

## 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, 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 for ASME and National Board 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.
- (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.
- (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.

- (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.
- (23) "Insurance inspector" means the special inspector employed by an insurance company, and holding a valid North Carolina Commission and National Board Commission.
- (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.
- (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.
- (26) "Menace to public safety" means a boiler or pressure vessel that cannot be operated without a risk of injury to persons and property.
- (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.
- (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.
- (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.
- (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.
- (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.
- (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.
- (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.
- (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.
- (35) "NPS" means nominal pipe size.
- (36) "Nuclear component" means the items in a nuclear power plant such as pressure vessels, piping systems, pumps, valves, and component supports.
- (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.
- (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.
- (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.

- (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.
- (41) "Pressure piping" means piping, including welded piping, external to high pressure boilers from the boiler proper to the required valve(s).
- (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.
- (43) "PSIG" means pounds per square inch gauge.
- (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.
- (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.
- (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.
- (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.
- (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.
- (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; Amended Eff. April 1, 2022.*