

Notices of Final Rulemaking

Notice of Proposed Rulemaking: 15 A.A.R. 154, January 16, 2009

Notice of Oral Proceedings on Proposed Rulemaking: 15 A.A.R. 706, April 24, 2009

5. The name and address of agency personnel with whom persons may communicate regarding the rulemaking:

Name: William M. Wright
Address: Division of Occupational Safety and Health
Industrial Commission of Arizona
800 W. Washington St., Suite 203
Phoenix, AZ 85007
Telephone: (602) 542-1695
Fax: (602) 542-1614
E-mail: wright.william.m@dol.gov

6. An explanation of the rule, including the agency's reason for initiating the rule:

These proposed changes will amend the existing rules with the most current updated rules which will be incorporated by reference, from nationally recognized standards, for the installation, operation and maintenance of boilers, lined hot water heaters and pressure vessels. The state boiler safety program currently uses nationally recognized standards published in 1995. Since 1995 technology in building, operating and maintaining boilers, lined hot water heaters and pressure vessels has changed and the current rules need to be updated to keep pace with the ongoing technological changes. The Boiler Advisory Board has given their recommendations to the Commission to adopt the most current rule changes. The Commission, after review of the Advisory Board's recommendation, has agreed that the state's boiler rules need to be updated to current national standards so as to continue to protect the employees and the general public in Arizona who use or work around boilers, hot water heaters or pressure vessels.

7. A reference to any study relevant to the rule that the agency reviewed and either relied on or did not rely on in its evaluation of or justification for the rule, where the public may obtain or review each study, all data underlying each study, and any analysis of each study and other supporting material:

None

8. A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:

Not applicable

9. The summary of the economic, small business, and consumer impact:

The adoption of the new rules and the incorporation by reference of the most current national boiler codes and amendments will not significantly impact small business or consumers. These new rules affect installation of new or used equipment, or modifications of existing equipment. The additional cost to comply with the proposed *Code* changes is minimal and is already built into the purchase price of the new equipment. The cost of purchasing a new boiler, hot water heater, or pressure vessel under the proposed *Code* change would reflect a minimal cost increase, under \$1000 due from technical advances of the boilers, hot water heaters or pressure vessels and for normal material and labor cost increase since the last *Code* changes were made.

10. A description of the changes between the proposed rules, including supplemental notices, and final rules (if applicable):

Due to a courtesy review, at our request, by the Governor's Regulatory Review Council staff, we have made non substantive, clerical changes as identified and suggested by the Governor's Regulatory Review Council staff to this final rule package. We have added several new definitions of words used in the text of the rules to R20-5-402 to ensure the rules are clear and concise. None of the proposed rules as published have been deleted nor have any new rules been added since publication of the proposed rules. We did add language to R20-5-429(B) to clarify when the Director can unilaterally modify or revoke a variance. We believe this addition clarifies this rule and its effects are non substantive.

11. A summary of the comments made regarding the rule and the agency response to them:

The Arizona Division of Occupational Safety and Health did not receive any written or oral comments concerning this rule.

12. Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:

None

13. Incorporations by reference and their location in the rules:

2007 – American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section I, Section II, Section IV, Section V, Section VIII Division 1, Division 2, Division 3 and Section IX. R20-5-404
2007 – American Society of Mechanical Engineers, ASME B31. 1, Power Piping. R20-5-404

Notices of Final Rulemaking

2004 – American National Standards Institute, ANSI, Z21.10.3, Standard for Gas Water Heaters.	R20-5-404
2006 – American Society of Mechanical Engineers, ASME, CSD-1 Controls and Safety Devices for Automatic Fired Boiler.	R20-5-404
2006 – National Fire Protection Association, NFPA 54/ANSI Z223.1 National Fuel Gas Code.	R20-5-404
2007 – National Board Inspection Code (NBIC) ANSI/NB 23.	R20-5-404
1991 – National Board Rules and Recommendations for Design and Construction of Boiler Blowoff System.	R20-5-415

14. Was this rule previously made as an emergency rule?

No

15. The full text of the rules follows:

TITLE 20. COMMERCE, FINANCIAL INSTITUTIONS, AND INSURANCE

CHAPTER 5. INDUSTRIAL COMMISSION OF ARIZONA

ARTICLE 4. ARIZONA BOILERS AND LINED HOT WATER HEATERS

Section

R20-5-401.	Applicability
R20-5-402.	Definitions
R20-5-403.	Boiler Advisory Board
R20-5-404.	Minimum Standards for Boilers, and Lined Hot Water Storage Heaters and Pressure Vessel
R20-5-405.	Lap-seam Crack Repealed
R20-5-406.	Repairs and Alterations
R20-5-407.	Inspection of Boilers, and Lined Hot Water Storage Heaters , <u>Direct Fired Jacketed Steam Kettles</u> and Issuance of Inspection Certificates
R20-5-408.	Frequency of Inspection
R20-5-410.	Report of Accident
R20-5-411.	Hydrostatic Tests
R20-5-412.	Automatic Low-water Fuel Cutoff Devices or Combined Water Feeding and Fuel Cutoff Devices
R20-5-413.	Safety and Safety Relief Valves
R20-5-414.	Pressure Reducing Valves Repealed
R20-5-415.	Boiler Blowdown, and Blowoff Equipment <u>and Drains</u>
R20-5-416.	Maximum Allowable Working Pressure
R20-5-417.	Maintenance and Operation of Boilers; Qualifications for Operators of Power Boilers , <u>Hot Water Heaters and Direct Fired Jacketed Steam Kettles</u>
R20-5-418.	Non-standard Boilers
R20-5-419.	Request to Reinstall Boiler or Lined Hot Water Heater
R20-5-420.	Special Inspector Certificate under A.R.S. § 23-485
<u>R20-5-429.</u>	<u>Variance</u>
<u>R20-5-430.</u>	<u>Forced Circulation Hot Water Heaters</u>
<u>R20-5-431.</u>	<u>Code Cases</u>
<u>R20-5-432.</u>	<u>Historical Boilers</u>

ARTICLE 4. ARIZONA BOILERS AND LINED HOT WATER HEATERS

R20-5-401. Applicability

This Article applies to all boilers, ~~and lined hot water storage heaters~~ and pressure vessels operated in Arizona, except the following:

1. Boilers, ~~and lined hot water storage heaters~~ and pressure vessels regulated by the United States Government;
2. Boilers, ~~and lined hot water storage heaters~~ and pressure vessels operated in private residences or apartment complexes of not more than six units; and
3. Boilers, ~~and lined hot water storage heaters~~ and pressure vessels operated on Indian reservations.
4. A lined hot water heater that does not exceed any of the following:
 - a. Heat input of 200,000 British thermal units per hour;
 - b. Water temperature of 210° F; and

Notices of Final Rulemaking

- c. Nominal water containing capacity of 120 gallons.

R20-5-402. Definitions

In this Article, unless the text otherwise requires:

1. “Act” means A.R.S. Title 23, Chapter 2, Article 11.
2. “Alteration” means a ~~any~~ change in ~~any~~ the item described on the original manufacturer’s data report which affects the pressure-containing ~~ability of the boiler, except for “Repairs.”~~ capability of the boiler or pressure vessel, including but not limited to:
 - a. Non physical changes such as an increase in the maximum allowable working pressure either internal or external, or
 - b. A reduction in minimum design temperature of a boiler or pressure vessel requiring additional mechanical tests.
3. “ANSI” means American National Standards Institute, Inc., located at 25 W. 43rd Street, 4th Floor, New York, NY 10036 or at <http://www.ansi.org/>.
4. “Apartment house” means a building with multiple family dwelling units, not used for commercial purposes, including condominiums and townhouses, where boilers are located in a common area outside of the individual dwelling units, such as a boiler room.
5. “Applicant” means an individual requesting permission to act as a special inspector under A.R.S. § 23-485.
6. “ASME Code” means the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Sections I, II, IV, V, VIII and IX, published by the ASME International. ~~American Society of Mechanical Engineers.~~
7. “ASME International” means a not for profit professional organization that promotes the art, science and practice of mechanical and multidisciplinary engineering and allied sciences throughout the world.
8. “Authorized Inspector” means an authorized representative under A.R.S. § 23-471(1) or a special inspector under A.R.S. § 23-485.
9. “Authorized representative” means the boiler chief or boiler inspector employed by the Division.
10. “Blowdown tank” or “Blowdown separator” means an ASME-stamped vessel designed to receive discharged steam or hot water from a boiler ~~blowoff or blowdown piping system.~~
11. “Boiler” means a closed vessel in which fluid is heated for use external to itself by the direct application of heat resulting from the combustion of fuel, solid, liquid, or gaseous, or by the use of electricity.
12. “Certificate of Competency” means a person who has passed the National Board Exam.
13. “Certificate Inspection” means an internal inspection, when construction allows; otherwise, it means as complete an inspection as possible.
14. “Condemned” ~~boiler or lined hot water storage heater~~ means a boiler or lined hot water storage heater that has been inspected and found to be unsafe by the Director or authorized inspector and ~~which~~ has been stamped or tagged ~~in accordance with R20-5-407(H), with the code XXX AZ8 XXX.~~
15. “CSD-1” means Controls and Safety Devices for Automatically Fired Boilers, published by ASME International, incorporated by reference in Article R20-5-404(A)(4).
16. “Direct fired jacketed steam kettle” means a ~~metallic vessel (other than a sterilizer) in which steam or vapor is generated, pressure vessel with inner and outer walls that is subject to steam pressure and stress, is used to boil or heat liquids or to cook food, and falls under the scope of Section VIII, Division 1, Appendix 19 (Electrically Heated or Gas Fired Jacketed Steam Kettles) of the ASME Boiler and Pressure Vessel Code incorporated by reference in R20-5-404(A).~~
17. “External inspection” means an examination of a boiler or lined hot water storage heater performed by an authorized inspector when the boiler or lined hot water storage heater is in operation.
18. “Forced circulation hot water heater” means a hot water heater used for potable water, a hot water heater requiring movement of water to prevent overheating and failure of the tubes or coils, and has no definitive waterline.
19. “Fully attended power boiler” means a power boiler that is operated by an individual who meets the requirements of R20-5-417 R20-5-408(C), and whose primary function is the care, maintenance, and operation of the boiler and the equipment associated with the boiler system.
20. “High temperature water boiler” means a boiler in which water is heated and operates at a pressure in excess of 160 psig (1.1 MPa) and/or temperature in excess of 250° F.
21. “Historical boilers” means steam boilers of riveted construction, preserved, restored, or maintained for hobby or demonstration use.
22. “Inspection certificate” means a document issued by the Division for the operation of a boiler, ~~or~~ lined hot water storage heater or direct fired jacketed steam kettles when a certificate inspection has been successfully completed, ~~under the Act.~~
23. “Internal inspection” means a complete examination of the internal and external surfaces of a boiler or lined hot water storage heater by an authorized inspector after the boiler or lined hot water storage heater is shut down.
24. “Lined hot water heater” means the same as lined hot water storage heater defined in A.R.S. § 23-471(10) as a vessel which is closed except for openings through which water can flow, that includes the apparatus by which heat is generated and on which all controls and safety devices necessary to prevent pressures greater than 160 psig (1100 kPa

Notices of Final Rulemaking

- gage) and water temperature greater than 210° F are provided, in which potable water is heated by the combustion of fuels, electricity, or any other heat source and removed for external use.
25. "MAWP" means maximum allowable working pressure.
 26. "National Board Commissioned Inspector" means an individual who holds a valid and current National Board Commission issued by the National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, OH 43229-1183.
 27. "National Board Registration Number" means a unique number issued to a boiler, hot water heater or pressure vessel by the manufacturer and recorded with the National Board of Boiler and Pressure Vessel Inspectors.
 28. "NFPA" means National Fire Protection Association.
 29. "Non-Standard Boiler" means any boiler, hot water heater or pressure vessel that is not constructed or maintained to the standards incorporated by reference of this Article.
 30. "Owner" or "Operator" means any individual or organization, including this state and all political subdivisions of this state, who have title, control or duty to control, the operation of one or more boilers, lined hot water heaters or pressure vessels.
 31. "Portable boiler" means a boiler permanently affixed to a trailer with wheels, that is totally self-contained while operating, and not attached to any other object either by pipe, hose or wire.
 32. "Relief valve" means an ASME-stamped automatic pressure relieving device designed for liquid service which is actuated by the pressure upstream of the valve and opens further with an increase in pressure above the stamped pressure.
 33. "Repairs" means work necessary to restore a boiler, ~~or~~ lined hot water ~~storage~~ heater or pressure vessel to a safe and satisfactory operating condition that complies with this Article.
 34. "Safety relief valve" means an ASME-stamped automatically pressure-actuated relieving device designed for use either as a safety valve or as a relief valve.
 35. "Safety valve" means an ASME-stamped automatic pressure relieving device designed for steam or vapor service which is actuated by the pressure upstream of the valve and characterized by full opening pop-action.
 36. "~~Secondhand~~ boiler ~~or secondhand lined hot water storage heater~~" means a boiler, ~~or~~ lined hot water ~~storage~~ heater or pressure vessel that has changed both location and ownership since original installation.
 37. "Shelter" means a permanent structure that provides protection from the weather.
 38. "Special Inspector" means any authorized inspector who is issued an Arizona Commission but is not employed by the state of Arizona.
 39. "State Identification Number" means a unique number assigned by the Division to a boiler, hot water heater or pressure vessel installed in Arizona.
 40. "User" means a person or entity that does not have legal title to a boiler, ~~or~~ lined hot water ~~storage~~ heater or pressure vessel, but has control and responsibility for the operation of a boiler, ~~or~~ lined hot water ~~storage~~ heater or pressure vessel. (for example, lessee).

R20-5-403. Boiler Advisory Board

- A. Members of the boiler advisory board appointed by the Commission pursuant to A.R.S. § 23-474(2) shall serve for a period of three years. At the end of each three year term, the Commission may extend a member's term an additional three years or replace any member with an individual representing similar interest within the industry. The board shall be composed of persons knowledgeable in the boiler industry and shall be reasonably balanced in representation with respect to industry, owner/operators, labor and the public.
- B. No change

R20-5-404. ~~Minimum Standards for Boilers, and Lined Hot Water Storage Heaters and Pressure Vessels~~

~~A. Compliance with National Consensus Standards.~~

A. The following apply to this Article:

1. An owner, or user, or operator of a boiler installed, repaired, replaced, or reinstalled in Arizona, ~~on or six months~~ after the effective date of this Article shall comply with the ~~1995~~ 2007 ASME Boiler and Pressure Vessel Code, Sections I, II, IV, V, VIII Division 1, 2, 3, and IX, and B31.1 Power Piping, and addenda as of ~~June 30, 1997~~ July 1, 2007, incorporated by reference, ~~and on file with the Office of the Secretary of State.~~ This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona, 800 W. Washington Street, Phoenix, AZ 85007 and may be obtained from the ~~ASME International American Society of Mechanical Engineers~~ at International Three Park Avenue, New York, New York NY 10016-5990 or at <http://www.asme.org/>.
2. An owner, or user, or operator of a boiler, lined hot water heater or pressure vessel installed, repaired, replaced, or reinstalled in Arizona, before the effective date of this Article shall comply with subsection (A)(1), or the ASME Boiler and Pressure Vessel Code in effect at the time of the last installation, repair, replacement, or reinstallation of the boiler, lined hot water heater or pressure vessel in Arizona. ~~As an alternative, an owner, user, or operator of a boiler described in this subsection may comply with subsection (A)(1).~~

Notices of Final Rulemaking

3. ~~An owner, user, or operator of an oil-fired lined hot water storage heater installed, operated, repaired, replaced, or reinstalled in Arizona, shall comply with the UL 732 Standard for Safety, Oil-Fired Water Heaters, ANSI Z95.3-1975, April 17, 1975, incorporated by reference and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from Underwriters Laboratories, Inc. at 1655 Scott Boulevard, Santa Clara, California 95050 or <http://www.ul.com/>. The incorporated material may also be obtained from the American National Standards Institute at 11 West 42nd St., New York, New York 10036 or at <http://web.ansi.org/>.~~
- 4.3. ~~An owner, or user, or operator of a gas-fired lined hot water storage heater installed, operated, repaired, replaced, or reinstalled in Arizona shall comply with the American National Standard for Gas Water Heaters, ANSI Z21.10.3-1975, Volume 3, October 17, 1975 Z21.10.3-2004, incorporated by reference and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona, 800 W. Washington Street, Phoenix, AZ 85007 and may be obtained from ANSI, the American National Standards Institute at 11 West 42nd St., New York, New York 10036 Attn: Customer Service Department, 25 W. 43rd Street, 4th Floor, New York, NY 10036 or at <http://web.ansi.org/> <http://www.ansi.org/>.~~
- 5.4. ~~An owner, or user, or operator of a boiler installed, repaired, replaced, or reinstalled in Arizona after the effective date of this Article shall comply with the American National Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1-1995 and 1996 addenda ANSI/ASME CSD-1-2006, incorporated by reference, and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated matter. A copy of this referenced material is available for review at the Industrial Commission of Arizona, 800 W. Washington Street, Phoenix, AZ 85007 and may be obtained from the ASME International, American Society of Mechanical Engineers at International Three Park Avenue, New York, New York NY 10016-5990 or at <http://www.asme.org/>. The incorporated material may also be obtained from the American National Standards Institute at 11 West 42nd St., New York, New York 10036 or at <http://web.ansi.org/>.~~
- 6.5. ~~An owner, or user, or operator of a boiler installed, repaired, replaced, or reinstalled in Arizona before the effective date of this Article shall comply with the American National Standard for Controls and Safety Devices for Automatically Fired Boilers in effect at the time of the last installation, repair, replacement, or reinstallation of a boiler in Arizona. As an alternative, an owner, or user, or operator of a boiler described in this subsection may comply with subsection (A)(5) (A)(4).~~
- 7.6. ~~A permanent source of outside air shall be provided for each boiler and lined hot water storage heater room to assure complete combustion of the fuel as required by ANSI Z223.1-1988, Z223.1-2006, NFPA 54, National Fuel Gas Code incorporated by reference, and on file with the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated matter. A copy of this referenced material is available for review at the Industrial Commission of Arizona, 800 W. Washington Street, Phoenix, AZ 85007 and may be obtained from the American National Standards Institute, at 11 West 42nd St., New York, New York 10036 or at <http://web.ansi.org/>. ASNI, Attn: Customer Service Department, 25 W. 43rd Street, 4th Floor, New York, NY 10036 or at <http://www.ansi.org/>.~~

B. The following registration requirements apply to this Article:

1. All boilers and lined hot water heaters, including reinstalled and secondhand boilers, shall be registered with the National Board of Boiler and Pressure Vessel Inspectors except for:
 - a. Non-standard boilers installed up to six months after the effective date of this Section.
 - b. Cast iron boilers, and
 - c. Cast aluminum boilers.
2. All fired and unfired pressure vessels installed or reinstalled on or after July 1, 2009, shall be registered with the National Board of Boiler and Pressure Vessel Inspectors.

B.C. The following installation, maintenance, and repair requirements apply to this Article.

1. ~~An owner, or user, or operator shall ensure that~~ keep a signed copy of the Manufacturer's Data Report for a boiler or lined hot water storage heater ~~is kept~~ at the location of the boiler or lined hot water storage heater and make the report available for review upon request from an authorized inspector.
2. No change
3. ~~A boiler or lined hot water storage heater installed in new construction shall have at least three feet clearance between the top of the boiler or lined hot water storage heater and the ceiling, and at least three feet clearance between all sides of the boiler or lined hot water storage heater and adjacent walls, structures, or other equipment.~~
3. There shall be at least 36 in. (915 mm) of clearance on each side of the boiler or lined hot water heater. Alternative clearances according to the manufacturer's recommendations are subject to approval by the Division prior to installation of boiler or lined hot water heater.
4. No change
5. ~~An owner, user, or operator shall ensure that a boiler or lined hot water storage heater is located to provide space to~~

Notices of Final Rulemaking

- permit an operator or authorized inspector to safely operate, maintain, and inspect the boiler, lined hot water storage heater, and equipment associated with the boiler or lined hot water storage heater systems.
- 6-5. A newly constructed boiler room in excess of 500 square feet of floor area and containing one or more boilers having with a total fuel capacity of 1,000,000 Btu BTU per hour or equivalent electrical heat input, a heating capacity greater than 285 Kw (electric), shall have at least two exits on each level of the boiler or boilers. The owner or user shall ensure Each each exit is shall be remotely located from other exits.
 - 7-6. An owner; or user; or operator shall ensure that keep a boiler or lined hot water storage heater room is kept clean and with no obstructions to the boiler or lined hot water storage heater.
 - 8-7. An owner; or user; or operator shall ensure that not store combustible, flammable or explosive materials are not stored in a boiler or lined hot water storage heater room.
 8. An owner or user shall not store combustibles less than three feet from any part of a boiler or lined hot water heater.
 9. If a boiler or lined hot water storage heater is moved outside Arizona for temporary use or repairs, the owner; or user; or operator shall not reinstall the boiler or lined hot water storage heater in Arizona until the owner; or user; or operator notifies and receives verbal or written permission approval from the Division under R20-5-419 to reinstall the boiler or lined hot water storage heater. If the Division grants permission approval to reinstall the boiler or lined hot water storage heater, the owner; or user; or operator shall not operate the reinstalled boiler or lined hot water storage heater until the owner; or user; or operator receives an inspection certificate from the Division under this Article.
 10. Before installing, repairing, replacing, or reinstalling any new or used boiler, an owner, user, or operator shall notify an authorized inspector. a new power boiler or a used or secondhand boiler or pressure vessel is installed, an inspection shall be made by an authorized inspector of this state, or by a National Board Commission Inspector. This inspection is to assess the integrity of the vessel and evaluate the original design specification. Prior to installation, an application shall be filed by the owner or user of the boiler or pressure vessel with the Division for approval. This application shall contain the following information:
 - a. Name of the owner or user;
 - b. Mailing address of owner or user;
 - c. Business telephone number of owner or user;
 - d. Installation name and address;
 - e. Installation date;
 - f. Start up date;
 - g. Name and address of boiler/pressure vessel insurance company;
 - h. Arizona serial number of the boiler/pressure vessel being replaced, if applicable;
 - i. Description of the new, used or secondhand power boiler/ pressure vessel as to include:
 - i. Manufacture's name,
 - ii. Date manufactured.
 - iii. Maximum allowable pressure or temperature of boiler/pressure vessel, and
 - iv. National Board registration number;
 - j. Name, address, business phone number, cell phone number, fax number and state contractor's license number of company or individual that will be installing the object;
 - k. Name, title and phone number of the contact person on the site of installation; and
 - l. Signature, title and date of the person submitting the application.
 11. Before the owner or user installing a used boiler or pressure vessel, an owner, user or operator shall ensure that the boiler or pressure vessel shall pass receive a hydrostatic test that is witnessed by an authorized inspector, authorized representative or by any National Board Commissioned inspector in accordance with under R20-5-411.
 12. An owner; or user; or operator of a portable boiler shall notify an authorized inspector before installing the portable boiler and shall not operate the portable boiler until the owner; or user; or operator receives an inspection certificate from the Division.

R20-5-405. Lap-seam Crack Repealed

~~The shell or drum of a boiler in which a lap-seam crack is discovered along a longitudinal riveted joint (i.e., a crack is found in a lap-seam, extending parallel to the longitudinal joint and located either between or adjacent to rivet holes) shall be immediately disconnected from use. Patching is prohibited.~~

R20-5-406. Repairs and Alterations

- A. No change
- B. Repairs and alterations to boilers shall conform to the applicable provisions of the National Board Inspection Code, ~~ANSI/NB-23-1995~~ ANSI/NB-23-2007 Edition and ~~1996~~ 2007 addenda, incorporated by reference ~~and on file with the office of the Secretary of State.~~ This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona, 800 W. Washington Street, Phoenix, AZ 85007, and may be obtained from the National Board of Boiler and Pressure Vessel Inspectors, ~~at~~ 1055 Crupper Avenue, Columbus, Ohio OH 43229-1183 or at http://www.nationalboard.org/.

Notices of Final Rulemaking

- C. An owner, ~~or user, or operator~~ shall not permit an individual to remove or repair a safety appliance of a boiler or lined hot water ~~storage~~ heater in operation. An owner, ~~or user, or operator~~ shall not permit a person to remove or repair a safety appliance of a boiler or lined hot water ~~storage~~ heater not in operation except as provided under the ASME Code. If an owner, ~~or user, or operator~~ permits a person to remove a safety appliance from a boiler or lined hot water heater as provided under the ASME Code, then the owner, ~~or user, or operator~~ shall ensure that the safety appliance is reinstalled in proper working order before the boiler or lined hot water ~~storage~~ heater is placed back into operation.
- D. ~~A No~~ person shall ~~not~~ alter in any manner a safety valve, relief valve, or safety relief valve, except by an organization qualified in accordance with The National Board Inspection Code, ANSI/NB-23 2007 Edition and 2007 addenda incorporated by reference. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona, 800 W. Washington Street, Phoenix, AZ 85007, and may be obtained from the National Board of Boiler and Pressure Vessel Inspectors at 1055 Crupper Avenue, Columbus, OH 43229-1183 or at <http://www.nationalboard.org/>.
- E. Repairs of fittings or appliances shall comply with the requirements of the National Board Inspection Code, ~~ANSI/NB-23 1995~~ ANSI/NB-23-2007 Edition and ~~1996~~ 2007 addenda incorporated by reference, ~~and on file with the Office of the Secretary of State.~~ This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona, 800 W. Washington Street, Phoenix, AZ 85007 and may be obtained from the National Board of Boiler and Pressure Vessel Inspectors, ~~at~~ 1055 Crupper Avenue, Columbus, Ohio OH 43229-1183 or at <http://www.nationalboard.org/>.
- F. Beginning six months after the effective date of this Section ~~Replacement~~ replacement of fittings or appliances shall comply with the requirements of the ~~1995~~ 2007 ASME Boiler and Pressure Vessel Code, Sections I, II, IV, V, VIII, Division 1, 2, 3, and IX and B31.1 Power Piping, and addenda ~~as of June 30, 1997,~~ incorporated by reference, ~~and on file with the Office of the Secretary of State.~~ This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona, 800 W. Washington Street, Phoenix, AZ 85007, and may be obtained from the National Board of Boiler and Pressure Vessel Inspectors ~~at 1055 Crupper Avenue, Columbus, Ohio 43229-1183 or at <http://www.nationalboard.org/>.~~ A copy of the incorporated material may also be obtained from the ASME International, American Society of Mechanical Engineers at International Three Park Avenue, New York, New York NY 10016-5990 or at <http://www.asme.org>.

R20-5-407. Inspection of Boilers, and Lined Hot Water Storage Heaters, Direct Fired Jacketed Steam Kettles and Issuance of Inspection Certificates

- A. An authorized inspector shall comply with the guidelines set forth in The National Board Inspection Code, ~~ANSI/NB-23 1995~~ ANSI/NB-23-2007 Edition and ~~1996~~ 2007 addenda, incorporated by reference, ~~and on file with the Office of the Secretary of State.~~ This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona, 800 W. Washington Street, Phoenix, AZ 85007 and may be obtained from the National Board of Boiler and Pressure Vessel Inspectors, ~~at~~ 1055 Crupper Avenue, Columbus, Ohio OH 43229-1183 or at <http://www.nationalboard.org/>.
- B. No change
- C. An authorized inspector shall not engage in the sale of any object or device relating to boilers, lined hot water ~~storage~~ heaters, direct fired jacketed steam kettles or equipment associated with ~~boiler boilers,~~ or lined hot water ~~storage systems heaters or direct fired jacketed steam kettles.~~
- D. Under A.R.S. § 23-485(D), ~~a special inspector shall submit inspection reports to the Division on forms equivalent to Form NV-6 of the National Board Inspection Code, Appendix G, 1995 Edition and 1996 addenda, incorporated by reference and on file with the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated matter. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the National Board of Boiler and Pressure Vessel Inspectors at 1055 Crupper Avenue, Columbus, Ohio 43229-1183 or at <http://www.nationalboard.org>~~ the Special Inspector shall file the inspection reports by entering data into the Division's Web-based inspection entry form, by submitting a paper inspection report issued by the Division or by electronic transfer of data between the insurance company's database and the Division's database. The inspection report shall contain the following:
 - 1. Whether it is a Certificate or non-Certificate inspection;
 - 2. Whether it is an internal or external inspection;
 - 3. Name of location, address and phone number of the object;
 - 4. Name, address and phone number of owner or responsible party;
 - 5. Contact person's name and phone number at the inspection location;
 - 6. State Identification Number;
 - 7. Certificate due date;
 - 8. Certificate duration;
 - 9. Whether the object is active, inactive or scrapped;
 - 10. MAWP permitted or allowed;
 - 11. National Board registration number;

Notices of Final Rulemaking

12. Name of the manufacturer and the year the object was built;
13. Special location in plant, if applicable;
14. Boiler type;
15. Purpose of the boiler;
16. Specify type of fuel used;
17. Whether the firing method is automatic, manual or unknown;
18. Whether the fuel train is in compliance with CSD-1, NFPA 85, Z21.10.3 or other;
19. Whether the boiler is fully attended as per R20-5-408(C);
20. Heating Surface/BTU Input/ Kilowatt (Kw) Input, as applicable;
21. Whether the heating surface type is stamped, computed or unknown;
22. Minimum safety valve relief capacity required;
23. Whether the minimum safety valve relief capacity type is BTU/Hr, LBS/Hr or unknown;
24. Number of temperature/pressure controls, as applicable;
25. Owner number assigned by the owner to specifically identify object's location;
26. Inspection date;
27. Whether the certificate is posted;
28. Safety Valve Total Capacity;
29. Safety Valve #1 set pressure;
30. Safety Valve #2 set pressure;
31. Safety Valve #3 set pressure;
32. Whether the object has been hydro tested;
33. Hydro Test (psi), if applicable;
34. Whether Pressure/Altitude Gage was tested;
35. Whether of the condition of the object is okay to issue a certificate;
36. Inspection comments, condition of boiler;
37. Violations noted;
38. Inspector name and Arizona Commission number; and
39. National Board Commission number.

- E. The Division shall issue to an owner or user an inspection certificate within ~~15~~ 30 calendar days of receipt of an inspection report that documents ~~that a boiler, or lined hot water storage heater or direct fired jacketed steam kettle that~~ complies with the Act and this Article. An owner, or user, or operator of a boiler, or lined hot water storage heater or direct fired jacketed steam kettle shall post the inspection certificate in the establishment where the boiler, or lined hot water storage heater or direct fired jacketed steam kettle is located.
- F. No change
- G. The Division shall mark with a metal dye stamp a boiler or lined hot water ~~storage heater declared~~ identified by the Division as ~~unfit not safe~~ for further service, with the code "XXX AZ8 XXX" which shall designate that the boiler or lined hot water ~~storage heater~~ is condemned.
- H. For any conditions not covered by this Article, the applicable provisions of the ASME Code that was in effect in Arizona at the time of the installation of the boiler or lined hot water ~~storage heater~~ shall apply.

R20-5-408. Frequency of Inspection

- A. No change
- B. An authorized inspector shall perform an internal inspection and pressure test on a boiler, ~~or lined hot storage water heater or pressure vessel~~ if the inspector determines from an external inspection of the boiler, ~~or lined hot water storage heater or pressure vessel~~ that continued operation of the boiler, ~~or lined hot water storage heater or pressure vessel~~ is a danger to the public or worker safety.
- C. The Division shall issue a 12 month inspection certificate to an owner or user to operate a fully attended power boiler if:
1. An owner, ~~or user, or operator~~ ensures that an authorized inspector performs an external safety inspection and audit of the operational methods and logs of the fully attended power boiler at least every 12 months and performs an internal inspection of the fully attended power boiler at least every ~~24~~ 36 months; ~~and~~
 2. Continuous boiler water treatment is under the direct supervision of persons trained and experienced in water treatment for the purpose of controlling and limiting corrosion and deposits.
 3. Records are available for review, that indicate:
 - a. The date, time, and reason the boiler is out of service; and
 - b. Daily analysis of water samples that adequately show the conditions of the water and elements or characteristics that are capable of producing corrosion or other deterioration to the boiler or its parts; and
 4. Controls, safety devices, instrumentation, and other equipment necessary for safe operation are current, in service, calibrated, and meet the requirements of an appropriate safety code for the size boilers, such as NFPA 85, ASME CSD-1 Controls and Safety Devices for Automatically Fired Boilers, National Board Inspection Code ANSI/NB-23, and state requirements.

Notices of Final Rulemaking

~~2-5.~~ Inspection reports of an authorized inspector document that the fully attended power boiler complies with A.R.S. § 23-471 et seq. and this Article.

- D. No change
- E. No change
- F. An owner, ~~or user, or operator~~ of a hot water heating or hot water supply boiler, or lined hot water heater shall ensure that an authorized inspector performs a certificate and external inspection of the hot water heating or hot water supply boiler or lined hot water heater at the time the hot water heating or hot water supply boiler or lined hot water heater is installed. An inspection certificate issued by the Division following an inspection under this subsection shall not state an expiration date. An owner, user, or operator of a hot water heating or hot water supply boiler not exceeding 200,000 Btu per hour input and a water temperature of 210° F is exempt from the inspections required under this subsection.
- ~~G.~~ Except as provided in A.R.S. § 23-474 (10), an owner, user, or operator of a lined hot water storage heater shall ensure that an authorized inspector performs a certificate and external inspection of the lined hot water storage heater at the time the heater is installed.
- ~~H.~~ An owner, user, or operator of a boiler or hot water storage heater shall ensure that an inspection required under A.R.S. § 23-471 et seq. and this Article is conducted no later than 30 days after an inspection certificate expires. An authorized inspector may conduct an inspection prior to expiration of the inspection certificate.

R20-5-410. Report of Accident

An owner, ~~or user, or operator~~ shall ~~immediately~~ notify the Division within 24 hours of an explosion, severe over-heating, or personal injury involving a boiler, ~~or lined hot water storage heater or direct fired jacketed steam kettle~~. A person shall not remove or disturb the involved boiler, ~~or lined hot water storage heater, or direct fired jacketed steam kettle~~ or parts of the boiler, ~~or lined hot water heater, or direct fired jacketed steam kettle~~ before an investigation by an authorized inspector, except for the purpose of preventing personal injury or limiting consequential damage.

R20-5-411. Hydrostatic Tests

~~A.~~ ~~The owner or user shall perform a hydrostatic or pneumatic pressure test shall not exceed 1.5 times the maximum allowable working pressure. The pressure shall be controlled so that the required test pressure does not exceed 2%. in accordance with the code incorporated by reference in R20-5-404(A) and R20-5-406(B).~~

- ~~B.~~ During a hydrostatic test, safety valves shall be removed or each safety valve disc shall be held to the disc's seat by a testing clamp. Safety valve disc shall not be held to the disc seat by screwing down the compression screw upon the spring. A plug device designed for this purpose may be used to hold the safety valve to the disc seat.
- ~~C.~~ The temperature of the water used to apply a hydrostatic test shall not be less than 70° F nor more than 120° F.

R20-5-412. Automatic Low-Water Fuel Cutoff Devices or Combined Water Feeding and Fuel Cutoff Devices

- A. An owner, user, or operator shall ensure that low-water fuel cutoff devices or combined water feeding and fuel cutoff devices do not interfere with an operator's or inspector's ability to safely clean, repair, or inspect a boiler or lined hot water storage heater.
- B. A low-water fuel cutoff device shall have a pressure rating not less than the set pressure of the safety valve or safety relief valve.
- ~~C.~~ An open circuit failure, break, or disconnection of the electrical components or conductors in the safety circuit of a probe-type low-water fuel cutoff device shall prevent continued operation of the firing mechanism of the device.
- ~~D.~~ If an alarm is used, the alarm shall be clearly audible above the existing noise level and shall be located to alert the operator of the boiler or lined hot water storage heater that a potentially dangerous situation is developing. An alarm may be used in conjunction with indicating lights.
- ~~E.~~ Each automatically fired high pressure steam boiler, except miniature boilers, and constantly attended boilers, shall have at least two automatic low-water fuel cutoff devices. Each cutoff device shall be installed to prevent start-up of the boiler and to automatically cut off the boiler fuel supply when the water level of the boiler falls no lower than the lowest visible part of the gauge glass. Controls of the cutoff devices shall be set so that the cutoff devices function sequentially.
- ~~F.~~ Each miniature boiler shall have at least one low-water fuel cutoff device.
- ~~G.~~ The activation of the second (lower) low-water fuel cutoff device of two cutoff devices set to function sequentially shall cause a safety shutdown (lockout) of a boiler requiring manual reset of the boiler. A manual reset device shall be installed in the lower cutoff device or installed in another location on the boiler as permitted under this Section. If a reset device is not installed in the low-water fuel cutoff device, an indicator shall reflect that the low-water fuel cutoff device has caused a safety shutdown (lockout) of the boiler. The manual reset device may be an instantaneous type or use a time delay of not more than three minutes after the fuel has been cut off.
- ~~H.~~ Except as otherwise permitted under this Article, a low-water fuel cutoff device shall be inserted internally or attached externally to a boiler. An external cutoff device may be attached to piping that connects a water column to a boiler or the external cutoff device may be combined with a water column. The pipe size of water column piping and connections to which an external cutoff device is attached or combined shall be at least 1". If a low-water fuel cutoff device is connected to a boiler by pipe or fittings, no shutoff valves shall be placed in the connecting piping. A cross or similar fitting shall be placed in the water piping at every right angle to facilitate cleaning and inspection of the boiler and low-water fuel cutoff

Notices of Final Rulemaking

device. Fuel cutoff devices shall have a full-size vertical drain pipe and blowoff valve located at the device or water-equalizing pipe connections, so that the device and the equalizing pipe can be flushed and the fuel cutoff device tested.

- I. A time delay component may be combined with a low water fuel cutoff device to prevent short cycling in the boiler system. The time delay component shall not constrict any connecting piping, and the time delay shall not exceed the boiler manufacturer's timing or 90 seconds, whichever is less. The low water fuel cutoff device shall shut off fuel supply if the water level falls to the lowest visible part of the gauge glass.
- J. A flow-sensing device may be installed instead of a low water fuel cutoff device in a water tube or coil type boilers that use forced circulation to prevent overheating and failure. The flow-sensing device shall prevent burner operation if the circulating flow of the water tube or coil type boiler is below a safe minimum of flow. Flow-sensing devices shall be located to ensure that the device will not be activated if a relief condition occurs.
- ~~K-C.~~ In addition to the requirements of subsections (A) through (E); and (B), the following requirements apply to low water fuel cutoff devices for steam boilers all low-water fuel cutoffs and flow sensing devices shall be constructed and installed in accordance with applicable ASME Code and standards for boilers and steam jacked kettles in R20-5-404(A), the following requirements apply to low water fuel cutoff devices for steam boilers.
 - 1. Each automatically fired steam heating boiler shall have at least one automatic low water fuel cutoff or combined water feeding and fuel cutoff device. Boilers with a pumped condensate return shall have two cutoff devices, each attached with separate connections to the boiler. Each low water fuel cutoff device shall be installed to prevent start-up and to automatically shut off the boiler fuel supply if the water level falls no lower than the lowest visible part of the gauge glass. If a water feeding device is used, it shall be constructed and installed so that the water inlet valve cannot feed water into the boiler through the float chamber or its connections to the boiler. The water feeding device shall be located to maintain the operating water level of the boiler.
 - 2. If a steam boiler has dual low water fuel cutoff devices both devices shall shut off the fuel supply to the boiler if a low water condition develops. The low water fuel cutoff devices shall be set to function sequentially. The activation of the second (lower) low water fuel cutoff device shall cause a safety shutdown (lockout) of the boiler requiring manual reset of the boiler. A manual reset device shall be installed in the lower cutoff device, or installed in another location on the boiler as permitted under this Section. If a reset device is not installed in the low water fuel cutoff device, an indicator shall reflect that the low water fuel cutoff device has caused a safety shutdown (lockout) of the boiler. The manual reset device may be an instantaneous type or use a time delay of not more than three minutes after the cutoff device has caused a fuel cutoff.
 - 3. A low water fuel cutoff device shall be inserted internally or attached externally to a boiler. An external cutoff device may be connected to water column piping. The water column piping to which an external cutoff device is attached shall be at least 1" pipe size. If the cutoff device is connected to the boiler by pipe and fittings, no shutoff valves shall be placed in the connecting piping. A cross or similar fitting shall be placed in the water piping connection at every right angle to facilitate cleaning and inspection of the boiler and low water fuel cutoff device. A full-size drain valve and piping shall be installed on the lowest cross or similar fitting to facilitate testing of the low water cutoff device.
 - 4. A low water fuel cutoff or combined water feeding and fuel cutoff device may be installed in the connection (tapped openings) that attaches a water gauge glass directly to a boiler, provided the water gauge glass is connected to the boiler with nonferrous tees and wyes so that the water gauge is attached directly and as closely as possible to the boiler. The pipe size of a nonferrous tee and wye connecting a water gauge glass to the boiler shall be at least 1/2". The urn of the tee or wye shall connect to the water glass fitting and the side outlet or branch of the tee or wye shall connect to the water feeding and fuel cutoff device. The ends of all pipe nipples shall be reamed to the full inside diameter of the pipe.
 - 5. A low water fuel cutoff device or combined water feeding and fuel cutoff device shall have a vertical drain pipe and a blowoff valve located at the device or water-equalizing pipe connections to allow testing and flushing of the device and the equalizing pipe.
 - 6. A time delay component may be combined with a low water fuel cutoff device to prevent short cycling in the boiler system. The time delay component shall not constrict any connecting piping, and the time delay shall not exceed the boiler manufacturer's timing or 90 seconds, whichever is less. The low water fuel cutoff device shall cut off the fuel supply if the water level falls to the lowest visible part of the gauge glass.
- L. In addition to the requirements of subsections (A) through (E), the following requirements apply to low water fuel cutoff devices for hot water boilers:
 - 1. An automatically fired hot water boiler shall be protected by a low water fuel cutoff or combined feeder cutoff device designed for hot water service.
 - 2. A low water fuel cutoff device shall be located any place above the lowest safe permissible water level established by the boiler manufacturer.
 - 3. No stop valves shall be located between the boiler and control of a low water fuel cutoff device.
 - 4. If a low water fuel cutoff device is located in the boiler system piping, the owner, user, or operator of the hot water boiler shall ensure that:
 - a. The float chamber drains properly under a low water condition; and

Notices of Final Rulemaking

- b. The low water cutoff device is installed so that if water flow occurs in the float chamber, the water flows in the upward direction.
- 5. A low water fuel cutoff device shall cause a safety shutdown (lockout) requiring a manual reset if low water conditions occur. If a reset device is not installed in the low water fuel cutoff device, an indicator shall reflect that the low water fuel cutoff device has caused a safety shutdown (lockout). The manual reset device may be an instantaneous type or may use a time delay of not more than three minutes after the fuel has been cut off.
- 6. An owner, user, or operator shall provide a method to test the operation of a low water fuel cutoff device without draining the piping system of the boiler. The method of testing shall not render the low water fuel cutoff device unsafe or inoperable.

R20-5-413. Safety and Safety Relief Valves

- A. A valve shall not be placed between a safety valve or a safety relief valve and installed on a boiler or lined hot water heater, or between a safety valve or a safety relief valve and the safety valve discharge point, discharge pipe attached to the boiler or lined hot water heater.
- B. A discharge pipe shall be the full size of the safety outlet. The discharge pipe shall be fitted with a drain to prevent water from accumulating in the discharge pipe and in the upper part of the safety valve.
- C. Safety valve discharge piping shall not discharge water or steam into walkways or platforms.
- D. In addition to the requirements of subsections (A) through (C), the following requirements apply to safety valves for power boilers:
 - 1. A power boiler shall have at least one safety valve, except that if the heating surface of a power boiler exceeds 500 square feet, or the electric input of the power boiler is greater than 500 kilowatts, the power boiler shall have at least two safety valves;
 - 2. Safety valves shall be connected to the power boiler independent of any steam connection and shall be attached as closely as possible to the power boiler without unnecessary intervening pipe or fittings;
 - 3. A safety valve for a power boiler shall have the capacity to discharge steam generated by the boiler without allowing the pressure to rise more than 6% above the highest pressure to which any valve is set, and in no case more than 6% above the maximum allowable working pressure of the power boiler;
 - 4. The minimum relieving capacity of a safety valve or safety relief valve for power boilers, other than electric boilers and forced flow steam generators without fixed steam and water lines, shall be determined on the basis of the pounds of steam generated per hour per square foot of the boiler heating surface and water wall heating surface;
 - 5. The minimum relieving capacity of a safety valve or safety relief valve for electric boilers shall be 3.5 pounds per hour per kilowatt input;
 - 6. A power boiler shall have one or more safety valves set at or below the maximum allowable working pressure. The remaining safety valves may be set within a range of 3% above the maximum allowable working pressure. The range of settings for all safety valves on the boiler shall not exceed 10% of the highest pressure to which any valve is set;
 - 7. If two or more connected power boilers operate at different pressures and safety valve settings, the lower pressure boiler and piping connecting the boilers shall be equipped with safety valves of sufficient capacity to prevent overpressure of the lower pressure boiler and connecting piping, considering the maximum generating capacity of the connected boilers;
- 8. B. When a power boiler is supplied with feed-water directly from a water main without the use of a feeding apparatus, safety valves shall not be set at a pressure greater than 94% of the lowest pressure obtained in the water main feeding the boiler;
- 9. C. ~~Weighted lever safety valves or safety valves having either a cast iron seat or disk shall not be used. Safety valves, safety relief valves and relief valves shall conform to the requirements of the 1995 2007 ASME Boiler and Pressure Vessel Code, Section I, IV or VIII, and addenda as of June 30, 1997 January 1, 2008, incorporated by reference as applicable, and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona, 800 W. Washington Street, Phoenix, AZ and may be obtained from the American Society of Mechanical Engineers ASME, at International Three Park Avenue, New York, New York NY 10016-5990 or at <http://www.asme.org/>; and~~
- 10. No safety valve shall be smaller than 1/2" and no larger than 6" standard pipe size.
- E. In addition to the requirements of subsections (A) through (C), the following requirements apply to safety valves for heating boilers:
 - 1. A steam heating boiler shall have at least one ASME rated and stamped safety valve of the spring loaded pop type, adjusted to relieve the total capacity of the boiler. Seals shall be attached to each safety valve to prevent tampering or resetting of the valve;
 - 2. A hot water heating or hot water supply boiler shall have at least one safety relief valve to relieve the total capacity of the boiler without exceeding the maximum allowable working pressure of the boiler; and
 - 3. Hot water heating boilers installed in parallel (side by side), having a pump return, shall have check valves installed on either side of a stop valve on the common return header.
- F. In addition to the requirements of subsections (A) through (C), the following requirements apply to lined hot water storage heaters:

Notices of Final Rulemaking

- ~~1. A lined hot water storage heater shall have at least one ASME-rated and stamped, pressure, temperature, automatic reseating relief valve. Valves shall be set to discharge at or below the maximum allowable working pressure of the heater and shall be equipped with a test lever;~~
- ~~2. The minimum relieving capacity of relief valves shall be determined by the Btu-per-hour output of the burner that is stamped on the data plate of the lined hot water storage heater; and~~
- ~~3. The minimum relieving capacity of valves on an electric lined hot water storage heater shall be 3,500 Btu per hour for each kilowatt rating.~~

R20-5-414. Pressure-reducing valves Repealed

- ~~A. If a pressure-reducing valve is used, at least one relief or safety valve shall be provided on the low pressure side of the reducing valve if the piping or equipment on the low pressure side does not meet the requirements of the high pressure side. Relief or safety valves shall be placed next to or as close as possible to the reducing valve. A relief or safety valve shall not discharge escaping fluid into walkways or an area in which individuals work.~~
- ~~B. A hand-controlled bypass on a reducing valve is permissible. If a hand-controlled bypass is used on a reducing valve, the safety valve required on the low pressure side shall have the capacity to relieve all pressure through the bypass without overpressuring the low pressure side.~~
- ~~C. A pressure gauge shall be installed on the low pressure side and next to the reducing valve.~~

R20-5-415. Boiler Blowdown, ~~and~~ Blowoff Equipment and Drains

- ~~A. Except as provided in this Section, an owner, or user or operator of blowdown and blowoff equipment shall comply with the National Board Rules and Recommendations for the Design and Construction of Boiler Blowoff Systems, 1991 Edition, incorporated by reference, and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona, 800 W. Washington Street, Phoenix, AZ 85007 and may be obtained from the National Board of Boiler and Pressure Vessel Inspectors, at 1055 Crupper Avenue, Columbus, Ohio OH 43229-1183 or at <http://www.nationalboard.org/>.~~
- ~~B. No change~~
- ~~C. No change~~
- ~~D. No change~~
- ~~E. No change~~
- ~~F. No change~~
- ~~G. In addition to the requirements of subsections (A) through (F), the following requirements apply to blowdown piping, and valves and drains for power boilers:

 - ~~1. Each power boiler and high temperature water boiler shall have two valves on the blowdown piping. be installed and maintained according to ASME Code, Section 1 and B31.1, incorporated by reference in R20-5-404, at the time of installation. The valves shall be designed for the pressure and temperature of the maximum operating pressure of the boiler. The blowdown piping shall have two slow-opening valves or one slow-opening and one quick-opening valve. The slow-opening valve shall be a wye type valve, except that angle valves may be used in vertical pipes, or horizontal piping, if the angle valves are constructed or installed so that the lowest edge of the opening through the seat of the angle valve is at least 25% of the inside diameter below the center line of the angle valve.~~
 - ~~2. Globe valves, gate valves, and valves that have dams or other pockets where sediment may collect shall not be used in a blowdown system.~~
 - ~~3. Quick-opening valves, including ball valves, shall be constructed and approved in accordance with ANSI/ASME B31.1 1995 Edition, Power Piping, incorporated by reference and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the American Society of Mechanical Engineers at International Three Park Avenue, New York, New York 10016-5990 or at <http://www.asme.org/>.~~
 - ~~4. If a safety valve is set greater than 100 p.s.i., the boiler blowdown piping shall be constructed of heavy duty pipe. For purposes of this subsection, heavy duty pipe means Schedule 80 black iron pipe or stronger.~~
 - ~~5. Size of boiler blowdown and blowoff piping and valves shall comply with Table 1.~~~~

Table 1.

Minimum Required Safety or Safety-Relief Valve Capacity (pounds of steam per hour)	Blowdown and Blowoff Piping and Valve Size
Up to 500	3/4"
501 to 1250	1"
1251 to 2500	1-1/4"
2501 to 6000	1-1/2"

Notices of Final Rulemaking

6001 and larger	2 ²
-----------------	----------------

- H.** In addition to the requirements of subsections (A) through (F), the following requirements apply to bottom blowdown or drain valves for heating boilers: and hot water heaters:
1. A hot water heating boiler or hot water heater shall have a bottom blowdown or drain pipe connection fitted with a valve or cock connected with the lowest available water space with the minimum size of blowdown piping and valves as ~~shown in Table 1; required by ASME Code, Section IV, incorporated by reference, in R20-5-404(A).~~
 2. ~~A boiler that has a capacity of no more than 25 gallons and a minimum drain valve size of 3/4" is exempt from subsection (F); and~~
 3. ~~Discharge piping connected to a bottom blowdown or bottom drain connection, or both, shall be the same pipe size as the connection.~~
 - 4.** Discharge outlets of blowdown pipes, safety valves, and other piping shall be located and structurally supported to prevent injury to individuals.

R20-5-416. Maximum Allowable Working Pressure

- A.** The ASME Code under which a boiler was constructed and stamped shall determine the maximum allowable working pressure for the ASME-stamped boiler.
- B.** If components in the boiler or hot water system such as valves, pumps, expansion tanks, storage tanks or piping have a lesser working pressure rating than the boiler or hot water heater, the pressure setting for the safety or safety relief valve on the boiler or hot water heater shall be based upon the component with the lowest maximum allowable working pressure rating.

R20-5-417. Maintenance and Operation of Boilers; ~~Qualifications for Operators of Power Boilers,~~ Hot Water Heaters and Direct Fired Jacketed Steam Kettles

- A.** An owner; ~~or user; or operator~~ of a boiler, hot water heater or direct fired jacketed steam kettle constructed under the ASME Code, Sections I, ~~H,~~ IV, ~~V,~~ or VIII Division 1, ~~or IX~~ incorporated by reference in R20-5-404(A) shall comply with the manufacturer's maintenance and operation instructions for the boiler, hot water heater or direct fired jacketed steam kettle.
- B.** In addition to the requirements of subsection (A), an owner; ~~or user; or operator~~ of a boiler constructed under the ASME Code, Sections I, ~~H,~~ IV, ~~V,~~ ~~or IX,~~ shall comply with the following preventive maintenance schedule if the boiler contains the component or system listed.
1. On a daily basis, the owner; ~~or user; or operator~~ shall:
 - a. Test the low-water fuel cutoff and alarm, and
 - b. Check the burner flame for proper combustion.
 2. On a weekly basis, the owner; ~~or user; or operator~~ shall:
 - a. Check for proper ignition, and
 - b. Check the flame failure detection system.
 3. On a monthly basis, the owner; ~~or user; or operator~~ shall:
 - a. Test all fan and air pressure interlocks,
 - b. Check the main burner safety shutoff valve,
 - c. Check the low fire start switch,
 - d. Test fuel pressure and temperature interlocks of oil-fired units, and
 - e. Test the high and low fuel pressure switch of gas-fired units.
 4. Every six months, the owner; ~~or user; or operator~~ shall:
 - a. Inspect burner components;
 - b. Check flame failure system components, such as vacuum tubes, amplifier; and relays;
 - c. Check wiring of all interlocks and shutoff valves;
 - d. Recalibrate all indicating and recording gauges; and
 - e. Check steam and blowdown piping and valves.
 5. Annually, the owner; ~~or user; or operator~~ shall:
 - a. Replace vacuum tubes, scanners, or flame rods in the flame failure system according to the manufacturer's instructions;
 - b. Check all coils and diaphragms; and
 - c. Test operating parts of all safety shutoff and control valves.
- C.** An owner or user of a power boiler or high temperature boiler shall designate an individual who meets the requirements of subsection ~~(E)~~ (D) to operate the boiler. An owner or user may operate the boiler if the owner or user meets the requirements of subsection ~~(E)~~ (D).
- ~~**D.** A boiler operator that meets the requirements of subsection (E) shall be on the premises at all times a power boiler is in operation.~~
- E.D.** ~~A boiler~~ An operator of a power boiler or high temperature water boiler shall meet the following minimum requirements:
1. Knowledge of and an ability to explain the function and operation of all safety controls of the boiler;

Notices of Final Rulemaking

2. Ability to start the boiler in a safe manner;₃
3. Knowledge of all safe methods of feeding water to the boiler;₃
4. Knowledge of and the ability to blow down the boiler in a safe manner;₃
5. Knowledge of safety procedures to follow if water exceeds or drops below permissible safety levels;₃ and
6. Knowledge of and the ability to safely shut down the boiler.

R20-5-418. Non-standard Boilers

An owner; ~~or user; or operator~~ shall remove from service a boiler, hot water heater or pressure vessel that does not bear an ASME stamp unless the boiler owner or user request a variance under R20-5-429, ~~operates properly and safely after an inspector performs an internal and external inspection and a hydrostatic pressure test of 1 1/2 times the allowable working pressure held for at least 30 minutes. The inspections and test required under this subsection shall be performed on an annual basis and any time an owner, user, or operator suspects that a boiler cannot be operated safely.~~

R20-5-419. Request to Reinstall Boiler or Lined Hot Water Heater

- A. The Division shall grant or deny ~~permission approval~~ to reinstall a boiler or lined hot water heater within three business days after an owner or user requests ~~permission approval~~ to reinstall the boiler or lined hot water heater. The order of the Division granting or denying ~~permission approval~~ to reinstall a boiler shall be in writing.
- B. The Division shall grant ~~permission approval~~ to reinstall a boiler or lined hot water heater if the boiler or lined hot water heater complies with A.R.S. § 23-471 et seq. and this Article. The Division shall deny ~~permission approval~~ to reinstall a boiler or lined hot water ~~storage~~ heater if the boiler or lined hot water ~~storage~~ heater does not comply with A.R.S. § 23-471 et seq. and this Article.
- C. An order of the Division denying ~~permission approval~~ to reinstall a boiler shall be final unless an owner or user requests a hearing under A.R.S. § 23-479 within 15 days after the Division mails the order. The owner or user requesting a hearing shall have the burden to prove that a boiler meets the requirements of A.R.S. § 23-471 et seq. and this Article.

R20-5-420. Special Inspector Certificate under A.R.S. § 23-485

- A. No change
 1. No change
 - a. No change
 - b. No change
 2. No change
 - a. No change
 - b. No change
 3. No change
- B. Application to take Written Examination under A.R.S. § 23-485(A).
 1. ~~An application to take the written examination under A.R.S. § 23-485(A) is deemed complete under subsection (A)(1) when an applicant files a complete and notarized application to take the National Board Examination.~~
 - 2.1. An individual requesting to take the written examination under A.R.S. § 23-485(A) shall complete an application to take the National Board Examination on a form approved by and submit the application to the Commission Division at least 45 days before the date of the examination.
 - 3.2. The application to take the National Board Examination shall be filed with the Division. An application is considered filed when it is received at the office of the Division and stamped by the Division with the date of filing.
 - 4.3. An application to take the National Board Examination shall be typewritten or written in legible text on a legible form, paper or electronic, issued to the Division, with the following information:
 - a. Full legal name.
 - b. State or country of residency.
 - c. Mailing address.
 - d. Telephone number.
 - e. E-mail address, and
 - f. Employer's name and address.
 5. ~~The individual completing the application to take the National Board Examination shall sign the application. The signature shall be notarized.~~
- C. No change
 1. The applicant provides written documentation that the applicant holds a certificate of competency as a an inspector of boilers or lined hot water storage heaters for a state that has a standard of examination substantially equal to that of Arizona or the applicant holds a commission as an inspector of boilers and pressure vessels issued by the National Board of Boiler and Pressure Vessel Inspectors, is a National Board Commissioned Inspector, and
 2. The applicant provides proof of employment as a full time inspector for a company ~~operating or insuring boilers or lined hot water storage heaters~~ conducting business in Arizona and whose duties as an inspector include making inspections of boilers or lined hot water ~~storage~~ heaters to be used or insured by the company and not for resale.
- D. Notice of Eligibility.

Notices of Final Rulemaking

- 1- ~~If an applicant is eligible to take the National Board Examination, the Division shall issue a written notice of eligibility to the applicant. If an applicant is not eligible to take the National Board Examination, the Division shall issue a written notice denying eligibility to the applicant. The Commission shall deem the notice denying eligibility final if an applicant does not request a hearing within 15 days after the Division mails the notice.~~
 - 2- If an applicant meets the criteria of A.R.S. § 23-485 and subsection (C), the Division shall issue a certificate to the applicant under subsection ~~(G)~~ (C). If an applicant fails to meet the criteria of A.R.S. § 23-485 and subsection (C), the Division shall issue a written notice denying eligibility to the applicant. The Commission shall deem the notice denying eligibility final if an applicant does not request a hearing within 15 calendar days after the Division mails the notice.
- E. Written Examination under A.R.S. § 23-485(A).
1. No change
 2. No change
 - 3- ~~An applicant is qualified to take the National Board Examination if the applicant meets the criteria established by the Rules and Regulations of the National Board of Boiler and Pressure Vessel Inspectors, Article 1, NB 215, 1994, incorporated by reference and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the National Board of Boiler and Pressure Vessel Inspectors at 1055 Crupper Avenue, Columbus, Ohio 43229-1183 or at <http://www.nationalboard.org/>.~~
 4. A passing grade of the National Board Examination is 70%.
 - ~~5-3.~~ The Division shall provide written notice to an applicant of the applicant's grade for the National Board Examination within three days after the Division receives notice of the grade from the National Board of Boiler and Pressure Vessel Inspectors.
 - ~~6-4.~~ The Division shall issue a certificate of competency to an applicant who passes the National Board Examination.
- F. Issuance of Special Inspector Certificate. The Division shall issue a special inspector certificate, A.R.S. § 23-485, to an applicant no later than ~~three~~ 15 calendar days after the Division determines that an applicant meets the criteria of A.R.S. § 23-485 and subsection (C).
- G. No change
1. No change
 2. No change
 3. No change
 4. No change
 5. No change
 - a. No change
 - b. No change
 - c. No change
 - d. No change
 - e. No change
 - f. No change
 - g. No change
 - h. No change
 6. No change
 7. No change

R20-5-429. Variance

- A.** Any owner or user may apply to the Director for a variance from the requirements of this Article, upon demonstrating the construction, installation, and operation of the boiler or pressure vessel will maintain the same level of safety as prescribed by this Chapter. The Director shall issue a variance if the Director determines that the proponent of the variance has demonstrated the construction, installation, and operation of the boiler or pressure vessel will maintain the same level of safety as prescribed by this Chapter. The variance issued shall prescribe the construction, installation, operation, maintenance, and repair conditions that the owner or user shall maintain.
- B.** A variance may be modified or revoked upon application by an owner, user or the Director, on the Director's own motion at any time after six months from issuance if the owner or user has not complied with the variance or if the variance does not protect the health and safety of employees or general public.
- C.** The application for a variance shall be made on the form issued by the Division and contains the following information:
1. Owner or user's name and company name;
 2. Mailing address;
 3. Telephone number;
 4. Fax number;
 5. Contact person;
 6. Contact person's telephone number;

Notices of Final Rulemaking

7. Address or location of proposed variance;
 8. Type of facility to include:
 - a. Variance description;
 - b. Justification for variance;
 - c. Component or system involved;
 - d. Supporting documentation for variance;
 - e. Identify the statute, rule, code or standard to justify the variance; and
 9. Printed name and title of owner or user, signature of owner or user and date.
- D.** If an owner or user does not agree with the variance issued or revoked by the Director, a request for a hearing under A.R.S. § 23-479 can be made with the Commission.

R20-5-430. Forced Circulation Hot Water Heaters

- A.** All water tube or coil-type hot water heaters that require forced circulation to prevent overheating and failure of the tubes or coils shall have a safety control, to prevent burner operation at a flow rate inadequate to protect the hot water heater unit against overheating, at all allowable firing rates. The safety control shall shut down the burner and prevent restarting until an adequate flow is restored.
- B.** All water tube or coil-type hot water heaters that require forced circulation to prevent overheating and failure of the tubes or coils, shall have a manually operated remote shutdown switch or circuit breaker and shall be located just outside the hot water heater room door and marked for easy identification. The shutdown switch shall be installed in a manner to safeguard against tampering. If a hot water heater room door is on the building exterior, the switch shall be located just inside the door. If there is more than one door to the hot water heater room there shall be a switch located at each door. The remote shutdown switch or circuit breaker shall disconnect all power to the burner controls.

R20-5-431. Code Cases

Code cases approved for use by the ASME Code Committee are allowed to be used in the design, fabrication and testing of boilers and pressure vessels provided approval from the Chief Boiler Inspector is obtained prior to use.

R20-5-432. Historical Boilers

Historical boilers shall require an initial Certificate inspection by an authorized inspector, followed by a Certificate inspection every three years thereafter if stored inside a shelter, or annually if stored outdoors. The initial Certificate inspection shall include ultrasonic thickness testing of all pressure boundaries. Thinning of the pressure retaining boundary shall be monitored and recorded on the inspection report, in accordance with R20-5-407(D), to the owner and the Division's electronic copy.