TITLE 13 – DEPARTMENT OF LABOR

Notice *is hereby given in accordance with G.S. 150B-21.2 that the Department of Labor intends to amend the rules cited as 13 NCAC 13 .0101, .0103, .0201-.0203, .0205, .0207, .0210, .0211, .0213, .0214, .0303, .0401, .0402, .0405, .0406, .0409, .0420, .0422, .0423, and .0701.*

Link to agency website pursuant to G.S. 150B-19.1(c): *https://www.labor.nc.gov/rules-and-regulations*

Proposed Effective Date: *April 1, 2022*

Public Hearing:
Date: *December 16, 2021*
Time: *9:00 a.m.*
Location: *Virtual:*
https://call.lifesizecloud.com/12081128;
https://skype.lifesizecloud.com/12081128;
(312) 584-2401, ext: 12081128

Reason for Proposed Action: *Amendments are proposed to increase inspection fees (13 NCAC 13 .0205; 13 NCAC 13 .0213; 13 NCAC 13 .0303); update terminology; make amendments to harmonize with national standards; update prices of standards that are incorporated by reference (13 NCAC 13 .0103); eliminate references to nuclear shop inspections; and make clarifying amendments.*

Comments may be submitted to: *Jill F. Cramer, 1101 Mail Service Center, Raleigh, NC 27699-1101; email jill.cramer@labor.nc.gov*

Comment period ends: *January 31, 2022*

Procedure for Subjecting a Proposed Rule to Legislative Review: If an objection is not resolved prior to the adoption of the rule, a person may also submit written objections to the Rules Review Commission after the adoption of the Rule. If the Rules Review Commission receives written and signed objections after the adoption of the Rule in accordance with G.S. 150B-21.3(b2) from 10 or more persons clearly requesting review by the legislature and the Rules Review Commission approves the rule, the rule will become effective as provided in G.S. 150B-21.3(b1). The Commission will receive written objections until 5:00 p.m. on the day following the day the Commission approves the rule. The Commission will receive those objections by mail, delivery service, hand delivery, or facsimile transmission. If you have any further questions concerning the submission of objections to the Commission, please call a Commission staff attorney at 984-236-1850.

Fiscal impact. Does any rule or combination of rules in this notice create an economic impact? Check all that apply.
☒ **State funds affected**
☒ **Local funds affected**
☐ **Substantial economic impact (>= $1,000,000)**
☒ **Approved by OSBM**
☐ **No fiscal note required**

CHAPTER 13 - BOILER AND PRESSURE VESSEL

SECTION .0100 - DEFINITIONS

13 NCAC 13 .0101 DEFINITIONS

The following definitions shall apply throughout the rules in this Chapter and shall be construed as controlling in case of any conflict with the definitions contained in ANSI/NB-23 National Board Inspection Code Parts ~~2 and 3,~~ 2, 3 and 4, The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, or The North Carolina State Building Code:

(1) "Accepted Design and Construction Code" means the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers (ASME Code), or a comparable code with standards that the Chief Inspector determines to be equivalent to the ASME Code.
(2) "Appurtenance" means any control, fitting, appliance, or device attached to or working in conjunction with the boiler proper or pressure vessel.
(3) "ASME Code" means the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers.
(4) "Audit" means activities, other than certificate inspections, conducted by the Chief Inspector or his designee. Audits include the following:
    (a) reviews ~~and surveys~~ for ASME and National Board ~~stamp~~ certificate issuance and renewal;
    (b) audits conducted of an authorized inspector at the location of a manufacturer or repair organization as may be required by the ASME Code, National Board Inspection Code, or National Board Rules for Commissioned Inspectors; and
    (c) audits pursuant to evaluation for the issuance of North Carolina Specials.

(5) "Automatically fired boiler" means a boiler that cycles in response to a control system and that does not require a constant attendant for the purpose of introducing fuel into the combustion chamber or to control electrical input. Electricity shall be considered a fuel for electrically fired boilers.

(6) "Authorized Inspection Agency" means an organization employing commissioned inspectors, including the following:
- (a) the Bureau, as defined in Item (11) of this Rule.
- (b) an inspection agency of an insurance company licensed to write boiler and pressure vessel insurance; or
- (c) an owner-user inspection organization that is accredited by the National Board.

(7) "Authorized inspector" means an employee of an Authorized Inspection Agency who is commissioned by the National Board and this State, holds an endorsement on his or her National Board Commission appropriate for the work to be performed, and inspects as the third party inspector in ASME Code manufacturing facilities.

(8) "Boiler," as defined in G.S. 95-69.9(b), includes the following types of boilers:
- (a) "Exhibition boiler" means a historical or antique boiler that generates steam or hot water for the purposes of entertaining or educating the public or is used for demonstrations, tourist transportation, or exhibitions. This term includes boilers used in steam tractors, threshers, steam powered sawmills, and similar uses;
- (b) "High pressure boiler" means a boiler in which steam or other vapor is generated at a pressure of more than 15 psig or water is heated to a temperature greater than 250°F and a pressure greater than 160 psig for use external to itself. High pressure boilers include the following:
  - (i) Electric boilers;
  - (ii) Miniature boilers;
  - (iii) High temperature water boilers; and
  - (iv) High temperature liquid boilers (other than water);
- (c) "Low pressure boiler" means a boiler in which steam or other vapor is generated at a pressure of not more than 15 psig or water is heated to a temperature not greater than 250°F and a pressure not greater than 160 psig, including the following:
  - (i) "Hot water heating boiler" means a low pressure boiler that supplies heated water that is returned to the boiler from a piping system and is used normally for building heat applications (hydronic boiler);
  - (ii) "Hot water supply boiler" means a low pressure boiler that furnishes hot water to be used externally to itself; and
  - (iii) "Steam heating boiler" means a low pressure boiler that generates steam to be used normally for building heat applications;
- (d) "Model hobby boiler" means a boiler that generates steam, whether stationary or mobile, and is used for the purpose of entertainment or exhibiting steam technology, where the boiler does not exceed:
  - (i) 20 square feet of heating surface;
  - (ii) a shell diameter of 16 inches;
  - (iii) a volume of 5 cubic feet; and
  - (iv) a pressure of 150 psig;
- (e) "Water heater" means a closed vessel in which water is heated by the combustion of fuel, by electricity, or by any other source and withdrawn for potable use external to the system at pressures not exceeding 160 psig and temperatures not exceeding 210°F.

(9) "Boiler blowoff" means the system associated with the rapid draining of boiler water to remove concentrated solids that have accumulated as a result of steam generation. This term also applies to the blowoff for other boiler appurtenances, such as the low-water fuel cutoff.

(10) "Boiler proper" or "pressure vessel" means the internal mechanism, shell, and heads of a boiler or pressure vessel terminating at:
- (a) the first circumferential joint for welded end connections;
- (b) the face of the first flange in bolted flange connections; or
- (c) the first threaded joint in threaded connections.

(11) "Bureau" means the Boiler Safety Bureau of the North Carolina Department of Labor.

(12) "Certificate inspection" means an inspection, the report of which is used by the Chief Inspector as justification for issuing, withholding, or revoking the inspection certificate. The term "certificate inspection" also applies to the external inspection conducted in accordance with this Chapter whether or not a certificate is intended to be issued as a result of the inspection.

(13) "Condemned boiler or pressure vessel" means a boiler or pressure vessel:
- (a) that has been found not to comply with G.S. Chapter 95, Article 7A, or this Chapter;
- (b) that constitutes a menace to public safety; and
- (c) that cannot be repaired or altered so as to comply with G.S. Chapter 95, Article 7A, and this Chapter.

(14) "Coil type watertube boiler" means a boiler having no steam space, such as a steam drum, whereby the heat transfer portion of the water-containing space consists only of a coil of pipe or tubing.

(15) "Commissioned inspector" means an employee of an Authorized Inspection Agency who is commissioned by the National Board and this State, holds an endorsement on his or her National Board Commission appropriate for the work to be performed, and who is charged with conducting in-service inspections of pressure equipment and inspecting repairs or alterations to that equipment.

(16) "Defect" means any deterioration to the pressure equipment affecting the integrity of the pressure boundary or its supports. Defects may be cracks, corrosion, erosion, bags, bulges, blisters, leaks, broken parts integral to the pressure boundary such as stays, or other flaws identified by NDE or visual inspection.

(17) "Deficiency" means any violation of the Uniform Boiler and Pressure Vessel Act, rules of this Chapter, or identified defects.

(18) "Design criteria" means design and construction code requirements relating to the mode of design and construction of a boiler or pressure vessel.

(19) "Equipment" means any boiler or pressure vessel subject to inspection by the Bureau, when the term applies as used.

~~(19)~~(20) "External inspection" means an inspection of the external surfaces and appurtenances of a boiler or pressure vessel. An external inspection may entail "shutting down" a boiler or pressure vessel while it is in operation, including inspection of internal surfaces, if the inspector determines this action is warranted.

~~(20)~~(21) "Hydropneumatic storage tank" means a pressure vessel used for storage of water at ambient temperature not to exceed 120°F and where a cushion of air is contained within the vessel.

~~(21)~~(22) "Imminent danger" means any condition or practice in any location that a boiler or pressure vessel is being operated such that a danger exists that could be expected to cause death or serious physical harm if the condition is not abated.

~~(22)~~(23) "Insurance inspector" means the special inspector employed by an insurance company, and holding a valid North Carolina Commission and National Board Commission.

~~(23)~~(24) "Internal inspection" means as complete an examination as can be made of the internal and external surfaces and appurtenances of a boiler or pressure vessel while it is shut down.

~~(24)~~(25) "Maximum allowable working pressure" or "MAWP" means the maximum gauge pressure as determined by employing the stress values, design rules, and dimensions designated by the accepted design and construction code or as determined by the Chief Inspector in accordance with this Chapter.

~~(25)~~(26) "Menace to public safety" means a boiler or pressure vessel that cannot be operated without a risk of injury to persons and property.

~~(26)~~(27) "Miniature boiler" means a boiler that does not exceed any of the following:

(a) 16 inch inside shell diameter;

(b) 20 square feet of heating surface (does not apply to electrically fired boilers);

(c) 5 cubic feet volume; and

(d) 100 psig maximum allowable working pressure.

~~(27)~~(28) "National Board Commission" means the commission issued by the National Board to those individuals who have passed the National Board commissioning examination and have fulfilled the requirements of the National Board Rules for Commissioned Inspectors.

~~(28)~~(29) "National Board Inspection Code" or "NBIC" means the ANSI/NB-23 standard published by the National Board, as incorporated by reference under Rule .0103 of this chapter.

~~(29)~~(30) "Nondestructive examination" or "NDE" means examination methods used to verify the integrity of materials and welds in a component without damaging its structure or altering its mechanical properties. NDE may involve surface, subsurface, and volumetric examination. Visual inspection, x-rays, and ultrasound are examples of NDE.

~~(30)~~(31) "Nonstandard boiler or pressure vessels" means:

(a) high pressure boilers contracted for or installed before December 7, 1935;

(b) heating boilers contracted for or installed before January 1, 1951;

(c) pressure vessels contracted for or installed before January 1, 1976;

(d) hydropneumatic storage tanks contracted for or installed before January 1, 1986; and

(e) boilers or pressure vessels to which the ASME Code is not intended to apply, other than those boilers and pressure vessels to which the term North Carolina Special applies.

~~(31)~~(32) "Normal working hours" means between the hours of 6:00 AM and 6:00 PM, Monday through Friday, except for State recognized holidays established in 25 NCAC 01E .0901.

~~(32)~~(33) "North Carolina Commission" means the commission issued by the Commissioner to those individuals who have passed the examination administered by the Chief Inspector relating to the Uniform Boiler and Pressure Vessel Act and the rules of this Chapter, and who also hold a National Board Commission, authorizing them to conduct inspections in this State.

~~(33)~~(34) "North Carolina Special" means a boiler or pressure vessel that is not constructed in compliance with the Accepted Design and Construction Code as defined in Item (1) of this Rule and for which the owner or operator shall apply for a special inspection certificate with the Chief Inspector.

~~(34)~~(35) "NPS" means nominal pipe size.

~~(35)~~(36) "Nuclear component" means the items in a nuclear power plant such as pressure vessels, piping systems, pumps, valves, and component supports.

~~(36)~~(37) "Nuclear system" means a system comprised of nuclear components that serve the purpose of producing and controlling an output of thermal energy from nuclear fuel and includes those associated systems essential to the function and overall safety of the power system.

~~(37)~~(38) "Operating pressure" means the pressure at which a boiler or pressure vessel operates. It shall not exceed the MAWP except as shown in Section I of the ASME Code for forced-flow steam generators.

~~(38)~~(39) "Owner or user" means any person or legal entity responsible for the operation of any boiler or pressure vessel installed in this State. This term also applies to a contractor, installer, or agent of the owner or user.

~~(39)~~(40) "Owner-user inspector" means an individual who holds a valid North Carolina Commission and National Board Commission and is employed by a company operating pressure vessels for its own use and not for resale and maintaining an inspection program that meets the requirements of the National Board for periodic inspection of pressure vessels owned or used by that company.

~~(40)~~(41) "Pressure piping" means piping, including welded piping, external to high pressure boilers from the boiler proper to the required valve(s).

~~(41)~~(42) "Pressure relief devices" mean the devices on boilers and pressure vessels set to open and relieve the pressure in the event of an over-pressurization event, and include the following:

(a) "Non-reclosing pressure relief device" means a pressure relief device designed to remain open after operation; and

(b) "Pressure relief valve" means a pressure relief device that is designed to reclose and prevent the further flow of fluid after normal conditions have been restored. These devices include:

(i) "Relief valve" means an automatic pressure relief valve that is actuated by static pressure upstream of the valve that opens further with the increase in pressure over the opening pressure;

(ii) "Safety relief valve" means an automatic pressure relief valve that is actuated by static pressure upstream of the valve and characterized by full opening pop action or by opening in proportion to the increase in pressure over the opening pressure; and

(iii) "Safety valve" means an automatic pressure relief valve that is actuated by static pressure upstream of the valve and characterized by full opening pop action.

~~(42)~~(43) "PSIG" means pounds per square inch gauge.

~~(43)~~(44) "Reinspection or Follow-Up Inspection" means an examination necessary to verify that any repair or corrective action required as a result of a certificate inspection is completed.

~~(44)~~(45) "Service vehicle" means a vehicle mounted with an air storage tank that services vehicles and equipment in the field away from the owner's shop.

~~(45)~~(46) "Shop inspection" means an inspection conducted by an Authorized Inspector or a Commissioned Inspector pursuant to an inspection service agreement whereby the fabrication process or the repair or alteration of a boiler or pressure vessel is observed to ensure compliance with the ASME Code and the ~~NBIC, including nuclear shop inspection where fabrication or material supply is done by the holder of an ASME "N" type certificate.~~ NBIC.

~~(46)~~(47) "Special inspection" means any inspection conducted by a Deputy Inspector other than a regularly scheduled inspection, including the performance of an inspection by a Deputy Inspector that requires that the inspector make a special trip to meet the needs of the individual or organization requesting the inspection, conducting certificate inspections during hours other than normal working hours, and inspection of field repairs and alterations. A special inspection may be considered any inspection or activity not otherwise described in these Rules.

~~(47)~~(48) "Special inspector" means a National Board commissioned inspector employed by an insurance company authorized to write boiler and pressure vessel insurance in the State of North Carolina.

~~(48)~~(49) "Violation" means the failure to comply with the requirements of the Uniform Boiler and Pressure Vessel Act or this Chapter.

History Note: *Authority G.S. 95-69.11; 95-69.14;*
Eff. May 29, 1981;
Temporary Amendment [(16)]; Eff. March 10, 1982, for a Period of 120 Days to Expire on July 8, 1982;
Amended Eff. March 1, 2017; March 1, 2015; July 1, 2011; January 1, 2009; July 1, 2006; January 1, 1995; January 1, 1987; January 1, 1986; June 1, 1982;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended Eff. April 1, 2022.

13 NCAC 13 .0103 INCORPORATED - STANDARDS

(a) The following standards are incorporated by reference, including subsequent amendments and editions of the standards:

(1) The ANSI/NB-23 National Board Inspection Code (NBIC) Parts ~~2 and 3.~~ 2, 3 and 4. Copies of the ANSI/NB-23 National Board Inspection Code Parts ~~2 and 3~~ 2, 3 and 4 are available for inspection at the offices of the Bureau and may also be obtained from the National Board of Boiler and Pressure Vessel Inspectors, via U.S. Mail at 1055 Crupper Avenue, Columbus, Ohio 43229 ~~43299~~, via telephone at (614) 888-8320, or via the internet at www.nationalboard.org. The ~~cost~~ costs, which does not include shipping and handling, ~~is~~ are as follows: ~~one hundred and fifty dollars ($150.00) per NBIC hard copy edition (complete set); sixty-five dollars ($65.00) for one part only; and one hundred and thirty dollars ($130.00) for two parts only, plus shipping and handling.~~

(A) Complete Set (printed or PDF), Parts 1-4: $325.00;

(B) Individual (printed), Part 2: $150.00;

(C) Individual (printed), Part 3: $150.00;

(D) Individual (printed), Part 4: $115.00; or

(E) Bundled Set (printed and PDF), Parts 1-4: $435.00.

(2) The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. Copies of the complete set of the ASME Code are available for inspection at the offices of the Bureau and may also be obtained from the American Society of Mechanical Engineers, via U.S. Mail at 150 Clove Road, 6th Floor, Little Falls, New Jersey 07424-2139, ~~P.O. Box 2300, Fairfield, New Jersey 07007-2300,~~ via telephone at (800) 843-2763, via facsimile at (973) 882-1717 or (800) 843-2763, ~~(973) 882-1170~~, via email at CustomerCare@asme.org ~~infocentral@asme.org~~, or via the internet at www.asme.org. The cost is ~~fourteen thousand five hundred dollars ($14,500)~~ seventeen thousand nine hundred and forty-five dollars ($17,945) for the complete 2021 edition of the code.

(3) The North Carolina State Building Code. Copies of the North Carolina State Building Code are available for inspection at the offices of the Bureau and may also be obtained ~~either~~ from the North Carolina Department of Insurance, Office

of the State Fire ~~Marshall~~ Marshal, ~~Engineering Division, Codebook Section, via walk in at 322 Chapanoke Road, Suite 200, Raleigh, North Carolina 27603, or from the International Code Council via telephone at (800) 786-4452 or via the internet at www.ncdoi.com/OSFM/Engineering/CodeServices/engineering_codeservices_sales.asp. The cost is one hundred sixteen dollars ($116.00) per copy~~ Engineering & Codes, 325 North Salisbury Street, Raleigh, North Carolina 27603. Information regarding cost of the publications may be obtained at the same address. Costs are based upon the cost to the N.C. Department of Insurance for publication, distribution, and annual revisions. The codes may be ordered via the internet at https://www.ncosfm.gov/codes.

(b) The rules of this Chapter shall control when any conflict between these Rules and the standards cited in Subparagraphs (a)(1) and (2) of this Rule exists. In the event that a conflict between these Rules and the North Carolina State Building Code exists, the more stringent standard prevails and shall be adhered to.

History Note: *Authority G.S. 95-69.11; 95-69.14;*
Eff. January 1, 1995;
Amended Eff. July 1, 2011; July 1, 2006;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended Eff. April 1, 2022.

SECTION .0200 - ADMINISTRATION

13 NCAC 13 .0201 NAME: ADDRESS

(a) The Boiler Safety Bureau, which administers the provisions of Article 7A of G.S. Chapter 95, is located in Raleigh at the following physical address:

N.C. Department of Labor
Boiler Safety Bureau
Old Revenue Building
111 Hillsborough Street
Raleigh, North Carolina 27603.

(b) All correspondence shall be addressed to the following mailing address:

North Carolina Department of Labor
Boiler Safety Bureau
1101 Mail Service Center
Raleigh, North Carolina 27699-1101
Telephone (919) 707-7918
Fax (919) ~~807-2762.~~ 707-7960.

History Note: *Authority G.S. 95-69.12;*
Eff. May 29, 1981;
Amended Eff. July 1, 2006; January 1, 1995; June 1, 1992;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, 2018;
Amended Eff. April 1, 2022; January 1, 2020.

13 NCAC 13 .0202 INSPECTOR QUALIFICATION

(a) Deputy Inspectors conducting certificate inspections shall be in possession of a valid North Carolina Commission. Special Inspectors and Owner-User Inspectors shall be in possession of a National Board Commission and a North Carolina Commission.

(b) A North Carolina Commission shall be issued to an inspector who:

(1) has attained a passing grade of 70 percent or higher on an examination administered by the Chief Inspector relating to the Uniform Boiler and Pressure Vessel Act and the rules of this Chapter; and

(2) meets all other criteria as set forth in the Uniform Boiler and Pressure Vessel Act and this Chapter.

(c) If a North Carolina Commissioned inspector does not conduct at least one certificate inspection in North Carolina per calendar year, the inspector must retake and pass this examination before becoming commissioned again in this state. A certificate inspection shall be an inspection as described in Rule .0211 of these Rules.

(d) National Board examinations are administered by the National Board of Boiler and Pressure Vessel Inspectors. ~~Inspectors through Applied Measurement Professionals ("AMP").~~ Information on the examinations may be found on the National Board web site at www.nationalboard.org or by telephone at (614) 888-8320.

(e) The National Board Inservice Inspector examination covers the installation, operation, ~~maintenance and repair~~ and inspection of boilers and pressure vessels and their appurtenances. A grade of 70 percent or higher must be attained to achieve a passing grade on the examination.

History Note: *Authority G.S. 95-69.11; 95-69.15;*
Eff. May 29, 1981;
Amended Eff. July 1, 2011; January 1, 2009; July 1, 2006; January 1, 1995; September 1, 1986;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended Eff. April 1, 2022.

13 NCAC 13 .0203 NORTH CAROLINA COMMISSION

(a) When requested by the employer and upon presentation of a completed Application for Commission as an Inspector of Boilers and Pressure Vessels, a North Carolina Commission, bearing the signature of either the ~~Commissioner,~~ Commissioner or Chief Inspector, shall be issued by the ~~Commissioner~~ Chief Inspector to persons holding a valid National Board Commission who have taken and passed the examination specified in 13 NCAC 13 .0202(b).
(b) Applications for a North Carolina Commission shall be processed upon proof of a National Board Commission and payment of a thirty-five dollar ($35.00) fee to the Department of Labor.
(c) North Carolina Commissions shall be valid through December 31 of each year, at which time the inspector's employer shall submit a renewal request letter and a thirty-five dollar ($35.00) fee to the Department of Labor.
(d) The North Carolina Commission shall be returned by the employing company with notification of termination date to the Bureau within 30 days of termination of employment.
(e) A North Carolina Commission may be suspended or revoked by the Commissioner in accordance with G.S. 95-69.11(20) if an inspector is incompetent or untrustworthy or has falsified any statement in an application or inspection report. The Commissioner shall give notice of the commencement of proceedings for suspension or revocation of a commission pursuant to G.S. 150B-23. A North Carolina Commission may be suspended prior to the hearing if the Chief Inspector determines that the public health, safety, or welfare requires the suspension. In this case, the proceedings shall be promptly commenced and determined in accordance with G.S. 150B-3. The Commissioner's decision regarding the competency of an inspector shall be determined after consideration of the knowledge, skill, and care possessed and employed by boiler and pressure vessel inspection personnel in good standing. Industry custom and practice shall be considered but are not determinative. Failure to conduct the inspections in accordance with this Chapter shall constitute incompetence. The Commissioner shall give the inspector opportunity to show that he or she is conducting his or her duties in a competent manner and that suspension or revocation is unwarranted. If the inspector believes that the decision of the Commissioner is not warranted, the inspector may take exception to the determination, in which event the inspector may appeal the final determination of the action pursuant to G.S. 150B.

History Note: *Authority G.S. 95-69.11; 95-69.15;*
Eff. May 29, 1981;
Amended Eff. March 1, 2017; March 1, 2015; July 1, 2011; January 1, 2009; July 1, 2006; January 1, 1995; March 2, 1992; September 1, 1986;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended April 1, 2022.

13 NCAC 13 .0205 OWNER-USER INSPECTION ORGANIZATION
(a) A company seeking to conduct inspections of its own pressure vessels shall file an application with the Chief Inspector, accompanied by the Certificate of Accreditation issued by the National Board as an Owner-User Inspection Organization.
(b) The company shall, in its application, designate a supervisor who shall be an engineer within its employ who, upon approval of the application, shall:
(1) ascertain that the company's inspectors, pursuant to Rules .0202 and .0203 of this Section, are issued National Board Commission cards;
(2) supervise inspections of pressure vessels and ensure that an inspection report, signed by the owner-user inspector, is filed at the equipment site;
(3) notify the Chief Inspector of any unsafe pressure vessel that presents a condition of imminent danger;
(4) maintain a master file of inspection records that shall be available for examination by the Chief Inspector or his representative during business hours and contain the following:
(A) identifying each pressure vessel by serial number and abbreviated description; and
(B) showing the date of the last and next scheduled inspection; and
(5) on a date agreed upon with the Chief Inspector, file an annual statement signed by the supervisor showing the number of boilers and certifying that each inspection was conducted pursuant to this Chapter, accompanied by an administrative fee of ~~twenty-five~~ fifty dollars ~~($25.00)~~($50.00) per vessel.
(c) Inspection certificates shall not be required for pressure vessels inspected under an owner-user program.

History Note: *Authority G.S. 95-69.11; 95-69.15; 95-69.16;*
Eff. May 29, 1981;
Amended Eff. March 1, 2017; March 1, 2015; January 1, 2009; July 1, 2006; January 1, 1995; March 2, 1992; September 1, 1986;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended Eff. April 1, 2022.

13 NCAC 13 .0207 INSPECTION REPORTS
(a) Inspectors shall file inspection reports with the Chief Inspector:
(1) within 10 working days after the date each ~~certificate inspection,~~ inspection is performed; ~~and~~
(2) immediately for all conditions of imminent danger, or any condition that would result in the insurance company's refusal to issue or continue an insurance policy on the boiler or pressure ~~vessel.~~ vessel; and
(3) shall include the insurance policy identifier covering any equipment inspected by a special inspector.
(b) Inspectors shall notify the Chief Inspector, in person or by electronic means, upon becoming aware of an accident which renders a boiler or pressure vessel inoperative or causes damage to property, personal injury, or death.

(c) Should the inspector, during the course of making an inspection, find a condition of imminent danger, he shall immediately notify the Chief Inspector, in person or by electronic means, so that steps might be taken to remove the device from service.

History Note: *Authority G.S. 95-69.11; 95-69.14;*
Eff. May 29, 1981;
Amended Eff. July 1, 2006; January 1, 1995;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended Eff. April 1, 2022.

13 NCAC 13 .0210 SHOP INSPECTIONS AND NATIONAL BOARD ~~R STAMP~~ "R" CERTIFICATE QUALIFICATION REVIEWS

(a) Shop Inspections.
- (1) Manufacturers or repair firms seeking to employ the Boiler Safety Bureau to act as their Authorized Inspection Agency pursuant to the ASME Code or National Board Inspection Code, shall enter into a written agreement with the North Carolina Department of Labor, Boiler Safety Bureau for this purpose.
- (2) An audit of the Deputy Inspector serving as the Authorized Inspector pursuant to Subparagraph (a)(1) of this Rule, and the contracting company in which he or she is working shall be conducted on an annual ~~basis~~ basis. ~~for non-nuclear companies and twice each year for nuclear companies.~~ The contracting company shall pay the audit fees required in Rule .0213 of this Section.

(b) National Board ~~R Stamp~~ "R" Certificate Qualification Reviews
- (1) The Chief Inspector, or the Chief Inspector's designee, shall conduct the qualification reviews for issuance or renewal of the National Board ~~R symbol stamp~~ "R" certificate of authorization pursuant to the National Board Inspection Code as adopted, except as provided in Subparagraph (b)(2) of this Rule.
- (2) The Chief Inspector or his designee shall not conduct the qualification reviews of those companies for which the Boiler Safety Bureau provides inspection services, or those companies which specifically request the review be conducted by the National Board.
- (3) A review to be conducted by the Boiler Safety Bureau shall be scheduled upon receipt of request by the National Board.

History Note: *Authority G.S. 95-69.11; 95-69.14;*
Eff. May 29, 1981;
Amended Eff. March 1, 2015; October 1, 2008; July 1, 2006; January 1, 1995;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended Eff. April 1, 2022.

13 NCAC 13 .0211 CERTIFICATE INSPECTIONS

(a) A commissioned inspector shall inspect all boilers and pressure vessels at the time of installation and at regular intervals thereafter, as provided in this Rule.

(b) Subject to the exceptions in Paragraphs (c) and (d) of this Rule, and after seven days notice is given to the owner or user, an inspector shall conduct an internal inspection of a high pressure boiler at the time of installation and annually thereafter. An external inspection shall be conducted ~~annually~~ a minimum of once every 12 months while the boiler is in operation. The inspector shall ensure that the safety controls are operating as required. Issuance of the inspection certificate shall be based on the results of the internal inspection; however, if the inspector determines during the external inspection that an unsafe condition exists that is likely to result in serious personal injury or property damage, the inspector shall recommend to the Chief Inspector that the certificate of operation be revoked pursuant to 13 NCAC 13 .0301(d).

(c) In place of the first internal inspection of a new high pressure boiler, an inspector may conduct an external inspection if the inspector determines that data sufficient to determine compliance with the rules of this Chapter can be gathered from an external inspection. This shall not apply to relocated used boilers or those for which extended inspection certificates are being requested.

(d) Miniature boilers, coil-type watertube boilers, and boilers heating a fluid other than water which do not produce steam or vapor operating as high pressure boilers shall undergo an external inspection annually. Miniature boilers, coil-type watertube boilers and boilers heating a fluid other than water operating as heating boilers shall undergo an external inspection biennially. Hobby boilers, locomotive boilers and exhibition boilers shall be inspected annually, at the beginning of the season when they are anticipated to be operated.

(e) Low pressure boilers and pressure vessels, except hydropneumatic storage tanks, shall undergo an external inspection ~~biennially.~~ biennially while in operation.

(f) Owner-user inspectors shall conduct inspections for pressure vessels as prescribed in this Rule.

(g) Inspectors may order coverings removed, internal inspections, external inspections, removal of internal parts, testing or calibration of controls, indicating and safety devices and pressure tests whenever conditions warrant further evaluation of the pressure equipment. The inspector may also require the boiler to be started to verify the operating controls.

(h) Hydropneumatic storage tanks shall undergo an external inspection every four ~~years.~~ years while in operation.

(i) When the inspector or Chief Inspector determines that a certificate cannot be issued as a result of an inspection, the boiler or pressure vessel shall be reinspected after the necessary repairs are made.

(j) Inspections shall be conducted in accordance with the National Board Inspection Code. The inspector may require controls, indicating and safety devices to be disassembled, tested, checked or calibrated as necessary to ensure their proper operation.

(k) The Chief Inspector may extend an existing inspection certificate for a high pressure boiler for a period not exceeding 90 days beyond the certificate expiration date, should an inspection at the specified period result in undue hardship for the owner or user. The owner or user shall submit a written request to extend an existing inspection certificate, providing justification for an extension. The request shall include a report from a commissioned inspector of an external inspection which shall have been conducted no earlier than 60 days before the certificate expiration date, and the inspection report shall include a recommendation from the inspector for an extension to the inspection certificate.
(l) The inspection frequency established by this Rule may be modified by the Chief Inspector for individual boilers and pressure vessels if the Chief Inspector determines that due to unique conditions, the frequency established herein is not appropriate, and that the safety attained by the normal inspection frequency will be otherwise obtained. Requirements for extended certificates for pressure equipment are detailed in Rule .0214 of this Chapter. Pressure vessels in "Locked High Radiation" areas may be certified for up to five years and may be inspected in accordance with Paragraph (m) of this Rule.
(m) Pressure retaining items which contain highly hazardous chemicals or biological elements that require level B personal protective equipment, or are in highly hazardous areas or pressure retaining items containing radioactive materials causing the pressure equipment to be classified as "Locked High Radiation," may be inspected remotely by video provided:

(1) There is a listing of all the items under this criterion at the site. The list shall be kept current by the owner/user and any additions or deletions shall be kept current. Prior to inspection the inspector shall review the last inspection certificate, the ASME data report, any National Board ("NB") repair/alteration forms and any records of testing performed during the certificate period;
(2) Each item shall be inspected by means of live video feed that is monitored by the inspector. The inspector shall remain in radio contact with the individual operating the video equipment;
(3) The inspector shall be in proximity to the item and shall witness the video equipment operator enter the location of the item;
(4) A scan as complete as possible (within the limitations of the equipment) of all the pressure boundaries shall be witnessed by the inspector;
(5) The ASME nameplate shall be viewed as well as the ASME/NB nameplate on any pressure relieving device on the item;
(6) Follow up inspections to verify the correction of deficiencies can be performed with a video inspection using the items outlined herein by the inspector;
(7) The inspector shall submit an inspection report for each pressure retaining item at intervals specified in this Rule and the report shall be annotated indicating that the item was inspected pursuant to this Paragraph; and
(8) Any incident that renders the item inoperative shall be reported to the Bureau by the owner/user or the inspector within 24 hours.

History Note: *Authority G.S. 95-69.11; 95-69.14; 95-69.17;*
Eff. May 29, 1981;
Amended Eff. August 1, 2011; July 1, 2006; January 1, 1995; March 2, 1992;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended Eff. April 1, 2022.

13 NCAC 13 .0213 CERTIFICATE AND INSPECTION FEES

(a) An owner shall pay a ~~thirty-five~~ fifty dollar ~~($35.00)~~($50.00) certificate and processing fee to the North Carolina Department of Labor for each boiler or pressure vessel inspected by an Insurance Inspector and found to be in compliance with the rules in this Chapter.
(b) An owner shall pay an inspection and certificate fee to the North Carolina Department of Labor for each boiler or pressure vessel inspected by a Deputy Inspector as follows:

Boilers - An inspection of a boiler where the heating surface is:	External Inspection	Internal Inspection
Less than 500 sq. ft.	$50.00	$85.00
500 or more sq. ft. but less than 5000 sq. ft.	$120.00	$235.00
5000 or more sq. ft.	$330.00	$600.00
Cast iron boilers	$50.00	$80.00
Locomotive boilers (Antique Exhibition/Show)	N/A	$150.00
Exhibition boilers (Antique Exhibition/Show)	N/A	$50.00
Hobby boilers	N/A	~~$35.00~~ $50.00
Pressure Vessels - An inspection of a pressure vessel, other than a heat exchanger, where the product of measurement in feet of the diameter or width, multiplied by its length is:	External Inspection	Internal ~~Inspection~~
~~Less than 20~~	~~$40.00~~	~~$45.00~~
~~20 or more but~~ less than 50	$50.00	$60.00
50 or more but less than 70	$85.00	$135.00
70 or more	$135.00	$190.00
Heat Exchangers - An inspection of a heat exchanger, where the heating surface is:	External Inspection	
Less than 500 sq. ft.	~~$45.00~~ $50.00	

500 or more sq. ft. but less than 1000 sq. ft.	$60.00
1000 or more sq. ft. but less than 2000 sq. ft.	$90.00
2000 or more sq. ft. but less than 3000 sq. ft.	$130.00
3000 or more sq. ft.	$180.00

(c) In addition to the fees established in Paragraph (b) herein, a fee of ninety dollars ($90.00) per hour, including travel time, plus each expense allowed by G.S. 138-6 and 138-7 and the standards and criteria established thereto by the Director of the Budget, at the applicable state rate shall be paid to the North Carolina Department of Labor for each special inspection as defined by 13 NCAC 13 .0101(46) and for all inspections performed outside of normal working hours as defined by 13 NCAC 13 .0101(31).
(d) A fee of three-hundred fifty dollars ($350.00) per one-half day (four hours) or any part of one-half day or five-hundred sixty-dollars ($560.00) for one day (four to eight hours) plus, in either case, each expense allowed by G.S. 138-6 and 138-7 and the standards and criteria established thereto by the Director of the Budget, at the applicable state rate shall be paid to the North Carolina Department of Labor for each shop inspection as defined by 13 NCAC 13 .0101(45).
~~(e) A fee of four hundred dollars ($400.00) per one-half day (four hours) or any part of one-half day or six hundred ten dollars ($610.00) for one day (four to eight hours), plus, in either case, each expense allowed by G.S. 138-6 and 138-7 and the standards and criteria established thereto by the Director of the Budget, at the applicable state rate shall be paid to the North Carolina Department of Labor for each nuclear shop inspection as defined by 13 NCAC 13 .0101(45).~~
~~(f)~~(e) A fee of four hundred fifty dollars ($450.00) per one-half day (four hours) or any part of one-half day or six hundred ninety dollars ($690.00) for one day (four to eight hours), plus, in either case, each expense allowed by G.S. 138-6 and 138-7 and the standards and criteria established thereto by the Director of the Budget, at the applicable state rate shall be paid to the North Carolina Department of Labor for audits as defined by 13 NCAC 13 .0101(4).

History Note: *Authority G.S. 95-69.11;*
Eff. May 29, 1981;
Amended Eff. January 1, 1995; March 2, 1992; September 1, 1986;
Temporary Amendment Eff. March 11, 1997;
Temporary Amendment Eff. March 11, 1997 expired on December 27, 1997;
Temporary Amendment Eff. December 10, 1997;
Amended Eff. March 1, 2015; July 1, 2006; March 1, 2006; August 1, 1998;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended Eff. April 1, 2022.

13 NCAC 13 .0214 EXTENDED PRESSURE EQUIPMENT OPERATING CERTIFICATES

(a) G.S. 95-69.16 and 13 NCAC 13 .0211(l) of this Chapter allows the Commissioner, through the Chief Inspector, to modify the inspection frequency for individual pressure equipment if it is determined that due to unique conditions, the new frequency will provide for the safety attained by the normal inspection frequency. Proper maintenance programs, the condition of the pressure equipment and a baseline inspection help to determine if the equipment is eligible for extended certification. The Chief Inspector may allow certificate renewal frequencies of up to three years. Companies wishing to have their pressure equipment given an extended certification must apply by letter to the Chief Inspector requesting extended certification.
(b) For a first time extended inspection frequency, the following shall apply to both new and existing equipment:
(1) Base Line Inspections: At the outset of an extended inspection frequency, a base line inspection must be conducted of all inside and outside accessible pressure boundaries. The inspected area shall be examined visually by a North Carolina Department of Labor, Boiler Safety Bureau Inspector Supervisor along with a Deputy Inspector for evidence of cracking, discoloration, wear, pitting, bulging, blistering, excessive corrosion and erosion, arc strikes, gouges, dents and other signs of surface irregularities. Areas that are suspect shall be non-destructively examined by a method acceptable to the Inspector Supervisor and Deputy Inspector. For areas which are still suspect after such examination, a more thorough supplemental examination and engineering evaluation of the discontinuities shall be conducted and discussed with the Chief Inspector or designee. At that time, a decision shall be rendered on the required repair of the discontinuity;
(2) Inspection Mapping and Records: An inspection grid map shall be constructed for each pressure component detailing precisely the areas found suspect. The grid shall not exceed four inch square. Suspect area shall be described in relevant details and photographs of such areas shall be taken. Records shall be kept and made available to the Deputy Inspector prior to the next required inspection;
(3) Base Line Inspection of Boiler Tubes: The boiler tubes shall be examined by nondestructive examination. Tubes shall be examined for wear, corrosion, erosion, thinning, bulging, blistering, dents, discoloration, cracking and any other surface irregularities. Areas which are suspect shall be noted and discussed with the Inspector Supervisor and Deputy Inspector; and
(4) Boiler Tube Inspection Mapping and Record: Where suspect tubes are identified, the boiler tubes shall be numbered in a logical sequence and the location of any suspect area shall be precisely defined and described in relevant details. Photographs of such areas shall be taken. Records shall be kept and made available to the Inspector Supervisor and Deputy Inspector prior to the next required inspection.
(c) Scheduling of Inspections for Extended Certificate: Approximately two months prior to a scheduled outage in which the boiler may be inspected, and prior to the current certificate expiration, the owner shall do the following in order to initiate the inspection process:
(1) Send a letter addressed to the Chief Inspector requesting the extended certificate;

(2) Contact the North Carolina Department of Labor, Boiler Safety Bureau at 919-707-7918 and request to speak with an Inspector Supervisor for the purpose of scheduling the inspections required for extending the boiler inspection certificate expiration for to up to 36 months (have the North Carolina identification number available); and

(3) Agree with the Inspector Supervisor and Deputy Inspector on a date to meet for the external inspection of the boiler and to review reports. The boiler must be operating when the external inspection is done. Heat recovery boilers with less than one percent capacity factor per year may be excluded from the need to operate during the external inspection but a letter requesting the exclusion must be sent to the Chief Inspector stating the capacity factor for the year.

(d) External Inspection: The following reports must be available to the Inspector Supervisor and Deputy Inspector at the external inspection:

(1) NBIC R1 forms with job folders (for the past five years for initial inspections and since the previous inspection for renewals);

(2) A list of major modifications scheduled and those modifications done since the last internal inspection with the NBIC R2 forms;

(3) VR forms (for the past five years for initial inspections and since the previous inspection for renewals);

(4) ~~Remaining life analysis (RLA)~~ Fitness for Service (National Board NB-403 or equivalent) reports for headers (for the past five years for initial inspections and since the previous inspection for renewals);

(5) Side elevation drawing of the boiler (8 ½ inches by 11 inches);

(6) Steam & Mud drums - Original drum thickness, drawings and P4's if available;

(7) Copy of the last operating certificate and copies of the last three years of inspection reports;

(8) Reports of annual external inspections (by owner's insurance company or a Boiler Safety Bureau Deputy Inspector; and

(9) Attention must be paid to the areas determined suspect by previous inspections.

(e) Internal Inspection: Following are the required inspections during the outage;

(1) Prior to the outage the safety valves must be inspected. Schedule the operational test for all safety valves after the unit comes back up. Upon a successful operational test, the repair organization will affix an updated inspection tag to the valve. Request the Deputy Inspector to return and verify the updated inspection tag. In lieu of operational tests, it is acceptable to replace safety valves with new valves or valves reworked by a National Board "VR" or "NVR" authorized company;

(2) Inspect the pressure equipment internally; and

(3) Inspect the drums and shells using the following methods:

(A) Examine penetrations into the drum/shell wall for cracking: if the nozzles are visible from inside the drum/shell, then a visual examination is satisfactory; otherwise ultrasonically examine the nozzles, from the outside surface, of at least 20 percent of the pressure equipment nozzles;

(B) Visually examine inside the heads; and

(C) Crawl through the drum/shell for a visual examination if possible.

(f) Setting the Certificate Interval: The Deputy Inspector will inform the owner whether the inspection records and condition of the pressure equipment meet the requirements necessary for requesting the Chief Inspector to extend the inspection certificate. If the necessary requirements are met, the Deputy Inspector will submit his inspection report to the Chief Inspector with the recommendation for up to a three-year certificate.

(g) Follow-up and Interim Inspections: External inspections of high pressure boilers are required six months after the certificate renewal, and then annually thereafter. The external inspections may be performed by the Boiler Safety Bureau Deputy Inspectors or by the owner's insurance inspector. The results of the inspection must be submitted to the North Carolina Department of Labor, Boiler Safety Bureau on the appropriate inspection form as provided by the Chief Inspector.

History Note: *Authority G.S. 95-69.11; 95-69.14; 95-69.16;*
Eff. July 1, 2011;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, 2018;
Amended Eff. April 1, 2022; January 1, 2020.

SECTION .0300 - ENFORCEMENT OF STANDARDS

13 NCAC 13 .0303 INSPECTIONS REVEALING DEFICIENCIES

(a) The owner or user shall complete any required repairs or corrective action and request an additional inspection within 60 calendar days of the inspection, except in cases where the boiler or pressure vessel is removed from service, in which case the owner or user shall send in written confirmation, signed by the owner or user, that use of the boiler or pressure vessel has been discontinued and that the boiler or pressure vessel has been removed from the source of energy.

(b) Upon notification by the inspector of a boiler or pressure vessel for which continued operation creates a condition of imminent danger, the Chief Inspector shall determine if the recommendations of the inspector are valid, and if so, the Chief Inspector shall notify the owner or user by the most expedient means possible, followed by written notification within 15 calendar days stating that the use of the boiler or pressure vessel shall be discontinued immediately.

(c) The owner or user may continue operation of the boiler or pressure vessel, including those boilers or pressure vessels that are condemned, during the 60 day period, except that this provision shall not apply to boilers and pressure vessels after notification by the Chief Inspector to the owner or user that a condition of imminent danger exists.

(d) After completion of any required repairs or corrective action, the boiler or pressure vessel shall be reinspected to the extent necessary to verify satisfactory completion of the required repairs or corrective action.

(e) An owner shall pay a fee of ~~forty~~ fifty dollars ~~($40.00)~~($50.00) to the North Carolina Department of Labor for each reinspection or follow-up inspection conducted by Deputy Inspectors.

History Note: *Authority G.S. 95-69.11;*
Eff. May 29, 1981;
Amended Eff. March 1, 2015; July 1, 2006; January 1, 1995;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended Eff. April 1, 2022.

SECTION .0400 – GENERAL REQUIREMENTS

13 NCAC 13 .0401 DESIGN AND CONSTRUCTION STANDARDS

(a) The design, construction, installation, inspection, stamping, certification, and operation of all boilers and pressure vessels shall conform to the rules in this Chapter and the accepted design and construction code.
(b) Repairs and alterations to boilers and pressure vessels shall conform to the requirements of the National Board Inspection Code, except as provided in Paragraph (g) of this Rule.
(c) The rules of this Chapter shall control when any conflict is found to exist between the Rules and the accepted design and construction code or the National Board Inspection Code.
(d) Welded repairs and alterations shall be made only by an individual or organization in possession of a valid certificate of authorization for use of the National Board "R" symbol stamp, except as provided in Paragraph (g) of this Rule. Repairs and alterations shall be reported on National Board "R1" and "R2" reports respectively, as required by the NBIC. These reports are available through the National Board of Boiler and Pressure Vessel Inspectors. The reports, along with supplements used, shall be submitted to the Chief Inspector within 60 days of the completion of the work conducted. Repair and alteration reports shall be annotated with the appropriate NC identification number for the pressure equipment repaired.
(e) In such cases where removal of a defect in a pressure-retaining item is not practical at the time of discovery, with approval of the Chief Inspector, the repair shall be conducted in compliance with the NBIC, Part 3 Repairs and Alterations, Repair of Pressure-Retaining Items Without Complete Removal of Defects. The Chief Inspector may be contacted in writing at 1101 Mail Service Center, Raleigh, NC 27699-1101 or via telephone at (919) 707-7918.
(f) Repairs of safety valves or safety relief valves shall be made by an individual or organization in possession of a valid certificate of authorization for use of the National Board "VR" symbol stamp.
(g) Welded repairs and alterations to exhibition (historical) boilers of riveted or welded construction may be conducted by a welder who has been qualified in accordance with the ASME Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualifications.

History Note: *Authority G.S. 95-69.11;*
Eff. May 29, 1981;
Amended Eff. October 1, 2014; July 1, 2011; January 1, 2009; July 1, 2006; January 1, 1995; February 1, 1989; February 1, 1985; June 1, 1982;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, 2018;
Amended Eff. April 1, 2022; January 1, 2020.

13 NCAC 13 .0402 NORTH CAROLINA STAMPING AND REGISTRATION

(a) Boilers and pressure vessels shall be registered with the National Board and shall bear the National Board stamping as follows:
(1) high pressure boilers installed after November 2, 1946;
(2) heating boilers (except cast iron or cast aluminum boilers) in stalled after January 1, 1976;
(3) pressure vessels installed after January 1, 1979; and
(4) hydropneumatic storage tanks installed after January 1, 1986.

(b) Boilers and pressure vessels may be exempted from the requirement for National Board registration provided the owner or user submits a letter requesting a variance to the Chief Inspector giving reason for the request. The requestor shall enclose with the letter a copy of the original manufacturer's data report. The documentation shall be reviewed by the Chief Inspector to determine if the information is complete and traceable to the boiler or pressure vessel. The owner or user shall be advised of the Chief Inspector's decision within 30 working days with regard to the approval or disapproval of the request.
(c) Electric boilers shall be listed with a qualified testing laboratory recognized by the Occupational Safety and Health Administration as a nationally recognized testing laboratory (NRTL) pursuant to 29 CFR 1910.7.
(d) The owner or user shall, upon request of the inspector, provide a manufacturer's data report for the boiler or pressure vessel.
(e) When a new boiler or pressure vessel is installed, or when an existing installation receives its first certificate inspection, a Deputy Inspector shall conduct the first inspection and apply a metal tag embossed or stamped with the North Carolina identification number (e.g., NC000) to the boiler or pressure vessel on or adjacent to the manufacturer's nameplate or stamping. If the boiler or pressure vessel is constructed of materials having adequate thickness to allow stamping, the identification number may be stamped onto the boiler or pressure vessel.
(f) The owner or user shall keep all required stamping exposed at all times unless a clearly marked removable cover is installed so that it may be readily accessible at any time.

History Note: *Authority G.S. 95-69.11; 95-69.14;*
Eff. May 29, 1981;
Amended Eff. July 1, 2006; January 1, 1995; February 1, 1989; November 1, 1986;

Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018; Amended Eff. April 1, 2022.

13 NCAC 13 .0405 PRESSURE RELIEF DEVICES

(a) Boilers and pressure vessels shall be protected from overpressurization by a pressure relief device. All pressure relief devices installed on any boiler or pressure vessel shall be constructed and stamped in accordance with the accepted design and construction code.

(b) All pressure relief devices shall be stamped and capacity certified by the manufacturer indicating compliance with the National Board. The stamping shall include the set pressure (that pressure at which the valve is set to open) and the relieving capacity (the rate of flow).

(c) High pressure boilers with over 500 square feet of heating surface and electrically fired boilers having an input in excess of 1100 kW shall be provided with a minimum of two safety valves. For high pressure boilers with a combined bare tube and extended water-heating surface area exceeding 500 square feet, one safety valve is required if the design steam generating capacity of the boiler is less than 4,000 pounds of steam per hour.

(d) Safety valves and safety relief valves for heating boilers shall have a seat diameter of not less than ½ inch, and not more than 4 ½ inches.

(e) Pressure relief devices shall have a set pressure and relieving capacity in accordance with the accepted design and construction code requirements for the type equipment on which the pressure relief device is installed. At least one pressure relief device shall have the set pressure set at not greater than the maximum allowable working pressure of the boiler or pressure vessel. The relieving capacity shall not be less than the minimum required relieving capacity indicated on the manufacturer's name plate or stamping, or as otherwise required by the accepted design and construction code. Safety relief valves installed on water heaters shall be of the combination temperature and pressure relieving ~~type.~~ type, or as permitted by the accepted design and construction code for modular water heaters.

(f) All safety valves installed on high pressure boilers shall be installed on top of the boiler, or in the case of watertube boilers on top of the upper drum, with the spindle in the vertical position. All safety valves and safety relief valves installed on heating boilers shall be on top of the boiler or on an opening at the highest practicable part of the side of the boiler, but in no case shall the safety valve be installed below the normal operating level for a steam boiler. Safety valves and safety relief valves installed on hot water heating boilers, hot water supply boilers, and steam heating boilers shall be installed with the spindles mounted in the vertical position. Safety relief valves for water heaters may be installed with the spindles mounted in either the vertical or horizontal position. In no case may pressure relief devices be mounted on ~~appurtenances.~~ appurtenances, unless permitted by the accepted design and construction code for modular heaters.

(g) The distance between the pressure relief device outlet nozzle on the boiler and the pressure relief device inlet shall be kept to a minimum consistent with the size of the pressure relief device and the pipe sizes required. In no case shall any valves or stops be installed in the inlet piping to the pressure relief device or in the discharge piping from the pressure relief device. The boiler outlet and the piping between the boiler outlet and the pressure relief device shall have a cross sectional area of not less than the cross sectional area of the pressure relief device inlet.

(h) Discharge piping from the pressure relief device outlet shall be the same size, or larger, than the outlet pipe connection on the pressure relief device and shall be extended full size to a safe location. A safe location shall be interpreted to mean a location within six inches of the finished floor of the mechanical room, to a location outside the building terminating a safe distance above the building roof or to a location outside the building within six inches above the finished grade. For vessels such as organic fluid heaters where the medium presents a hazard, the discharge shall be to a containment vessel large enough to hold all anticipated pressure relief discharges. When pressure relief device discharge piping is routed vertically, piped drainage shall be provided by the use of drip pan elbows installed on the outlet of each pressure relief device served.

(i) Multiple pressure relief devices may be piped to the point of discharge using a common discharge header pipe. The header pipe size shall have a diameter sufficient to provide an equivalent cross-sectional area equal to or larger than the sum of the cross-sectional areas of the pressure relief device outlets to which it is connected.

(j) Pressure relief devices on pressure vessels may be installed with the spindle in the vertical or horizontal position. The pressure relief device inlet, discharge piping, and the requirement for piping the discharge to a safe location shall be the same as noted for boilers. The requirement for discharge piping is optional for pressure vessels used to store compressed air, inert gasses, water, or other fluids no more hazardous than water.

(k) Pressure relief devices for direct fired pressure vessels and for those used as air compressor storage tanks shall be installed directly on the pressure vessel with no intervening valves. Pressure relief devices for all other pressure vessels may be installed directly on the pressure vessel or in the piping system, except as modified in this Rule. ~~A stop valve may be installed between a pressure vessel and the pressure relief device if one of the following is satisfied:~~

~~(1) the stop valve is normally locked in the open position, and may only be closed when there is a full time attendant stationed at the stop valve when it is in the closed position for testing purposes; or~~

~~(2) isolating the pressure relief device from the pressure vessel by closing the stop valve also isolates the pressure vessel from the source of pressure.~~

(l) A stop valve may be installed between a pressure vessel and the pressure relief device if one of the following is satisfied:

(1) the stop valve is normally locked in the open position, and may only be closed when there is a full time attendant stationed at the stop valve when it is in the closed position for testing purposes; or

(2) isolating the pressure relief device from the pressure vessel by closing the stop valve also isolates the pressure vessel from the source of pressure.

~~(l)~~(m) Pressure relief devices shall be sealed to prevent the valve from being taken apart without breaking the seal. Pressure relief devices for boilers and pressure vessels containing air, water, or steam, shall be provided with a test lever, pull test ring or other mechanism which may be used to test the operation of the valve. Pressure relief devices which are required to be provided with a testing

mechanism shall be readily accessible for testing from the work platform or other means, such as a pull chain, shall be provided so that the pressure relief device can be tested from the work platform.

~~(m)~~(n) When a hot water supply boiler or storage vessel is heated indirectly by steam or hot water in a coil or pipe, the pressure relief device capacity shall be determined by the heating surface available for heat transfer, and the pressure relief device shall not be less than 1 inch diameter.

~~(n)~~(o) A person shall not:

(1) attempt to remove, tamper, alter or conduct any work on any pressure relief device while the boiler or pressure vessel is in operation, except as permitted by the accepted design and construction code or the National Board Inspection Code;

(2) load a pressure relief device in any manner to maintain a working pressure in excess of the maximum allowable working pressure as stated on the inspection certificate;

(3) operate any boiler or pressure vessel without the safety appliances as described in this Chapter, the accepted design and construction ~~code,and~~ code, and the National Board Inspection Code;

(4) use a pressure relief device required by this Chapter as an operating pressure control; or

(5) remove the seal and attempt to adjust or otherwise work on a pressure relief device unless the person/company removing the seal is a authorized holder of a National Board "VR" stamp.

~~(o)~~(p) If an owner or user can demonstrate that a pressure vessel is operating in a system of such design that the maximum allowable working pressure cannot be exceeded, the Chief Inspector shall waive the requirement for installation of a pressure relief device if the pressure vessel meets the safety requirements greater than or equal to the level of protection afforded by this Chapter and the accepted design and construction code, and does not pose a danger to persons or property.

~~(p)~~(q) Pressure relief device piping shall be supported so that the piping is supported with no additional force being applied to the pressure relief device.

~~(q)~~(r) Hydropneumatic storage tanks shall be provided with a relief valve of not less than ¾ inch NPS and rated in standard cubic feet per minute (SCFM). The relief valve shall be installed on top of the tank. This rule applies to any equipment installed after January 1, 2009. Preexisting installed equipment shall meet the criteria effective on January 1, 1995 and does not require a change-out of the existing relief valve unless the current relief valve becomes defective.

~~(r)~~(s) Dead weight safety valves are prohibited from use on any boiler or pressure vessel regulated by this Chapter.

~~(s)~~(t) When the minimum safety valve relieving capacity is not found on the data plate, the following guide may be used to determine the required safety valve capacity for steam boilers. The factor noted in the table shall be multiplied by the heating surface of the boiler to determine required safety valve relieving capacity. Additional requirements found in NBIC Part 4, Section 2 for calculating heating surface shall be utilized.

Table-0405 Guide for Estimating Steaming Capacity Based on Heating Surface

	Firetube Boilers	Watertube Boilers
Boiler heating surface:		
Hand-fired	5	6
Stoker-fired	7	8
Oil, gas, or pulverized fuel	8	10
Waterwall heating surface:		
Hand-fired	8	8
Stoker-fired	10	12
Oil, gas, or pulverized fuel	14	16
Copper-finned watertube		
Hand-fired	N/A	4
Stoker-fired	N/A	5
Oil, gas, or pulverized fuel-fired	N/A	6

History Note: *Authority G.S. 95-69.11; 95-69.14;*
Eff. May 29, 1981;
Amended Eff. June 1, 1992; February 1, 1985;
Recodified from 13 NCAC 13 .0404 Eff. January 1, 1995;
Amended Eff. January 1, 2009; July 1, 2006; January 1, 1995;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended Eff. April 1, 2022.

13 NCAC 13 .0406 HIGH PRESSURE OR TEMPERATURE LIMIT CONTROL

(a) Each automatically fired steam boiler or system of commonly connected steam boilers shall have at least one steam pressure control that will shut off the fuel supply to each boiler or system of commonly connected boilers when the pressure reaches a preset maximum operating pressure. In addition to the required operating pressure control, each individual automatically fired steam boiler shall have a high steam pressure limit control that will shut off the fuel supply to the boiler to prevent pressure in excess of the maximum allowable working pressure. The high limit control shall be equipped with a manual reset which shall prevent the boiler from being fired after the maximum pressure has been reached until the operator resets the switch manually. Steam boilers shall be provided with a syphon(s) or equivalent which will provide a water seal and protect the pressure control(s) from being damaged by the steam.

(b) Each automatically fired hot water heating boiler, hot water supply boiler, water heater or each system of commonly connected hot water heating or supply boilers shall have at least one temperature-actuated control to shut off the fuel supply when the system water reaches a preset operating temperature. In addition to the required temperature control, each individual automatically fired hot water heating boiler, hot water supply boiler, and water heater shall have a high temperature limit control that will prevent the water temperature from exceeding the maximum allowable temperature for the respective equipment. The high limit control for the hot water heating boilers and hot water supply boilers that are either stamped with the ASME "H" ~~symbol~~ designator or are not constructed in accordance with the ASME Codes shall be equipped with a manual reset which shall prevent the boiler from being fired after the maximum temperature has been reached until the operator resets the switch manually. A manual reset is not required for boilers that bear the AMSE "HLW" designator or for unfired pressure vessels.

(c) Automatic resets or remote resets by electronic means are prohibited. The manual reset may be incorporated in the high limit control. Where the reset device is separate from the high limit control, a means shall be provided to indicate actuation of the high limit control. Each high limit and operating control shall have its own sensing element and operating switch.

History Note: *Authority G.S. 95-69.11; 95-69.14;*
Eff. May 29, 1981;
Recodified from 13 NCAC 13 .0407 Eff. January 1, 1995;
Amended Eff. July 1, 2011; July 1, 2006; January 1, 1995;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended Eff. April 1, 2022.

13 NCAC 13 .0409 AUTOMATIC LOW-WATER FUEL CUTOFF CONTROLS AND WATER-FEEDING DEVICES

(a) Each automatically fired steam or vapor boiler, except miniature boilers, shall meet the following criteria:

(1) Have at least two automatic low-water fuel cutoff devices;
(2) One of the low-water fuel cutoff devices may also be used to regulate the normal water level;
(3) Each cutoff device shall be installed to prevent startup and to shut down the boiler fuel or energy supply automatically when the surface of the water falls to a level not lower than the lowest visible part of the gauge glass;
(4) One control shall be set to function ahead of the other. The lower fuel cutoff device shall be equipped with a manual reset which shall prevent the boiler from being fired after the low water limit has been reached until the operator resets the switch manually; and
(5) The low-water fuel cutoffs shall be attached directly to the boiler or to the water column with no stops or valves. For float type low-water fuel cutoffs installed external to the boiler, each device shall be installed in individual chambers which shall be attached to the boiler by separate pipe connections below the waterline. If the low-water fuel cutoff is connected to the boiler by pipe and fittings, no shut off valves of any type shall be placed in such pipe. A cross or equivalent fitting shall be placed at every right angle turn to facilitate cleaning. Piping from the boiler shall be not less than 1 inch NPS. Low-water fuel cutoff designs embodying a float and float bowl shall have a vertical straightaway valved drain pipe of not less than ¾ inch NPS at the lowest point in the water-equalizing pipe connections by which the bowl and the equalizing pipe can be flushed and the device tested.

(b) Each automatically fired hot water heating boiler with heat input greater than 400,000 Btu/hr (117 kW) shall meet the following criteria:

(1) Be protected by a low-water fuel cutoff intended for hot water service;
(2) The fuel cutoff device shall be installed to prevent startup and to shut down the boiler fuel or energy supply automatically when the surface of the water falls to a level not lower than the lowest safe permissible water level established by the boiler manufacturer;
(3) The fuel cutoff device shall be equipped with a manual reset which shall prevent the boiler from being fired after the lowest water level has been reached until the operator resets the switch manually;
(4) The low-water fuel cutoff installed in a hot water heating boiler system may be installed anywhere in the system above the lowest safe permissible water level established by the boiler manufacturer so long as there is no isolation valve installed between the device and the boiler. Connections to the system shall be not less than 1 inch NPS; and
(5) A means shall be provided for testing the operation of the low-water fuel cutoff on a hot water heating boiler system without resorting to draining the entire system.

(c) Coil type boilers or watertube boilers requiring forced circulation to prevent overheating of the coils or tubes may have a flow-sensing device installed at or near the boiler proper, in lieu of a low-water fuel cutoff, to automatically cut off the fuel supply when the circulation of flow is interrupted. If there is a definitive water line, a low-water fuel cutoff complying with the forgoing shall be provided in addition to the flow-sensing device.

(d) Electric boilers where uncovering of the electrical element can lead to an unsafe condition shall be equipped with a low-water fuel cutoff device. In the case of electrode type boilers, where the reduction in water level provides a self-limiting control on heat input, a low-water cutoff control is not required.

(e) Automatically fired boilers shall be provided with a system to automatically maintain a constant water level so that the water level cannot fall below the lowest safe water line. This requirement does not apply to hot water heating boilers used in closed-loop radiant floor heating systems when installed in accordance with the manufacturer's instructions.

(f) Low water fuel cutoff devices embodying a float and float bowl shall be installed so that the boiler feedwater or makeup water cannot be introduced through the float chamber.

History Note: *Authority G.S. 95-69.14;*
Eff. January 1, 1982;

Recodified from 13 NCAC 13 .0416 Eff. January 1, 1995;
Amended Eff. July 1, 2011; January 1, 2009; July 1, 2006; January 1, 1995;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended Eff. April 1, 2022.

13 NCAC 13 .0420 FIRING MECHANISM CONTROLS

(a) Automatically fired boilers and pressure vessels shall be provided with firing mechanism controls.
(b) Oil, gas-fired, and electrically heated boilers shall be equipped with primary (flame safeguard) safety controls, safety limit switches, and burners or electric elements that are listed and labeled with a testing laboratory recognized by the Occupational Safety and Health Administration as a nationally recognized testing laboratory (NRTL) pursuant to 29 CFR 1910.7.
(c) Automatically fired boilers installed after January 1, 2007, shall be provided with a remote emergency fuel shut-off switch marked for easy identification. The remote shut-off switch shall be located outside each door of the room in which the boiler is located. Alternatively, the shut-off switch may be located just inside the entrance door(s) where the equipment is located. If there is more than one door to the boiler room, there shall be a switch located at each door designed for primary emergency egress from the boiler room. Boilers that bear the ASME "HLW" designator are not required to be provided with a remote emergency fuel shut-off switch.
(d) For installations which are gas-fired, the burners used shall conform to the North Carolina Fuel Gas Code in effect at the time of installation.

History Note: *Authority G.S. 95-69.11; 95-69.14;*
Eff. January 1, 1995;
Amended Eff. February 1, 2009; July 1, 2006;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended April 1, 2022.

13 NCAC 13 .0422 EXHIBITION BOILERS

~~In addition to the requirements outlined in this Chapter for manually fired boilers, exhibition~~ Exhibition boilers shall meet the following requirements:

(1) Exhibition boilers that are not built to the ASME Code shall not be operated above 125 psig without specific written approval by the Chief Inspector who shall base such approval on documentation and calculations submitted by the owner. These documents and an inspection shall support higher pressure ratings.
(2) Safety relief valves shall not exceed the maximum allowed working pressure and shall be ASME/NB certified valves.
(3) Each boiler shall have as a minimum;
    (a) A properly operating pressure gauge which shall be approximately double the pressure to which the safety relief valve is set but in no case shall it be less than 1 1/2 times the set pressure.
    (b) A safety relief valve which shall be capable of protecting the boiler from over pressurization.
    (c) A water gauge glass
(4) When fusible plugs are used, they shall ~~be replaced every two years with appropriately sized plugs of the required material.~~ conform to NBIC Part 2 as applicable.
(5) A hydrostatic test may be required by the inspector if, in his opinion, it is necessary to prove the integrity of the pressure boundary. The hydrostatic test shall not exceed ~~100%~~ 125 percent of the maximum allowed working pressure of the vessel or the set pressure of the safety valve, whichever is greater.
(6) Upon successful completion of the inspection and payment of fees the Chief Inspector shall issue a Certificate of Inspection valid for one year.

History Note: *Authority G.S. 95-69.11; 95-69.14;*
Eff. July 1, 2006;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended Eff. April 1, 2022.

13 NCAC 13 .0423 MODEL HOBBY BOILERS

~~In addition to the requirements outlined in this Chapter for manually fired boilers, model~~ Model hobby boilers shall meet the following requirements:

(1) Each boiler shall have as a minimum:
    (a) A properly operating pressure gauge that shall not be less than 1 ½ times nor more than four times the operating pressure of the boiler;
    (b) Two safety relief valves each of which shall be capable of protecting the boiler from over pressurization. Requirements for ASME/NB certification are ~~waived;~~ waived. If an ASME/NB safety relief valve is utilized, only one safety relief valve is required;
    (c) An easily accessible mud-ring valve;
    (d) A water gauge glass; and
    (e) If constructed of copper, a fusible plug in the top of the crown sheet.
(2) Upon successful completion of the inspection and payment of the fees, the Chief Inspector shall issue a Certificate of Inspection valid for one year.

History Note: *Authority G.S. 95-69.11; 95-69.14;*

Eff. July 1, 2006;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. July 22, ~~2018.~~ 2018;
Amended April 1, 2022.

SECTION .0700 - NUCLEAR POWER SYSTEMS

13 NCAC 13 .0701 STANDARDS

(a) Nuclear power components and systems covered under the scope of Section III of the ASME Code shall be designed, constructed, reworked, stamped, and installed in accordance with Section III of the ASME Code. Balance of plant items may be constructed under other ASME Code sections as appropriate.
(b) All nuclear power systems falling under the scope of the ASME Code, Section III, are inspected in service under the requirements of Section XI of the ASME Code. The equipment is not required to be inspected under this Chapter. Balance of plant pressure equipment not covered by Section XI are required to be registered with a North Carolina identification number and inspected in accordance with this Chapter.
(c) A vessel composed of two or more pressure retaining compartments shall constitute one complete unit for the purpose of assigning the North Carolina identification number.
(d) The design criteria for nuclear power systems shall be certified as to compliance with Section III of the ASME ~~Code by a registered professional engineer with at least one year of experience in nuclear pressure vessel design.~~ Code.

History Note: *Authority G.S. 95-69.9; 95-69.11; 95-69.14;*
Eff. May 29, 1981;
Amended Eff. October 1, 2008; July 1, 2006; June 1, 1982;
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