prepared by a Registered Professional Engineer, knowledgeable in the appropriate Code of Construction, and submitted to the Boiler Safety Program prior to construction.~~

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6.0 — Installation

- ~~6.1 — A new boiler or pressure vessel installation, including a reinstalled or secondhand boiler or pressure vessel, shall be installed in accordance with the current Edition:~~
 - ~~6.1.1 — The ASME Code.~~
 - ~~6.1.2 — Delaware Rules and Regulations.~~
 - ~~6.1.3 — ASME CSD1~~
 - ~~6.1.3.1 — Part CF of CSD-1 shall be met when the installing contractor submits an operational test form CSD-1 or a form containing the same information. This is for boilers over 400,00 Btu/hr.~~
 - ~~6.1.3.2 — Part CM The preventive maintenance schedule will be determined by the owner or user.~~
- ~~6.2 — If a condition is not covered by these regulations, the applicable provisions of the ASME Code or NBIC govern.~~
- ~~6.3 — External piping shall be made of materials accepted by the ASME Code.~~
- ~~6.4 — Installation Registration. The installation of any boiler or pressure vessel within the scope of these rules, and installed in a place of public assembly, shall be registered with the Boiler Safety Program by the installer before the operation of the boiler or pressure vessel. The boiler may be operationally tested prior to obtaining a certificate.~~
- ~~6.5 — Clearances. All boiler installations shall have adequate clearance which should be 30 inch clearance on all sides or the distance stated in the manufacturer's specifications. If the Manufacturer specified minimum clearance is not available, a variance must be obtained from the Manager of the Boiler Safety Program prior to the boilers being installed. All pressure vessels shall have adequate clearance for safe maintenance and inspection.~~
- ~~6.6 — Power Boilers~~
 - ~~6.6.1 — New Installations~~
 - ~~6.6.1.1 — Ladders and runways. Steel runway or platform, at least twenty four (24") inches wide, and provided with standard handrails and toe boards on either side, with at least 7'-6" head room, shall be installed across the tops of adjacent boilers, or at some other convenient level, for the purpose of affording safe access to the boilers. All runways shall have at least two (2) means of exit, each exit to be remotely located from the other and connected to a permanent stairway or inclined ladder leading to the floor level.~~
 - ~~6.6.1.2 — Exit from boiler rooms all boiler rooms exceeding five hundred (500) square feet of floor area and containing one or more boilers having a fuel burning capacity of 1,000,000 BTU's shall have at least two (2) means of exit, one of which shall lead outside.~~
 - ~~6.6.1.3 — Explosion doors if used and if located in the setting walls, within seven (7) feet of the firing floor or operating platform, shall be provided with substantial deflectors to divert the blast.~~
- ~~6.7 — When a standard boiler, pressure vessel, or nuclear component located within this jurisdiction is to be moved outside the jurisdiction for repair, alteration, or modification, it shall be documented on the appropriated "R" form. Copies of all "R" forms shall be forwarded to the Boiler Safety Program. Routine Repairs are not required to be filed with the division.~~
- ~~6.8 — The installation or operation of nonstandard boilers, pressure vessels, or nuclear components in this jurisdiction without prior permission from the Manager of the Boiler Safety Program is prohibited.~~
- ~~6.9 — High Pressure Steam Boiler Blow Down Tanks and Receivers~~
 - ~~6.9.1 — Blowoff piping from a power boiler shall not discharge directly into a sewer or interconnected system. A blowoff tank shall be used where conditions do not provide adequate and safe open discharge and shall be placed between the boiler and the sewer or other such system.~~
 - ~~6.9.2 — Pressure or unvented blowdown tanks:~~
 - ~~6.9.2.1 — A blowdown tank subject to possible maximum steam boiler pressure shall be constructed for the boiler pressure and stamped in accordance with the ASME Code.~~
 - ~~6.9.3 — Atmospheric or vented blowdown tanks:~~

~~6.9.3.1 The outlet from the blowdown tank shall be not less than twice the area of the boiler blowdown pipe, and made to extend internally to within six inches of the bottom of the tank.~~

~~6.9.3.2 A vent pipe at least twice the diameter of the inlet shall lead to the outside atmosphere. Vents shall be as direct as possible to the outside atmosphere and discharge at a point not less than seven feet above grade. No valve, water pocket, or other obstruction shall be in this line.~~

~~6.10 Centrifugal type separators:~~

~~6.10.1 Centrifugal type separators shall be built and stamped in accordance with the ASME Code.~~

~~6.10.2 Separators may be used when a safe point of discharge is available and the pressure and temperature conditions at the point of discharge need not be considered.~~

~~6.10.3 Separators may be used as an auxiliary to a blowdown tank but may not be used in lieu of a conventional blowdown tank in those installations requiring a blowdown tank.~~

~~16 DE Reg. 786 (01/01/13)~~

~~7.0 Nonstandard Boilers or Pressure Vessels~~

~~7.1 Nonstandard high-pressure boilers, which were installed in the State of Delaware prior to January 1, 1924, shall be subject to the rules of the ASME Boiler Code for calculations and installation. Nonstandard pressure vessels installed prior to June 30, 1974, shall be calculated and installed in accordance with ASME Code Section VIII, and the following rules:~~

~~7.1.1 Factors of Safety. The minimum factor of safety may not be less than 4 for existing installations. The factor of safety may be increased when it is considered necessary by the inspector to insure the operation of the vessel within safe limits. The condition of the vessel and the particular service to which it is subject shall be the determining factors.~~

~~7.1.2 The owner/user and the AI inspector shall agree what further NDE will be required to verify the integrity of the vessel.~~

~~7.1.3 When a nonstandard boiler, pressure vessel, or nuclear component is removed from this jurisdiction for reason other than repair or alteration, it shall not be brought back and installed within this State.~~

~~7.1.4 Maximum Allowable Working Pressure for Non-standard Pressure Vessels.~~

~~7.1.4.1 Internal Pressure. The maximum allowable working pressure on the shell of a nonstandard pressure vessel is determined by:~~

~~7.1.4.1.1 The strength of the weakest course computed from the thickness of the plate.~~

~~7.1.4.1.2 The tensile strength of the plate.~~

~~7.1.4.1.3 The efficiency of the longitudinal joint.~~

~~7.1.4.1.4 The inside diameter of the course.~~

~~7.1.4.1.5 The factor of safety set by these rules.~~

~~maximum allowable
working pressure, psig = $\frac{TS \cdot t \cdot E}{R \cdot FS}$~~

~~Where:~~

~~TS = Ultimate tensile strength of shell
plate, PSI. When the tensile of shell
plate is not known, it shall be taken as
55,000 PSI for temperatures not
exceeding 700 F.~~

~~t = Minimum thickness of shell plate of
weakest course, inches.~~

~~E = Efficiency of longitudinal joint
depending upon construction. Use the
following values: for riveted joints the
calculated riveted efficiency; and for
fusion welded and brazed joints:~~

~~Percent~~

~~Single Lap Weld _____ 40~~

~~Double Lap Weld _____ 60~~

~~Single Butt Weld _____ 60~~

~~Double Butt Weld _____ 75~~

~~Forge Weld _____ 70~~

~~Brazed Steel _____ 80~~

~~R = Inside radius of weakest course of
shell, inches, provided the thickness
does not exceed 10 percent of the
radius. If the thickness is over 10
percent of the radius, the outer radius
shall be used.~~

~~FS = Factor of safety allowed by these~~

rules.

~~7.1.4.2 External Pressure: The maximum working pressure for cylindrical nonstandard pressure vessels subjected to external or collapsing pressure shall be determined by the rules in the appropriate ASME Code Section VIII, Div. 1, 2, or 3~~

~~7.1.5 A State Special number may be assigned to a boiler or pressure vessel of nonstandard design. All designs and specifications must be submitted to the Boiler Safety Program for approval and must include:~~

~~7.1.5.1 Drawings and calculations certified by a mechanical engineer from the original manufacturer, or a Delaware registered professional engineer.~~

~~7.1.5.2 Material test reports certified by the original manufacturer or a material testing laboratory.~~

~~7.1.5.3 Report of a pressure test certified by the owner and a Delaware commissioned Inspector.~~

~~7.1.5.4 Report of an internal & external inspection by a Delaware commissioned Inspector.~~

~~7.1.5.5 Establish that welding meets the requirements of the ASME code.~~

~~7.1.5.6 If any of the above documentation has been lost, it will be necessary to fulfill the basic requirements by some other means acceptable to the Chief Inspector of the Boiler Safety Program.~~

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8.0 Inspections

8.1 Access for inspection.

~~8.1.1 The Secretary, Chief Inspector of the Boiler Safety Program, Deputy Inspector, Special Inspectors, or members of the Council on Boiler Safety, shall have full access during reasonable hours to any premises in the State, where a boiler, pressure vessel or nuclear component within the scope of these Rules and Regulations is being constructed, installed, connected for use or operated, to ascertain compliance with these Rules and Regulations. Immediate access must be provided upon event of an accident.~~

8.2 Inspection Requirements

~~8.2.1 High pressure boilers, miniature boilers and high pressure high temperature water boilers shall receive a certificate of inspection annually. They shall also be inspected internally annually. The external (in service) inspection should be done within six months of the internal inspection.~~

~~8.2.2 Low pressure steam heating boilers, hot water heating boilers, hot water supply boilers, and lined water heaters, shall be given a certificate of inspection biennially. This inspection may be an external inspection, unless the Inspector requires an internal inspection. The Inspector, due to operating conditions, may require additional inspections.~~

~~8.2.3 All pressure vessels shall be given a certificate of inspection every four years. This inspection may be an external inspection, unless the Inspector requires an internal inspection. The Inspector, due to operating conditions such as corrosive conditions or lethal service, may require additional inspections or request the certificate be for two years instead of 4 years.~~

~~8.2.3.1 The Department may grant an alternate approval for a pressure vessel to operate for a period of 10 days provided they have a valid certificate from another jurisdiction.~~

~~8.2.3.2 Any air cannon used in competition prior to 2004 that does not have ASME code welds must pass a hydrostatic test once every 2 years to continue to be allowed to operate.~~

~~8.2.4 Thermal Fluid Heaters (Boilers) shall receive a certificate inspection annually. They shall also be externally inspected annually. During the annual inspection, the Relief Devices test history shall be reviewed and safety controls checked. The inspector may require additional inspections due to conditions found.~~

8.3 Certificate Inspections

~~8.3.1 Certificate inspections will be allowed a grace period of one month beyond the normal inspection date, with extensions to the above, granted only by the Manager of the Boiler Safety Program. A current Certificate of Inspection must have a decal attached by the Inspector using the decals provided by the Boiler Safety Program. Violation of this paragraph will subject the owner/user to the penalty, as provided in 7 Del.C. ch 74B.~~

~~8.3.2 If, at the discretion of the Inspector, a hydrostatic test or any other test is deemed necessary, it shall be made by the owner or user of the boiler or pressure vessel.~~

~~8.3.3 Sufficient covering of the boiler or pressure vessel shall be removed to satisfy the Inspector that he may determine the conditions of the boiler or pressure vessel. If the covering cannot be removed at that time, the inspector may order the operation of the boiler or pressure vessel stopped until such time as the covering can be removed and proper examinations made.~~

8.4 Alternate Internal Inspection Requirements

~~8.4.1 High pressure boiler internal inspection may be extended to 24 months; and 48 months for waste heat boilers, if the following requirements are met:~~

~~8.4.1.1 Continuous water treating under the general supervision of a trained person with experience in water treatment for the purpose of controlling and limiting corrosion and deposits.~~

~~8.4.1.2 Record keeping available for review showing:~~

~~8.4.1.2.1 The date and time boiler is out of service and the reason therefore.~~

~~8.4.1.2.2 Daily analysis of water samples that will adequately show the condition of such water and any elements or characteristics which are capable of producing corrosion or other deterioration of the boiler or its parts.~~

~~8.4.1.3 — Annual external inspections performed by an Inspector with review of records in 8.4.1.1 and 8.4.1.2 above and enter results in comments section of his report.~~

~~8.4.1.4 — Applicable NDE, if required by the Inspector. Records are to be maintained at least six (6) years. In order to qualify for such an extension, a written request to the Manager of the Boiler Safety Program must be made. This extension, when granted, is good until revoked.~~

~~8.4.2 — The Manager of the Boiler Safety Program upon written requests may grant other extensions from the owner user with approval of the AIA.~~

~~8.5 — Condemned boiler or pressure vessel~~

~~8.5.1 — This is a vessel that is declared unsafe by an Inspector, due to an irreversible defect, and removed from service. It shall be stamped as follows:~~

~~8.5.1.1 — XXXDELXXX adjacent to original stamping~~

~~8.6 — The inspections required by this Section shall be made by the Chief inspector, by a Deputy Inspector, an Owner/User inspector, or by a Special Inspector.~~

~~8.6.1 — If an owner or user of equipment, specified by this Section, obtains an insurance policy on such equipment from an insurance company licensed by the Delaware Insurance Commissioner's Office to insure boilers and pressure vessels, the Special Inspector employed by that insurance company shall conduct the inspection required by this Section.~~

~~8.6.2 — An Inspector employed by an Owner User or a State of Delaware Owner/User may conduct the inspections on pressure vessels owned by that company in lieu of a State or Insurance Company Inspector.~~

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9.0 — Certificate of Inspection

~~9.1 — Issuance of Certificate~~

~~9.1.1 — If upon making the required inspection, the Inspector finds the boiler, pressure vessel or nuclear installation to be in a safe working order, including all necessary safety devices shall submit a report to the Boiler Safety Program. When the Boiler Safety Program receives the report, either electronically or upon receipt of the inspection report (hard copy) from said Inspector, and the fee mentioned hereafter paid, shall issue a Certificate of Inspection. The certificate shall be posted on or near the object.~~

~~9.1.2 — At the time of the first inspection, the Inspector shall assign the Delaware State Number (sequential number on seal) and leave a decal at the site.~~

~~9.1.3 — On subsequent inspections, the Inspector will attach the decal to the Certificate of Inspection. Any corrections or changes to this inspector's request form will be circled and changes noted and returned to the Boiler Safety Program. If reports are submitted electronically, no decals or hard copies of report have to be submitted to the Boiler Safety Program.~~

~~9.1.4 — In the event of a violation of these regulations or unsafe condition, the Inspector will indicate on the decal the object "failed" and return the inspection request to the Boiler Safety Program. No decal or hard copy of report is required to be submitted if the report is submitted electronically. A decal marked "failed" will be left at location if object does not meet requirements for issuance of a certificate.~~

~~9.2 — Certificates for boilers, pressure vessels or nuclear installations. Every Inspector inspecting boilers, pressure vessels or nuclear installations in the State of Delaware shall file with the Manager of Boiler Safety Program the applicable inspection report within thirty (30) days, after the date of inspection. The report can submitted either electronically or by a hard copy.~~

~~9.3 — Certificate withdrawn, withheld, or revoked. If an Inspector finds that the boiler, pressure vessel or nuclear installation is not in safe working condition, or is not provided with the necessary safety appurtenances, or if the appurtenances are improperly arranged, the inspector shall immediately notify the owner or user, and the person in charge of the boiler, of the code violations. He shall report the same to the Manager of Boiler Safety Program. The owner and/or user shall not operate it or permit it to be operated, until such Certificate has been granted or restored.~~

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10.0 — Safety and Relief Valves and Rupture disks.

~~10.1 — Installation of pressure relief valves, safety valves and rupture disks shall be in accordance with the appropriate Section of the ASME Code. A hot water supply boiler, including lined water heaters stamped HLW shall have a pressure temperature relief valve marked 210 F.~~

~~10.2 — When any of the safety/relief valves require repairs or adjustments, these adjustments must be made by the manufacturer or an appropriate "VR" stamp repair company, and tested either before reinstallation or immediately upon placing the boiler, pressure vessel or nuclear installation in service.~~

~~10.3 — No person shall load or adjust safety/relief valves in any matter to maintain a working pressure in excess of that stated on the certificate of inspection.~~

~~10.4 — The owner/user shall assure that the safety valve(s) is functional at all times.~~

~~10.5 — All low pressure boiler safety and relief valves shall be determined to be functional at time of inspection.~~

~~10.6 — All high pressure boiler safety valves shall be hand tested or bench tested for set pressure and blowdown at the time of inspection or within the maximum allowable inspection interval provided by these regulations. In~~

lieu of bench testing, the hydraulic lift system is acceptable. All high-pressure boiler safety valves for pressures over 400 PSIG shall be overhauled every five(5) years.

- 10.7 All pressure vessel relief valves shall be hand tested or bench tested for set pressure at the time of inspection or within the allowable inspection interval permitted by these regulations. In lieu of bench testing, the hydraulic lift system is acceptable. The frequency may be extended when supported by performance records of the individual user. For liquids or gasses, which are hazardous or costly and in-service testing is impractical, bench testing/ replacement frequency shall be done every five (5) years and documented.
- 10.8 Bench testing is only acceptable if the bench testing apparatus can deliver proper pressure and volume. Sufficient volume should be enough to lift the pressure relief valve fully open.
- 10.9 Pressure vessel relief valves on installations must be overhauled or replaced every four (4) years where there is documented corrosion, deterioration of valve parts, product build up, or the possibility of plugging in the inlet or outlet, or sticking of the disc to the seat.
- 10.10 Thermal Fluid Heaters shall be equipped with Pressure Relief Devices that meet the requirements of ASME Section I Part PVG or ASME Section VIII as determined by the Department.

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11.0 Antique Boilers

- 11.1 Antique boilers include any closed vessel manufactured prior to January 1, 1924, and used solely for display and demonstration purposes, in which water is heated or steam is generated by the direct application of heat from the combustion of fuels.
 - 11.1.1 An AI shall inspect antique boilers and remaining material thickness will be determined by a method acceptable to the AI. The MAWP based on these Rules and Regulations, as determined by a Registered Professional Engineer knowledgeable in power boiler fabrication, shall be submitted to the Manager of Boiler Safety Program for his review and acceptance.
 - 11.1.2 All antique boilers shall be inspected annually and shall include the following:
 - 11.1.2.1 A hydrostatic test at 1 1/4 times the MAWP
 - 11.1.2.2 ASME approved fusible plug installed and in good condition. Fusible plug shall be replaced annually.
 - 11.1.2.3 A safety valve meeting current ASME and National Board requirements set at or below the MAWP, with required relieving capacity, and tested, as required by these regulations. The seals on the valve shall be intact. The outlet of safety valve shall be piped to a safe point of discharge.
 - 11.1.2.4 A visual examination for any evidence of corrosion or leakage to include the boiler piping up to the first valve.
 - 11.1.2.5 Thickness readings shall be taken at the time of the first inspection, and every two years thereafter to determine the amount of corrosion of metal.
 - 11.1.2.6 Any other requirements specified in the Division Boiler Safety Program's regulations.
 - 11.1.2.7 Ultrasonic thickness testing of boiler shall be performed every 4 years and the results recorded and maintained for review by the inspector.
 - 11.1.3 Approval for operation of an antique boiler will be granted upon successful completion of the above inspection requirements and payment of the fee required. A Certificate will be issued and shall be valid for a period not to exceed 12 months. A fee of \$15.00 shall be charged for inspections and a fee of \$15.00 shall be charged for the certificate. A current operating certificate shall be posted while in operation.
 - 11.1.4 Alternate approval may be given to operate an antique boiler having a valid certificate from another State, whose requirements have been determined by the Boiler Safety Program to meet or exceed the current Edition and Addenda of the NBIC and these requirements.
 - 11.1.5 Request for approval must be submitted 30 days prior to operation.

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12.0 Repairs or Alterations by Fusion Welding

- 12.1 Repairs and alterations to boilers and pressure vessel shall comply with:
 - 12.1.1 The original construction standard, or later editions of the construction standard,
 - 12.1.2 The latest accepted edition of the National Board Inspection Code, and
 - 12.1.3 These Rules & Regulations.
- 12.2 All repairs or alterations to boilers, pressure vessels or piping within jurisdictional limits, shall be approved by a Delaware commissioned AI and performed under his guidance.
- 12.3 The organization making the repair or alteration shall possess a valid National Board Repair Certificate of Authorization
 - 12.3.1 National Board Repair Certificate of Authorization is required for any repair or alteration work performed in or out of the manufacturer's premises.
 - 12.3.2 Design changes shall be certified by an organization having an approved Q.C. Program, which includes control of drawings, design calculations and specifications. These controls shall meet or exceed ASME requirements.
 - 12.3.3 The work shall be within the scope of their Q.C. program.

- ~~12.4 An R1 "Record of Welded Repair" shall be filed with the Boiler Safety Program with the Delaware jurisdiction number clearly identified.~~
- ~~12.5 An R2 "Report of Alteration" with a copy of the manufacturer's data report shall be filed with the Boiler Safety Program, with the Delaware jurisdiction number clearly identified.~~
- ~~12.6 Repairs of a routine nature as defined by the NBIC need not have a "Report of Welded Repair" submitted to the Manager of Boiler Safety Program, but this repair documentation must be retained by the owner/user as long as the object remains in service. "Routine Repair" shall be entered in "Remarks" section of the R-1 Form.~~
- ~~12.7 Lap Seam Cracks. The shell or drum of a boiler or pressure vessel in which a lap seam crack is discovered along a longitudinal riveted joint shall be immediately condemned and permanently removed from service. Repairs of this type defect are prohibited.~~
- ~~12.8 Riveted Patches. In applying riveted patches, the design of the patch and method of installation shall be in accordance with the NBIC, 1973 edition.~~
- ~~12.9 Repair, modification or replacement of nuclear components. Repair, modification or replacement of nuclear components shall be made only by an organization which holds a valid Certificate of Authorization for use of the appropriate National Board nuclear "NR" symbol stamp. Repair, modification or replacement of ASME stamped "NV" pressure relief valves shall be made only by an organization which holds valid National Board Certificates of Authorization for use of the "NR" and "VR" symbol stamps.~~
- ~~12.10 Restamping of Boilers and Pressure Vessels shall be in accordance with the current Edition of the NBIC and jurisdictional requirements.~~

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13.0 Fees

~~13.1 Inspection and certificate of inspection fees:~~

~~13.1.1 The owner and/or user of a boiler, pressure vessel or nuclear installation required to be inspected under these Rules & Regulations shall pay the required fees.~~

~~13.1.2 All checks should be made payable to the Boiler Safety Program and sent directly to the office by the owner and/or user.~~

~~13.2 Certificate of Inspection Fees. Boiler and pressure vessel certificate fees are \$7.50 annually.~~

~~13.3 Inspection Fees:~~

~~13.3.1 Power Boilers & High Pressure/High Temperature Hot Water Boilers:~~

Internal inspection under 5 HP	\$15.00
5 HP up to 99 HP	\$25.00
99 HP up to 200 HP	\$35.00
Over 200 HP, on an hourly basis with a minimum of	\$50.00
External Inspection	\$15.00
Heating Boilers and Hot Water Supply Boilers:	
Without a manhole:	\$15.00
With a manhole:	\$25.00
Water heater	\$10.00

~~13.3.2 Pressure Vessels. The required inspection fee shall be based on the cross sectional area in square feet obtained by multiplying the external diameter of the vessel in feet by the external length of the vessel in feet.~~

Fifty (50) square feet or less	\$10.00
Each additional 100 square feet or fraction thereof in excess of 50 square feet	\$20.00

~~A group of pressure vessels such as rolls of a paper machine or a dryer operating as a single machine or unit shall be considered as one pressure vessel and the inspection fee shall be based on the actual hourly inspection time.~~

~~13.3.3 Hydrostatic tests. When it is necessary to make a special trip to witness the application of a hydrostatic test, the fee for such service shall be based on the actual hourly inspection time including travel. The entire expense of applying the hydrostatic test shall be borne by the owner and/or user.~~

~~13.3.4 Nuclear Installations. The inspection fee is based on actual hourly inspection time at an hourly or daily rate determined by the Manager of the Boiler Safety Program, dependent on the type of qualified personnel necessary to perform the required safety inspections.~~

~~13.3.5 Shop Reviews. A fee of \$1500 per ASME and National Board "R" review requires a team leader and if available, a jurisdictional representative to be present. A fee of \$800 per review, if only a National Board "R" authorization is requested.~~

~~13.4 Miscellaneous Fees:~~

Inspectors Commission Fees	
National Board Examination,	
Delaware Resident	\$75.00
Non-Delaware Resident	\$150.00
Examination for a Delaware Inspector Commission	\$50.00
Biennial (2 yr.) Commission Credential card renewal	\$25.00
Replacement of lost or destroyed Commission	\$20.00
Permit for State Special	
Boiler or Pressure Vessel	\$500.00 minimum
Nuclear installation	\$2000.00 minimum

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~~14.0 Gas Water Heaters Suitable For Potable Water And Space Heating~~

~~14.1 Units Covered~~

~~14.1.1 Gas water heaters, which are suitable for potable water and space heating, shall be covered by this Section provided the water heater does not exceed any of the following limitations:~~

~~14.1.1.1 Maximum heat input of 200,000 BTU per hour or 58,600 watts;~~

~~14.1.1.2 Maximum water temperature limit of 210 degrees Fahrenheit (99 degrees Celsius); or~~

~~14.1.1.3 Nominal water containing capacity of 120 gallons (454.2 L).~~

~~14.1.2 This Section shall cover the water heater, heat exchanger, coil or any other device connected directly or indirectly to the water heater and used to supply potable hot water and space heating.~~

~~14.2 Gas Water Heaters Suitable for Potable Water and Space Heating with Input Ratings of 75,000 BTU per Hour or less. In addition to the requirements in section 14.1 of this Section, gas water heaters suitable for potable water and space heating with input ratings of 75,000 BTU per hour or less shall also be constructed and installed in accordance with the American National Standard for Gas Water Heaters, Volume 1, ANSI Z21.10.1, current edition and addenda, including, but not limited to Z21.10.1a, current edition and addenda, as well as all applicable Federal, State and local laws and regulations. Water heaters covered by this Section are not required to be constructed to the standards set forth in Section IV, ASME Boiler and Pressure Vessel Code, except to the extent required by ANSI Z21.10.1, current edition and addenda.~~

~~14.3 Gas Water Heaters Suitable for Potable Water and Space Heating with Input Ratings in excess of 75,000 BTU per Hour but with a Maximum of 200,000 BTU per Hour. In addition to the requirements of 14.1 of this Section, gas water heaters suitable for potable water and space heating, with input ratings in excess of 75,000 BTU per hour, but not more than 200,000 BTU per hour, shall be constructed and installed in accordance with the American National Standard for Gas Water Heaters, Volume III, ANSI Z21.10.3 current edition and addenda, as well as applicable Federal, State and local laws and regulations.~~

~~14.4 Limitations~~

~~14.4.1 All units covered by this Section shall not be connected to any existing nonpotable water heating system.~~

~~14.4.2 No more than one (1) unit covered by this Section shall be connected to a circulating system.~~

~~14.4.3 This Section shall not apply to closed loop systems.~~

~~14.5 Inspection~~

~~14.5.1 Exemption from field inspection of units covered by this Section shall be governed by 29 Del.C. §8210.~~

~~14.5.2 These exempt water heaters shall be equipped with ASME Code approved pressure/temperature relief valves.~~

~~14.6 Oil fired combination service water heating or space heating equipment shall meet the requirements of the ASHRAE/IES 90.1, current edition and addenda.~~

~~15.0 Jacketed Cooking Kettles~~

~~15.1 Fired jacketed cooking kettles built to ASME Section VIII Division 1 shall meet the requirements of ASME Section VIII Division 1 Appendix 19:~~

- ~~15.1.1 No steam or water shall be withdrawn from the jacket for use external to the vessel and operating pressure of the jacket shall not exceed 50 psi.~~
- ~~15.1.2 An ASME approved relief valve shall be installed set at or below the allowable working pressure of the jacketed cooking kettle with the minimum relieving capacity as required by the manufacturer.~~
- ~~15.1.3 There shall be a pressure gage installed on the jacket.~~
- ~~15.1.4 There shall be a water gage glass; or alternatively, for electrically heated jacketed steam kettles with immersion type heating elements, a low level warning light.~~
- ~~15.1.5 There shall be a separate connection, fitted with a stop valve, for venting air or adding water to the jacket (the water may be added while the vessel is not under pressure).~~
- ~~15.1.6 There shall be an electric heater control or automatic gas valve controlled by pressure to maintain the steam pressure in the jacket below the safety valve setting.~~
- ~~15.1.7 There shall be a low water cutoff that will cut off the fuel to the burner or power to the heating elements on a low water condition.~~

~~16 DE Reg. 786 (01/01/13)~~

~~16.0 — Variances~~

~~The Manager of the Boiler Safety Program shall have the authority to grant a variance, on a case by case basis, to those rules and regulations that pertain to the installation of new boilers to replace existing boilers. The variance shall be in writing describing all pertinent information regarding the variance requested and the reason for the request.~~

~~16 DE Reg. 786 (01/01/13)~~

~~17.0 — Complaints~~

~~When the Boiler Safety Program receives a complaint a boiler or pressure vessel is being operated in an unsafe condition or does not meet codes, an investigation shall be conducted by either a State Deputy Boiler Inspector, or by the inspector employed by the insurance company carrying boiler machinery insurance on the object. A report will be submitted to the Manager of the Boiler Safety Program, and appropriate action will be taken depending on the conditions found.~~

~~16 DE Reg. 786 (01/01/13)~~

~~18.0 — Code Variations (the following are code variances)~~

~~The application of a NB number to a boiler or pressure vessel after it has been placed in service is not permitted without prior approval of Boiler Safety.~~

~~16 DE Reg. 786 (01/01/13)~~

~~19.0 — Delaware Owner/User Agency and Inspectors~~

~~19.1 Owner/User Inspector. The Manager shall, upon the request of any company maintaining a Delaware Owner/User Inspection Agency and operating pressure vessels in this State, issue an Owner/User Commission to an inspector that meets the requirements stated in 20.2, the inspector is continuously employed by the company, and satisfactorily passes a written examination based on the requirements of the latest Edition of the Rules and Regulations of the Boiler Safety Program.~~

~~19.2 — Examination for Certificate of Competency~~

~~19.2.1 Examination for a certificate competency as a Delaware Owner/User inspector of pressure vessels shall be held at the office of the Boiler Safety Program or at any location selected by the Manager of the Boiler Safety Program.~~

~~19.2.2 An applicant for an examination shall have education and experience equal to at least one of the following:~~

~~19.2.2.1 A degree in mechanical engineering plus one year experience in the design, construction, operation, or inspection of high pressure boilers, pressure vessels, or nuclear installations.~~

~~19.2.2.2 A degree in a branch of engineering, other than mechanical engineering, plus (2) years of experience in the design, construction, operation or inspection of high pressure boilers, pressure vessels, or nuclear installations.~~

~~19.2.2.3 The equivalent of a high school education plus three (3) years of experience (1) in high pressure boiler, pressure vessel, nuclear construction or repair or (2) as an operating engineer in charge of a high pressure boiler, pressure vessel, or nuclear installation operation; or (3) as an inspector of high pressure boilers, pressure vessels, or nuclear installations.~~

~~19.2.3 Applications for examination shall be in writing on a form furnished by the Boiler Safety Program stating the school education of the applicant, a list of employers, period of employment and position held with each employer. Applications containing willful falsifications or untruthful statements will be rejected. If the applicant's history and experience meet with the approval of the Manager of the Boiler Safety Program, the applicant shall be given a written examination dealing with the construction, installation, operation, maintenance, repair and inspection of boilers, pressure vessels, and nuclear installations and their appurtenances. The applicant shall be accepted or rejected on the merits of this examination. If the applicant is successful in meeting the requirements of the examining Board, a Certificate of Competency will be issued by the Manager of the Boiler Safety Program.~~

~~19.3 — Owner/User Inspection Agency~~

~~19.3.1 Within 6 months of the effective date of these regulations, any company which maintains a regularly established inspection department in the State of Delaware, has a written Quality Control manual that is accepted by the Manager of the Boiler Safety Program and reviewed every three years, employs owner/user inspectors qualified under the provisions of 20.1.1, and desires to inspect pressure vessels for its own use and operation in the State of Delaware shall apply on its letterhead requesting registration.~~

~~19.3.2 An Owner/User Inspection Agency shall only be authorized to do in-service inspections of pressure vessels it owns and operates in the State of Delaware and not available for re-sale.~~

~~19.3.3 The Quality Control Manual shall contain:~~

~~19.3.3.1 Title Page~~

~~19.3.3.2 Contents Page~~

~~19.3.3.3 Scope of Work~~

~~19.3.3.4 Statement of Authority and Responsibility~~

~~19.3.3.5 Organization~~

~~19.3.3.6 Inspection Methods~~

~~19.3.3.7 Reporting~~

~~19.3.3.8 Training~~

~~19.3.3.9 Control of Contract Services~~

~~19.3.3.10 Exhibits~~

~~16 DE Reg. 786 (01/01/13)~~

~~20.0 — Non-traditional Inspection Agency~~

~~20.1 Non-traditional Inspection Agencies shall maintain a valid Delaware Business License to perform work required by these regulations in the State of Delaware.~~

~~20.2 Non-traditional Inspection Agencies shall maintain two million dollars of Professional Liability Insurance and submit documentation of this insurance to the Boiler Safety Program annually to perform work required by these regulations in the State of Delaware.~~

~~20.3 The State of Delaware Boiler Safety Program shall maintain a list of approved Non-traditional inspection agencies and only those approved by the State of Delaware's Boiler Safety Program shall perform work required by these regulations in the State of Delaware.~~

~~20.4 Non-traditional Inspection Agencies shall only perform inspections at un-insured locations; or at locations where the Non-traditional Inspection Agency is a contractor to an insurance company.~~

~~20.5 The DNREC Boiler Safety Program shall have the right to audit a Non-traditional Inspection Agency and revoke their approval based on just cause.~~

~~16 DE Reg. 786 (01/01/13)~~

~~21.0 — Severability~~

~~If any part of these Rules and Regulations are held invalid, unconstitutional, or otherwise contrary to law, then it shall be severable and the remaining portions hereof shall remain and continue in full force and effect.~~

~~5 DE Reg. 1128 (11/1/01)~~

~~16 DE Reg. 786 (01/01/13)~~

~~5 DE Reg. 1128 (11/1/01)~~

~~16 DE Reg. 786 (01/01/13)~~

4.0 Program Administration

4.1 General Requirements for Owners or Users of Boilers or Pressure Vessels

4.1.1 An owner or user shall immediately notify the Department's Boiler Safety Program of any accident that renders a boiler or pressure vessel inoperative. No boiler, pressure vessel, or parts thereof involved in the accident shall be removed or disturbed before an investigation can be conducted, except for the purpose of conserving human life and limiting consequential damage.

4.1.2 The owner or user shall document when a standard boiler, pressure vessel, or nuclear component is to be moved outside of this jurisdiction for repair, alteration, or modification.

4.1.2.1 The owner or user shall document such action on the appropriate "R" form from the National Board.

4.1.2.2 All "R" forms must be submitted to the Department's Boiler Safety Program 15 days prior to removal from this jurisdiction.

4.1.2.3 No forms are required to be submitted to the Department for routine repairs.

4.1.3 Owners may apply for a variance in writing, providing all pertinent information including the purpose for the variance request.

4.2 General Requirements for Delaware Owner/User Inspection Agency

4.2.1 Within 6 months of the effective date of this regulation, any company which maintains a regularly established inspection department in the State of Delaware and desires to conduct inservice inspections on pressure

vessels unavailable for resale and for its own use and operation shall request on company letterhead its intent to register to operate within the State of Delaware. The company shall provide the following:

4.2.1.1 A written Quality Control Manual for review and approval by the Department, to be reviewed every three years thereafter; and

4.2.1.2 Evidence that the agency limits employment to owner/user Inspectors with a Delaware Certificate of Competency.

4.2.2 The Department's Boiler Safety Program shall, upon the request of any company maintaining a Delaware Owner/User Inspection Agency registration that operate pressure vessels in this State, issue an Owner/User Delaware Commission to Owner/User Agency Inspectors when the following conditions are met:

4.2.2.1 The Inspector meets the Certificate of Competency requirements in accordance with subsection 4.4 of this regulation;

4.2.2.2 The Inspector is continuously employed by the company; and

4.2.2.3 The Inspector satisfactorily passes a written examination based on the requirements of this regulation.

4.2.3 The Quality Control Manual must contain the following:

4.2.3.1 Title Page. The title page must contain the company name, physical address, and scope of activities. It may also contain any other information desired by the inspection organization.

4.2.3.2 Table of Contents. Provide a list of headings and associated page numbering.

4.2.3.3 Scope of Work. The scope must identify the type and extent of inspection activities intended by the inspection organization. If, at any time, the scope of activities is changed, the manual must be revised to reflect that change.

4.2.3.4 Statement of Authority and Responsibility. The statement of authority must identify the authority and responsibility of those persons charged with ensuring the quality control manual is implemented as described, their freedom in the organization to identify quality problems, and to initiate, recommend, and provide solutions. It must also contain a statement of the full support of management and must be dated and signed by a senior manager official of the inspection organization. Resolution of disagreements between department heads shall be resolved in a manner that will not conflict with code, jurisdictional or quality control requirements.

4.2.3.5 Organization. An organizational structure is required showing the line of authority between management and the various individuals that perform functions described in the quality control manual. This may be in the form of a chart or descriptive text. The organizational structure should contain job titles of key personnel within the organization. In larger organizations, additional departmental structures are often desirable showing additional job titles referenced in the manual and to whom responsibilities are specifically assigned. Job titles used in the text of the manual must be consistent with those in the organizational structure.

4.2.3.6 Inspection Methods. The manual must describe the process of developing, approving, and controlling the written procedure covering the inspection of pressure retaining items, including the scope of expected activity. The method of performing and documenting inspection activities must be described in sufficient detail to permit the Inspector to determine at what stages specific inspections are due to be performed. When applicable, the program must describe the process of authorizing and accepting repairs, alterations, and replacements (including signing the NBIC report forms) when the organization is seeking to provide inspections of repairs, alterations, and replacements within the scope of their program.

4.2.3.7 Reporting. The manual must describe the process used by the Inspector to take necessary action if an unsafe condition is encountered and to resolve conflicts by referring to a higher authority within the organization.

4.2.3.8 Training. The type, extent, and frequency of inspector training must be included, as well as a description of the documentation used and retained. Areas which must be addressed include:

4.2.3.8.1 Orientation training for new Inspectors;

4.2.3.8.2 Periodic training for all Inspectors, including requirements for continuing education;

4.2.3.8.3 Specific topics, including as a minimum:

4.2.3.8.3.1 NBIC and its revisions;

4.2.3.8.3.2 Delaware requirements for commissioned Inspectors;

4.2.3.8.3.3 Any training required by the State of Delaware;

4.2.3.8.3.4 The inspection organization's quality control manual.

4.2.3.8.4 The method of training employed;

4.2.3.8.5 The method of evaluating the effectiveness of any training (examination, etc.); and

4.2.3.8.6 Training documentation, including:

4.2.3.8.6.1 Training schedules;

4.2.3.8.6.2 Course topics with summary; and

4.2.3.8.6.3 Verification of successful completion.

4.2.3.9 Control of Contract Services. The manual must describe the process for contracting and control of services if applicable.

4.2.3.10 Exhibits. When describing sample forms, provisions for controlling forms must be included in the manual. Forms should be identified by number, letter, or title and their use explained in the text of the manual. They may be included with each section or grouped together as an appendix or section. Forms shown should be marked "Sample" or "Exhibit" and are not required to be filled in or completed. All forms used in the

implementation of the organization's quality control program must be included in the manual. Titles of the forms used in the text must match the titles of those shown as samples or exhibits in the manual.

4.3 General Requirements for Non-traditional Inspection Agency

4.3.1 Non-traditional Inspection Agencies shall:

4.3.1.1 Maintain a valid Delaware Business License to perform work required by this regulation in the State of Delaware;

4.3.1.2 Maintain a minimum of 2 million dollars of professional liability insurance;

4.3.1.3 Submit insurance documentation to the Department on an annual basis; and

4.3.1.4 Only perform inspections at un-insured locations or at locations where the Non-traditional Inspection Agency is a contractor to an insurance company.

4.3.2 Only those agencies approved by the Department's Boiler Safety Program shall perform work required by this regulation.

4.3.3 The Department's Boiler Safety Program shall maintain the authority to audit a Non-traditional Inspection Agency and revoke Department approval based on this regulation.

4.4 General Requirements for all Inspectors:

4.4.1 Examination for Certificate of Competency

4.4.1.1 An applicant for an examination shall have either experience or education equal to at least 1 of the following:

4.4.1.1.1 A degree in mechanical engineering plus 1 year experience in the design, construction, operation, or inspection of high-pressure boilers, pressure vessels, or nuclear installations;

4.4.1.1.2 A degree in a branch of engineering other than mechanical engineering, plus 2 years of experience in the design, construction, operation or inspection of high-pressure boilers, pressure vessels, or nuclear installations;

4.4.1.1.3 The equivalent of a high school education plus 3 years of experience:

4.4.1.1.3.1 In high pressure boiler, pressure vessel, nuclear construction or repair; or

4.4.1.1.3.2 As an operating engineer in charge of high-pressure boilers, pressure vessels, or nuclear installation operations; or

4.4.1.1.3.3 As an inspector of high-pressure boilers, pressure vessels, or nuclear installations.

4.4.1.2 Applicants shall submit a request for an examination on a form furnished by the Department's Boiler Safety Program. The request for an examination must be submitted with the following:

4.4.1.2.1 Fee payment in accordance with subsection 4.10.5; and

4.4.1.2.2 National Board Commission card.

4.4.1.3 The Department's Boiler Safety Program shall issue a Certificate of Competency once the applicant receives a minimum exam score of 80%.

4.4.2 The Department's Boiler Safety Program may suspend or revoke an Inspector's Certificate of Competency or Delaware Commission after due investigation for willful falsification of an application, an inspection report, or for any other finding of improper conduct.

4.4.2.1 Written notice of any such suspension or revocation as required by 29 Del.C. §10131(c), shall be given by the Secretary or their designee, to the Inspector and their employer.

4.4.2.2 An Inspector whose Certificate of Competency or Delaware Commission has been suspended or revoked by the Department's Boiler Safety Program shall be given 10 days to appeal the decision to the Secretary. The notice of any proceedings will conform to 29 Del.C. §10122.

4.4.3 All Inspectors shall either submit or immediately report to the Department's Boiler Safety Program the following:

4.4.3.1 Completed boiler or pressure vessel inspection reports within 30 days of inspection;

4.4.3.2 The name and contact information of the owner or user who is operating any boiler or pressure vessel in an unsafe condition, detailing the unsafe condition;

4.4.3.3 All accidents involving boilers and pressure vessels when informed by the owner or user.

4.4.4 Insurance company Inspectors shall notify the Department's Boiler Safety Program of installations or operations where insurance is either accepted, refused, canceled, or suspended within 30 days of such action by the insurance company.

4.4.5 Shop inspections required by any applicable section of the ASME Boiler and Pressure Vessel Code must be conducted by an Inspector holding a valid AI commission issued by the National Board of Boiler and Pressure Vessel inspectors, maintain a valid "B" endorsement and possesses a Certificate of Competency card, issued by the Department's Boiler Safety Program. The same requirements apply to an AI inspecting nuclear components; however, maintaining a valid "N" endorsement rather than a "B" endorsement.

4.4.6 ASME and National Board Shop reviews must be conducted by an ASME representative, an NB representative, or the Department's Boiler Safety Program ASME designee.

4.4.7 No Inspector shall engage in the sale of any services, articles or devices relating to boilers, pressure vessels, or their appurtenances.

4.4.8 When the Department's Boiler Safety Program receives a complaint that a boiler or pressure vessel is being operated in an unsafe condition or does not meet codes, the State of Delaware Inspector or the Inspector employed by the insurance company carrying boiler machinery insurance shall conduct an investigation on the object.

Immediately thereafter, the Inspector shall prepare a report and document the findings to be submitted to the Department's Boiler Safety Program for further action or enforcement if appropriate.

4.5 Fees

4.5.1 The owner or user of a boiler, pressure vessel, or nuclear installation required to be registered and inspected in accordance with this regulation shall pay all required fees as outlined in this section.

<u>Annual Boiler and Pressure Vessel Certificate of Inspection</u>	<u>\$30.00</u>
<u>Power Boilers and High Pressure-High Temperature Hot Water Boilers:</u>	
<u>Internal inspection under 5 PH</u>	<u>\$60.00</u>
<u>5 HP up to 99 HP</u>	<u>\$100.00</u>
<u>99 HP up to 200 HP</u>	<u>\$140.00</u>
<u>Over 200 HP</u>	<u>\$200.00 hourly</u>
<u>External inspection</u>	<u>\$60.00</u>
<u>Heating Boilers and Hot Water Supply Boilers:</u>	
<u>Without a manhole</u>	<u>\$75.00</u>
<u>With a manhole</u>	<u>\$50.00</u>
<u>Water Heater</u>	<u>\$25.00</u>
<u>Pressure Vessels:</u>	
<u>50 square feet or less</u>	<u>\$50.00</u>
<u>Each additional 100 square feet or fraction thereof in excess of 50 square feet</u>	<u>\$20.00</u>
<u>Shop Review</u>	
<u>National Board "R" review</u>	<u>\$800.00</u>
<u>ASME and National Board "R" review; requires a team leader and if available, a jurisdictional representative</u>	<u>\$1500.00</u>
<u>Inspector Delaware Commission Fees:</u>	
<u>National Board Examination</u>	
<u>Delaware resident</u>	<u>\$75.00</u>
<u>Non-Delaware resident</u>	<u>\$150.00</u>
<u>Delaware Inspector Commission Examination</u>	<u>\$100.00</u>
<u>Delaware Commission Credential card renewal (every 2 years)</u>	<u>\$25.00</u>
<u>Replacement Delaware Commission card</u>	<u>\$20.00</u>
<u>Permit for State Special</u>	
<u>Boiler or Pressure Vessel</u>	<u>\$500.00</u>
<u>Nuclear Installation</u>	<u>\$2000.00</u>

4.5.2 Inspection fees for pressure vessels are based on the cross-sectional area in square feet obtained by multiplying the external diameter of the vessel in feet by the external length of the vessel in feet.

4.5.3 A group of pressure vessels such as rolls of a paper machine or a dryer operating as a single machine or unit shall be considered as one pressure vessel and the inspection fee shall be based on the actual hourly inspection time.

4.5.4 Hydrostatic testing fees are based on the actual hourly inspection time, including travel. The entire expense of conducting the hydrostatic test shall be borne by the owner or user.

4.5.5 The inspection fee for a nuclear installation is based on actual hourly inspection time at an hourly or daily rate, dependent on the type of qualified personnel necessary to perform the required safety inspections.

5.0 Installation and Maintenance

5.1 General Requirements

5.1.1 The installation of any boiler or pressure vessel within the scope of this regulation, and installed in a place of public assembly, shall be registered with the Department's Boiler Safety Program by the installer prior to operating the boiler or pressure vessel. The object may be operationally tested prior to obtaining a certificate.

5.1.2 A new boiler or pressure vessel installation, including a reinstalled or secondhand boiler or pressure vessel, must be installed in accordance with Section 3.0 of this regulation.

5.1.3 The installation or operation of nonstandard boilers, pressure vessels, or nuclear components is prohibited in this jurisdiction without prior registration and approval by the Department's Boiler Safety Program.

5.1.4 All boiler installations or pressure vessels must have a minimum of a 30-inch clearance on all sides, or the distance stated in the manufacturer's specifications.

5.1.5 All new and existing boiler installations must have a carbon monoxide alarm in the room where the boiler is located.

5.2 Power Boilers

5.2.1 Steel runways or platforms must be at least 24 inches wide, with standard handrails and toe boards on either side, and provide at least 7 feet 6 inches of head room. Such runways or platforms must be installed across the tops of adjacent boilers, or at some other convenient level, for the purpose of affording safe access to the boilers. All

runways must have at least 2 means of exit, each exit to be remotely located from the other and connected to a permanent stairway or inclined ladder leading to the floor level.

5.2.2 All boiler rooms exceeding 500 square feet of floor area and containing 1 or more boilers having a fuel burning capacity of 1,000,000 BTU's must have at least 2 means of exit, 1 of which must lead outside.

5.2.3 Explosion doors located in the setting walls, within 7 feet of the firing floor or operating platform, must be provided with substantial deflectors to divert the blast.

5.3 High Pressure Steam Boiler Blow Down Tanks and Receivers

5.3.1 A blow down tank must be used where conditions do not provide adequate and safe open discharge and must be placed between the boiler and the sewer or other such system. Blowdown piping from a power boiler must not discharge directly into a sewer or interconnected system.

5.3.2 A blowdown tank subject to possible maximum steam boiler pressure must be constructed for the boiler pressure and stamped in accordance with the ASME Code.

5.3.3 Atmospheric or vented blowdown tanks:

5.3.3.1 The outlet from the blowdown tank must be greater than or equal to twice the area of the boiler blowdown pipe and made to extend internally to within 6 inches of the bottom of the tank.

5.3.3.2 A vent pipe at least twice the diameter of the inlet must lead to the outside atmosphere. Vents must be as direct as possible to the outside atmosphere and discharge at a point 7 feet or more above grade. No valve, water pocket, or other obstruction is permitted in this line.

5.3.4 Centrifugal type separators:

5.3.4.1 Centrifugal type separators must be built and stamped in accordance with the ASME Code.

5.3.4.2 Separators may be used when a safe point of discharge is available and the pressure and temperature conditions at the point of discharge need not be considered.

5.3.4.3 Separators may be used as an auxiliary to a blowdown tank but may not be used in lieu of a conventional blowdown tank in those installations requiring a blowdown tank.

5.4 Nonstandard Boilers or Pressure Vessels

5.4.1 An owner or user shall submit a permit application to the Department's Boiler Safety program for a State Special permit prior to construction when a boiler, pressure vessel, or nuclear component is of special design and:

5.4.1.1 Is unable to be built to the ASME Code; and

5.4.1.2 Does not maintain an ASME Code symbol; and

5.4.1.3 National Board or User stampings.

5.4.2 A registered professional engineer, knowledgeable in the appropriate ASME Code shall prepare blueprints, design data, calculations and specifications, as part of the permit application.

5.4.3 Nonstandard high-pressure boilers, which were installed in the State of Delaware prior to January 1, 1924, will be subject to the rules of the ASME Boiler Code for calculations and installation.

5.4.4 Nonstandard pressure vessels installed prior to June 30, 1974, shall be calculated and installed in accordance with ASME Code Section VIII, in addition to the following:

5.4.4.1 The owner or user and the Inspector shall agree on what further nondestructive examination (NDE) will be required to verify the integrity of the vessel.

5.4.4.2 The internal maximum allowable working pressure on the shell of a nonstandard pressure vessel is determined by:

5.4.4.2.1 The strength of the weakest course computed from the thickness of the plate;

5.4.4.2.2 The tensile strength of the plate;

5.4.4.2.3 The efficiency of the longitudinal joint;

5.4.4.2.4 The inside diameter of the course; and

5.4.4.2.5 The factor of safety set by these rules.

5.4.4.3 The internal maximum allowable working pressure on the shell of a nonstandard pressure vessel is determined by the following equation:

$$\text{MAWP} = (\text{TS} \times t \times E) / (\text{R} \times \text{FS}).$$

5.4.4.3.1 MAWP is the Maximum Allowable Working Pressure measured in pounds per square inch gauge (PSIG).

5.4.4.3.2 TS is the ultimate Tensile Strength of the shell plate, measured in pounds per square inch (PSI). When the tensile strength of shell plate is unknown, 55,000 PSI for temperatures not exceeding 700°F will be taken.

5.4.4.3.3 t is the minimum thickness of the shell plate of weakest course measured in inches.

5.4.4.3.4 E is the efficiency of the longitudinal joint. The efficiency of a longitudinal joint depends on its construction. Use the calculated efficiency for riveted joints. Use the efficiencies listed below for fusion-welded and brazed joints.

Single Lap Weld	40%
Double Lap Weld	60%
Single Butt Weld	60%
Double Butt Weld	75%
Forge Weld	70%
Brazed Steel	80%

5.4.4.3.5 R is the inside Radius of the weakest course of the shell. When calculating the radius value, if the thickness of the radius exceeds 10% of the radius the outer radius must be used.

5.4.4.3.6 FS is the Factor of Safety permitted by this regulation. The minimum factor of safety may not be less than 4 for existing installations. The factor of safety may be increased when it is considered necessary by the Inspector to ensure the operation of the vessel within safe limits. The Inspector shall consider the condition of the vessel and the particular service to which it is subject.

5.4.4.4 The maximum working pressure for cylindrical nonstandard pressure vessels subject to external or collapsing pressure must be determined by the rules in the appropriate ASME Code Section VIII, Div. 1, 2, or 3.

5.4.5 When a nonstandard boiler, pressure vessel, or nuclear component is removed from this jurisdiction for reason other than repair or alteration, it shall not be brought back and installed within the State of Delaware.

5.4.6 A State Special number may be assigned by the Department's Boiler Safety Program to a boiler or pressure vessel of nonstandard design. All designs and specifications must be submitted to the Boiler Safety Program for approval and must include:

5.4.6.1 Drawings and calculations certified by a mechanical engineer from the original manufacturer, or a Delaware registered professional engineer; and

5.4.6.2 Material test reports certified by the original manufacturer or a material testing laboratory; and

5.4.6.3 Report of a pressure test certified by the owner and a Delaware commissioned Inspector; and

5.4.6.4 Report of an internal and external inspection by a Delaware commissioned Inspector; and

5.4.6.5 Establish that welding meets the requirements of the ASME Code.

6.0 Inspection Requirements

6.1 Access. The Secretary or the Secretary's designee shall have full and immediate access in accordance with Section 7403B during reasonable hours to locations where a regulated boiler, pressure vessel, or nuclear installation is in use to ensure regulatory compliance.

6.2 Inspection Frequency

6.2.1 High-pressure boilers, miniature boilers and high-pressure high temperature water boilers must be internally and externally inspected on an annual basis. The external inservice inspection should be done within 6 months of the internal inspection.

6.2.2 Low-pressure steam heating boilers, hot water heating boilers, hot water supply boilers, and lined water heaters, must be inspected every 2 years. This inspection may be an external inspection, unless the Inspector requires an internal inspection. The Inspector, due to operating conditions, may require additional inspections.

6.2.3 Every 4 years, pressure vessels must be inspected, either internally or externally, as determined by the Inspector. The Inspector may require additional inspections and limit the certificate of inspection to 2 years for safety purposes.

6.2.4 Thermal fluid heaters must be internally or externally inspected on an annual basis.

6.2.4.1 During the annual inspection, the Inspector shall review the relief devices' test history and safety controls.

6.2.4.2 The Inspector may require additional inspections due to conditions found.

6.2.5 Alternate Internal Inspection Frequency Requirements

6.2.5.1 The Department's Boiler Safety Program may extend high-pressure boiler and waste heat boiler internal inspections to 24 and 48 months respectively, when the following requirements are met:

6.2.5.1.1 Continuous water treatment under the general supervision of a trained person with experience in water treatment for the purpose of controlling and limiting corrosion and deposits; and

6.2.5.1.2 Record keeping submitted for review that shows the following:

6.2.5.1.2.1 The date, duration, and reason the boiler will be out of service; and

6.2.5.1.2.2 Daily analysis of water samples that adequately show the water sample condition, including elements or characteristics capable of producing corrosion or other deterioration of the boiler or its parts.

6.2.5.1.3 Annual external inspection documents performed by an Inspector detailing a records review specific to subsections 6.2.5.1.1 and 6.2.5.1.2 of this regulation; and

6.2.5.1.4 Applicable NDE, if required by the Inspector. Records must be maintained for a minimum of 6 years.

6.2.5.2 The Department's Boiler Safety Program may grant an extension to the inspection requirements with approval of the AIA upon request.

6.2.5.3 The owner or user shall submit a written request to the Department's Boiler Safety Program to be considered for such an extension. An owner or user shall reapply for an additional extension 30 days prior to the end date of the current extension.

6.2.5.4 All owners or users shall comply with all requirements associated with a requested extension. All extensions are subject to revocation by the Department's Boiler Safety Program if requirements are not met or maintained.

6.3 Certificate Inspections

6.3.1 Requirements for Owners or Users

6.3.1.1 Owners or users of boilers, pressure vessels, or nuclear installations shall continuously maintain a current certificate of inspection.

6.3.1.2 An owner or user shall ensure all boilers and pressure vessels are in operation during an external inspection to ensure proper operation of controls and safety devices.

6.3.1.3 The owner or user of a boiler or pressure vessel shall be responsible for all testing, including hydrostatic testing if the Inspector determines such testing is necessary to complete an inspection.

6.3.1.4 The owner or user of the boiler or pressure vessel shall be responsible for the removal of any covering to allow for an inspection to be conducted. If the covering cannot be removed at the time of inspection, the Inspector shall cease inspection of the boiler or pressure vessel until the covering can be removed for proper inspection.

6.3.1.5 The owner or user shall be responsible for correcting a violation or violations within 30 days of receipt of the violation notice and shall schedule a follow up inspection.

6.3.1.5.1 The owner or user shall not operate or permit the operation of the boiler, pressure vessel, or nuclear installation until an Inspector has conducted an inspection and determined the boiler, pressure vessel, or nuclear installation to be compliant with this regulation.

6.3.1.5.2 Owners and users shall be subject to enforcement actions in accordance with section 7405B when code violations remain after 30 days of the first day of the violation.

6.3.1.6 The owner or user of the boiler or pressure vessel shall post a legible certificate of inspection on or near the object.

6.3.1.7 All certificates of inspection expire on the last day of the expiration month displayed on the certificate.

6.3.2 Requirements for Inspectors

6.3.2.1 A State of Delaware Inspector, Owner/User Inspector, or Special Inspector shall conduct the inspections required by this section.

6.3.2.1.1 If an owner or user of an object obtains an insurance policy on said object or objects from an insurance company licensed by the Delaware Insurance Commissioner's Office, to insure boilers and pressure vessels, the Special Inspector employed by that insurance company shall conduct the inspection required by this section.

6.3.2.1.2 An Inspector employed by an Owner/User or a State of Delaware Owner/User may conduct the inspections on pressure vessels owned by that company in lieu of a State or Insurance Company Inspector.

6.3.2.2 At the time of the first inspection, all inspectors shall assign a Delaware State Registration Number and attach a tag provided by the Department's Boiler Safety Program with that number to the boiler or pressure vessel.

6.3.2.3 Every inspector shall submit the applicable inspection report to the Department's Boiler Safety Program within 30 days from the date of inspection.

6.3.2.4 An Inspector shall issue a decal bearing the date of the inspection and place the decal on the boiler or pressure vessel once the Inspector has inspected the boiler or pressure vessel and has determined it to be compliant with the requirements of this regulation.

6.3.2.5 An Inspector shall issue a decal marked "failed" in the event of a violation of this regulation or unsafe condition of the object and place the decal on the boiler, pressure vessel, or nuclear installation.

6.3.2.6 If an Inspector determines that a boiler, pressure vessel, or nuclear installation is in violation of this regulation, the Inspector shall notify the owner or user of the boiler, pressure vessel, or nuclear installation, and the Department's Boiler Safety Program of all code violations.

6.3.2.7 If, in the Inspector's judgement, a boiler, pressure vessel, or nuclear installation presents an imminent threat to human health, safety or property, the Inspector shall shut down the unit and place a "Do Not Operate" tag on the unit.

6.3.2.7.1 The operation or continued operation of a boiler, pressure vessel, or nuclear installation that presents an imminent threat to human health, safety or property shall subject the owner or operator to all appropriate legal actions including the provisions set forth in 7 Del.C. Ch. 74B, or 7 Del.C. Ch 60.

6.3.2.7.2 The boiler, pressure vessel, or nuclear installation that presents an imminent threat to human health, safety or property must remain shut down until a reinspection by the Inspector determines that the boiler, pressure vessel or nuclear installation may be operated safely.

6.3.2.8 The Inspector shall notify the Department's Boiler Safety Program when it has been determined that a boiler, pressure vessel or nuclear installation should be condemned. A State Inspector shall condemn a boiler or pressure vessel once an irreversible defect is identified and stamp the boiler or pressure vessel XXXDELXXX, adjacent to the original stamp, then immediately remove the boiler, pressure vessel or nuclear installation from service.

6.3.2.9 The Department's Boiler Safety Program shall issue a Certificate of Inspection to the owner or user upon receipt of all applicable fees and a satisfactory inspection report.

6.4 Jacketed Cooking Kettles

6.4.1 Fired jacketed cooking kettles built to ASME Section VIII Division 1 must meet the requirements of ASME Section VIII Division 1 Appendix 19:

6.4.1.1 No steam or water is permitted to be withdrawn from the jacket for use external to the vessel and operating pressure of the jacket must not exceed 50 psi.

6.4.1.2 An ASME approved relief valve must be installed set at or below the allowable working pressure of the jacketed cooking kettle with the minimum relieving capacity as required by the manufacturer.

6.4.1.3 A pressure gage must be installed on the jacket.

6.4.1.4 There must be a water gage glass; or alternatively, for electrically heated jacketed steam kettles with immersion type heating elements, a low-level warning light.

6.4.1.5 There must be a separate connection, fitted with a stop valve, for venting air or adding water to the jacket. The water may be added while the vessel is not under pressure.

6.4.1.6 There must be an electric heater control or automatic gas valve controlled by pressure to maintain the steam pressure in the jacket below the safety valve setting.

6.4.1.7 There must be a low water cutoff that will cut off the fuel to the burner or power to the heating elements on a low water condition.

6.5 Antique Boilers

6.5.1 Antique boilers include any closed vessel manufactured prior to January 1, 1924, and used solely for display and demonstration purposes, in which water is heated or steam is generated by the direct application of heat from the combustion of fuels.

6.5.2 Remaining material thickness will be determined by a method acceptable to the Delaware Commissioned Inspector.

6.5.3 A registered professional engineer knowledgeable in power boiler fabrication shall submit the maximum allowable working pressure (MAWP) to the Department's Boiler Safety Program for review and acceptance.

6.5.4 A Delaware Commissioned Inspector shall inspect antique boilers annually.

6.5.4.1 Inspections must include the following:

6.5.4.1.1 A hydrostatic test at 1 ¼ times the MAWP

6.5.4.1.2 An assessment of the ASME approved fusible plug. The plug must be installed, in good condition, and replaced annually.

6.5.4.1.3 An examination of the ASME and National Board approved safety valve. The valve must be set at or below the MAWP, appropriate relieving capacity, and tested in accordance with this regulation. The seals on the valve must be intact. The outlet must be piped to a safe point of discharge.

6.5.4.1.4 A visual examination for any evidence of corrosion or leakage to include the boiler piping up to the first valve.

6.5.4.1.5 Ultrasonic thickness readings at the time of the first inspection, and every 2 years thereafter, to determine the amount of metal corrosion.

6.5.4.1.6 Any other requirements specified in this regulation.

6.5.5 The Department's Boiler Safety Program will issue a Certificate of Inspection:

6.5.5.1 When all fees are received by the Department; and

6.5.5.2 When the Department receives an inspection report showing no violations;

6.5.6 The Certificate of Inspection will be valid for 12 months and must be posted in an obvious location while the boiler is in operation.

6.5.7 If an owner or user possesses a valid certificate to operate an antique boiler from another state, alternate approval may be granted by the Department if the Department's Boiler Safety Program determines the other jurisdiction's certificate requirements meet or exceed the current edition and addenda of the National Board and this regulation.

6.5.7.1 An owner or user shall not operate an antique boiler without Department approval.

6.5.7.2 An owner or user shall submit a request for alternate approval at least 30 days prior to the object's planned operation.

7.0 Safety and Relief Valves and Rupture Disks

7.1 Installation of pressure relief valves, safety valves and rupture disks shall be in accordance with the appropriate section of the ASME Code. A hot water supply boiler, including lined water heaters stamped HLW must have a pressure temperature relief valve marked 210°F.

7.2 When any of the safety or relief valves require repairs or adjustments, these adjustments must be made by the manufacturer or an appropriate "VR" stamp repair company and tested either before reinstallation or immediately upon placing the boiler, pressure vessel or nuclear installation in service.

7.3 No person shall load or adjust safety or relief valves in any manner to maintain a working pressure beyond what is identified on the Certificate of Inspection.

7.4 The owner or user shall continuously maintain functional safety valves.

7.5 All low-pressure boiler safety and relief valves must be functional at the time of inspection.

7.6 All high-pressure boiler safety valves must be hand tested or bench tested for set pressure and blowdown at the time of inspection or within the maximum allowable inspection interval provided by this regulation.

7.6.1 In lieu of bench testing, the hydraulic lift system is acceptable.

7.6.2 All high-pressure boiler safety valves for pressures over 400 PSIG shall be overhauled every 5 years.

7.7 All pressure vessel relief valves must be hand tested or bench tested for set pressure at the time of inspection or within the allowable inspection interval permitted by this regulation.

7.7.1 In lieu of bench testing, the hydraulic lift system is acceptable.

7.7.2 The frequency may be extended by the Inspector when supported by performance records of the individual user.

7.7.3 When liquids or gasses are hazardous, and inservice testing is impractical, bench testing or replacement frequency may be done every 5 years and must be documented.

7.8 Bench testing is only acceptable if the bench testing apparatus can deliver proper pressure and volume. Sufficient volume should be enough to lift the pressure relief valve fully open.

7.9 Pressure vessel relief valves on installations must be overhauled or replaced every 4 years where there is documented corrosion, deterioration of valve parts, product build up, or the possibility of plugging in the inlet or outlet or sticking of the disc to the seat.

7.10 Thermal Fluid Heaters shall be equipped with pressure relief devices that meet the requirements of ASME Section I Part PVG or ASME Section VIII as determined by the Department's Boiler Safety Program.

8.0 Repairs or Alterations

8.1 All repairs or alterations to boilers, pressure vessels or piping within jurisdictional limits, shall be approved by a Delaware commissioned AI and performed under their guidance.

8.2 The organization making the repair or alteration shall possess a valid National Board Repair Certificate of Authorization.

8.2.1 National Board Repair Certificate of Authorization is required for any repair or alteration work performed in or out of the manufacturer's premises.

8.2.2 Design changes shall be certified by an organization having an approved quality control program, which includes control of drawings, design calculations and specifications. These controls must meet or exceed ASME requirements.

8.2.3 The work must be within the scope of their quality control program.

8.3 The owner shall file an R1 "Report of Repair" form with the Department's Boiler Safety Program with the Delaware jurisdiction number clearly identified.

8.4 An owner does not need to file an R1 "Report of Repair" form with the Department's Boiler Safety Program if the repair is routine in nature as defined by the NBIC. The owner or user shall retain all repair documentation as long as the object remains in service. "Routine Repair" must be entered in the "Remarks" section of the R1 form. All repair documentation must be maintained and be made immediately available upon request of the Department.

8.5 The owner shall file an R2 "Report of Alteration" form with a copy of the manufacturer's data report to the Boiler Safety Program with the Delaware jurisdiction number clearly identified.

8.6 The owner, user, or Inspector shall immediately condemn and permanently remove a boiler or pressure vessel from service when a lap seam crack is discovered along a longitudinal riveted joint of the shell or drum of a boiler or pressure vessel. Repairs of this type are prohibited.

8.7 When applying riveted patches, the design of the patch and method of installation must be in accordance with subsection 3.2 of this regulation.

8.8 Restamping of boilers and pressure vessels must be in accordance with section 3.0 of this regulation.

8.9 Only an organization that holds a valid National Board certificate of authorization with the appropriate "NR" symbol stamp shall make repairs, modifications or replacements of nuclear components.

8.10 Only an organization that holds valid National Board certificates of authorization with the appropriate "NR" and "VR" symbol stamps shall make repairs, modifications, or replacements of ASME stamped "NV" pressure relief valves.