



**ASHRAE**  
**2016 Boiler and Pressure Vessel**  
**Program Overview**  
**February 22, 2016**

Iowa Division of Labor

Boiler and Unfired Steam Pressure Vessel Program

Chief Boiler Inspector, Rick Merkle

515-281-8064

# History of the Boiler and Pressure Vessel Program

- The Iowa boiler program started in 1887
- Boiler Board was created in 2004
- Revolving fund created in 2004
- Date of latest amendment to law: July 2014.
- Date of latest rules and regulations: 2016.
- Number Objects  
Boilers = 21,607  
Unfired Steam Pressure Vessels = 3,689

# Enforcement Codes of the Boiler and Pressure Vessel Program

- **The most restrictive code applies. Dealing with Iowa Rules, ASME Standards, NBIC and CSD-1**
- **ASME codes were adopted in 1960**
- **Installations after July 1 1983, must comply with CSD-1- 1982 (Edition)**
- **The National Board of Inspection Code (NBIC) was adopted January 1, 1998. The edition that was adopted was the NBIC-23 (1995)**
- **Low pressure steam/hot water heating boilers that were installed prior to these dates are required to follow the specific administrative rule and ASME requirements at the time of installation.**
- **In 1998 new administrative rules were adopted and changed to Chapters 90, 91, 92, 93, 94, 95 and 96.**  
<http://www.iowadivisionoflabor.gov/boiler-and-pressure-vessel-iowa-code-and-administrative-rules>
- **There is a new definition of "re-installation" effective May 20, 2015. This means if the object has been "re-installed" the owner/user shall comply with the current codes. (More on this later)**

# Iowa Code Update

## Effective April 01, 2016

- ASME boiler and pressure vessel construction codes -2015
- The National Board Inspection Code (NBIC) 2015
- The National Electrical Code- NFPA-70 2014
- Piping codes: The Power Piping Code, ASME B31.1 - 2014,
- The Building Services Piping code, ASME B31.9, - 2014
- Controls and Safety Devices for Automatically Fired Boilers (CSD-1)-2012 (No change)

# Iowa Code Update

## Effective April 01, 2016

- International *Mechanical code (IMC)*.  
Excluding Section 701.1, Chapters 2 and 7  
2015
- NPFA-31 Installation of Oil Burning  
Equipment, 2011 (No Change)
- NFPA-54 National Fuel Gas Code, 2015
- NFPA-58 Liquefied Petroleum Gas Code,  
2014
- NFPA-85 Boiler and Combustion Systems  
Hazards 2015

## **Proposed Rule Change 875—90.11(89) Reporting requirements.**

To expand the reporting requirements from “Old rule on explosions” to this “New rule on incidents”

**875—90.11(89) Notification of explosion. Owners and users of covered objects must report any object explosion by calling (515)281-3647 or (515)281-6533. If the explosion occurs during normal division operating hours, notification shall occur before close of business on that day. If the explosion occurs when the division office is closed, the notification shall occur no later than close of business on the next division business day. Division hours are 8 a.m. to 4:30 p.m., Monday through Friday, except state holidays.**

**90.11(3) Reporting explosions and other incidents.**

**a. The following definitions apply to this subrule.**

“Incident” means the explosion of a covered object or other failure of a component of a covered object causing injury or acute illness.

“Injury” means a personal injury requiring professional medical care or causing disability exceeding one day.

**b. The owner or user of a covered object shall notify the commissioner of an incident. A special inspector investigating an incident shall notify the owner or user of this reporting requirement.**

**c. Incident reports shall be made by calling (515)281-3647 or (515)281-6533. If the incident occurs during normal division operating hours, notification shall occur before close of business on that day. If the incident occurs when the division office is closed, the notification shall occur no later than close of business on the next division business day. Division hours are 8 a.m. to 4:30 p.m., Monday through Friday, except state holidays.**

**d. At the request of the commissioner, a person who submits a report pursuant to this subrule shall also submit a written report that includes the state identification number of the object, name of the owner of the object, and description of the incident.**

**e. The removal of any part of the damaged object from the premises is forbidden until permission to do so is granted by the state inspector or special inspector who investigated the incident.**

**f. When an incident involves the failure or destruction of any part of the object, the use of the object is forbidden until it has been made safe and it has passed an inspection by the state inspector or special inspector who investigated the incident.**

# Proposed Rule Changes

- To require that R-1 and R-2 forms be filed with our office
- to move the CSD-1 reporting requirements from 91.20 to 90.11

**\*\*\*\*Recommending to go to our web site to see when these requirements will be applicable. I will also be sending a message to keep everyone informed.**

# Iowa code reminders

- 875 – 90.11
- The installer shall complete Manufacturer's/Installing Contractor's Report for ASME CSD-1 (CSD-1 report) for each newly installed or reinstalled object.
- A person who installs a new burner, new gas train, or new controller on an object shall complete a CSD-1 report.
- A person who replaces a part or component of an object shall complete the relevant portions of the CSD-1 report unless the replacement satisfies the design specifications. A copy of an invoice containing the same information as the relevant portions of the CSD-1 report is an acceptable alternative.



# Iowa code reminders

## **90.06(1) General**

All boilers and unfired steam pressure vessels covered by Iowa code, chapter 89 shall be inspected according to the requirements of National Board Inspection code (2015) which hereby adopted by reference.

## **875-90.8 (89) Certificate**

No boiler or pressure vessel shall be operated without a current, valid certificate to operate. A certificate to operate shall not be issued until the boiler or pressure vessel is in compliance with the applicable rules and the fees have been paid. The certificate should be conspicuously posted in the room where the object is installed.

# Old and Current Certificates

Boiler Nbr: NB 3231  
State Nbr: IA097807

IOWA WORKFORCE DEVELOPMENT  
**DIVISION OF LABOR SERVICES**  
1000 EAST GRAND AVE, DES MOINES, IOWA 50319  
515-281-6533 [www.iowaworkforce.org](http://www.iowaworkforce.org)  
**BOILER INSPECTION SECTION**

Expnrv Date: 10/2016  
Invoice Nbr: 146356

(OLD)

Location: M LCKRM  
YMCA of Greater Des Moines  
501 Grand Ave  
Des Moines, IA 50309-2406

Year Built: 2014  
Boiler Type: ELEC. GEN. B.  
Manufacturer: SAUNATEC  
Pressure Allowed: 15  
Safety Valve Pressure: 15

**OLD**

Nature of Business: Public Assembly

## Annual Inspection Certificate

This is to certify that herein described may be operated at pressure not to exceed that shown above and only at the location specified herein. NEW OR RE-INSTALLATIONS REQUIRE 10 DAY ADVANCE NOTICE FORM.

Next Internal Is Due On: 10/2017

Caution: Before making any repairs-Notify the Division of Labor Services or your Insurance Company.

YMCA of Greater Des Moines  
501 Grand Ave  
Des Moines, IA 50309

*Michael A. Mann*

HANG THIS CERTIFICATE UNDER GLASS IN BOILER OR ENGINE ROOM

Boiler Nbr: NB 54728  
State Nbr: IA029795

**DIVISION OF LABOR SERVICES**  
1000 EAST GRAND AVE, DES MOINES, IOWA 50319  
515-281-6533 [www.iowadivisionoflabor.gov](http://www.iowadivisionoflabor.gov)  
**Annual Inspection Certificate**

Expiration Date: 08/2016  
Next Internal Due:

(NEW)

Alburnett CSD  
131 Roosevelt St PO Box 400  
Alburnett, IA 52202-0400

Year Built: 1970  
Boiler Type: JT Kettle Cooker D  
Manufacturer: Groen  
Maximum Pressure Allowed: 30  
Safety/Relief Valve Pressure: 30

**NEW**

Location: KTCN

Notify the Division of Labor of new installations or re-installations at least 10 days in advance.  
Post this certificate near the equipment.

Alburnett CSD  
PO Box 400  
131 Roosevelt St  
Alburnett, IA 52202-0400

*Michael A. Mann*

Labor Commissioner

# Current inspection sticker on new and existing installations



The sticker is to remain on for the life of the object

# Iowa Code and Administrative Rules

## ***Iowa Code***

### Chapter 89

## ***Administrative Rules***

- Chapter 90- Administration of the Boiler and Pressure Vessel Program
- Chapter 91 - General Requirements for all Objects
- Chapter 92 - Power Boilers
- Chapter 93 - Miniature Boilers Installed Prior to September 20, 2006
- Chapter 94 - Steam Heating Boilers, Hot Water Heating Boilers and Hot Water Supply Boilers
- Chapter 95 - Water Heaters
- Chapter 96 - Pressure Vessels

# 89.2-8 Public Assembly

*"Public assembly"* means the assembly of people in any of the following:

- A building or structure primarily used as a theater, motion picture theater, museum, arena, exhibition hall, school, college, dormitory, bowling alley, physical fitness center, family entertainment center, lodge hall, union hall, pool hall, casino, place of worship, funeral home, institution of health and custodial care, hospital, or child care or adult day services facility.
- A building or structure, a portion of which is primarily used for amusement, entertainment, or instruction.
- A building or structure owned by or leased to the state or any of its agencies or political subdivisions.

For purposes of this chapter, *"public assembly"* does not include the assembly of people in buildings or structures containing only eating and drinking establishments or in any building used exclusively by an employer for training or instruction of its own employees.

## 89.4 Exemptions

### **The provisions of this chapter shall not apply to the following boilers:**

- Boilers of railway locomotives subject to federal inspection.
- Boilers operated and regularly inspected by railway companies operating in interstate commerce.
- Boilers under the jurisdiction and subject to inspection by the United States government.
- Steam heating boilers and unfired steam pressure vessels associated therewith and mobile power boilers used exclusively for agricultural purposes.
- Heating boilers in residences.
- Fire engine boilers brought into the state for temporary use in times of emergency.
- Low pressure heating boilers used in buildings other than those for public assembly.
- Hot water heating boilers used for heating pools or spas regulated by the department of public health pursuant to chapter 135I.
- Water heaters used for potable water if the capacity is less than or equal to fifty gallons, the burner input is less than or equal to fifty thousand British thermal units, and the maximum allowable working pressure is less than one hundred sixty pounds per square inch.
- An electric boiler with a water capacity of six gallons or less that is used as an integral machine, cappuccino coffee machine, or cleaning machine.

# Boiler Room Fire Separation Requirements

One needs to Contact the State Fire Marshal Division, Public Safety to find the required fire rating requirements.

**FIRE CODE MATRIX**

**Ph: 515-725-6145**

**Fax: 515-725-6140**

**Email: [bcinfo@dps.state.ia.us](mailto:bcinfo@dps.state.ia.us)**

# ***Administrative Rule 90.2 (6)*** ***"Reinstallation"***

**What does this mean? The object must be brought up to code. All CSD-1 AND NBIC standards shall apply.**

**This means if the object has been disconnected, moved, and reconnected at the same location or a new location, the owner/user shall comply with the current codes.**



# 875—91.10(89) Clearance

- **91.10(1)** All objects installed prior to September 20, 2006, shall be so located that adequate space is provided for the proper operation, inspection, and necessary maintenance and repair of the object and its appurtenances.
- **91.10(2)** This sub rule applies to all installations and **re-installations** after September 20, 2006.
  - Minimum clearance on all sides of objects shall be 24 inches or the manufacturer's recommended service clearances if they allow sufficient room for inspection.
    - When a manufacturer identifies in the installation manual or any other document that the unit requires more than 24 inches of service clearance, those dimensions shall be followed.
  - Manholes shall have five feet of clearance between the manhole opening and any wall, ceiling or piping that would hinder entrance or exit from the object.

# 875—91.11(89) Fall Protection

**Safe access to all necessary parts of boilers over eight feet tall shall be provided by a runway platform or fall protection system consistent with the requirements below:**

- **91.11(1)** *Runway platform.* A steel runway platform in compliance with the criteria of 29 CFR 1910.23 and 1910.27 shall be installed across the tops of objects or at some other convenient level for the purpose of affording safe access. All runways shall have at least two means of exit remotely located from each other.
- **91.11(2)** *Fall protection system.* A fall protection system shall be in compliance with the requirements of 29 CFR 1910.132.
- **875—91.12(89)** *Exit from rooms containing objects.* All rooms exceeding 500 square feet of floor area and containing one or more objects having a fuel-burning capacity of 1 million BTU's shall have two means of exit remotely located from each other on each level.

# 875—91.13(89)

## Air and Ventilation

- **91.13(1)** *Notice concerning other rules.* The Iowa Division of Labor and the Iowa Department of Public Safety both enforce requirements concerning air and ventilation. Objects that are covered by both sets of rules must comply with both sets of rules.
- **91.13(2)** *Documentation.* Documentation of compliance with any requirement of this rule shall be maintained in the boiler room. However, it is not necessary to maintain documentation of the louvered area.
- **91.13(3)** *National combustion air standards.*
  - *Installations and reinstallations.* Installations and reinstallations shall comply with the edition of NFPA 31, NFPA 54, NFPA 58, NFPA 85, or IMC currently adopted at rule 875—91.1(89) or with the Iowa combustion air standard in sub rule 91.13(4). However, compliance with one of the listed NFPA codes constitutes compliance with this rule only if the object burns the fuel covered by the NFPA.
  - *Existing objects.* An adequate supply of combustion air shall be maintained for all objects while in operation. Compliance with the current edition of NFPA 31, NFPA 54, NFPA 58, NFPA 85, or IMC as adopted at rule 875—91.1(89) or with sub rule 91.13(4) constitutes compliance with this rule. Compliance with an earlier edition of NFPA 31, NFPA 54, NFPA 58, NFPA 85, or IMC constitutes compliance with this rule. However, compliance with one of the listed NFPA codes constitutes compliance with this rule only if the object burns the fuel covered by the NFPA. Compliance with an earlier version of Iowa's combustion air rule constitutes compliance with this rule. Earlier versions of Iowa's combustion air rule are available for reference at <http://www.iowadivisionoflabor.gov/boiler-and-pressure-vessel-safety>

# 91.13(4)

## *Iowa Combustion Air Standard*

- A permanent source of outside air shall be provided for each room to permit satisfactory combustion of fuel and ventilation if necessary under normal operations. The minimum ventilation for coal, gas, or oil burners in rooms containing objects is based on the Btu's per hour, required air, and louvered area. The minimum net louvered area shall not be less than 1 square foot. The following table shall be used to determine the net louvered area in square feet:

<b>Input Area (BTU's per hour)</b>	<b>Minimum Required (cubic feet per minute)</b>	<b>Minimum Louvered Area (net square feet)</b>
500,000	125	1.0
1,000,000	250	1.0
2,000,000	500	1.6
3,000,000	750	2.5
4,000,000	1,000	3.3
5,000,000	1,200	4.1
6,000,000	1,500	5.0
7,000,000	1,750	5.8

- When mechanical ventilation is used, the supply of combustion and ventilation air to the objects and the firing device shall be interlocked with the fan so the firing device will not operate with the fan off.
- The velocity of the air through the ventilating fan shall not exceed 500 feet per minute, and the total air delivered shall be equal to or greater than shown above.

# Program Updates

- Updated CSD-1 form (2012)
- FAQ
- <http://www.iowadivisionoflabor.gov/>
- Overview of website
- Overview of other administrative rules

[Home](#)

## Division of Labor Quick Link Resources

[Amusement Rides](#)

[Asbestos Abatement](#)

[Athletic](#)

[Bidder Preference](#)

[Boilers & Pressure Vessels](#)

[Child Labor](#)

[Contractor Registration](#)

[Elevators & Escalators](#)

[Employment Agencies](#)

[Iowa OSHA](#)

[Wage](#)

## Boiler and Pressure Vessel Safety

The Iowa Division of Labor regulates boilers and unfired steam pressure vessels according to [Iowa Code Chapter 89](#). Some water heating boilers used for pools or spas are regulated by the [Iowa Department of Public Health](#). More information can be found by reviewing the [Iowa Code and Administrative Rules](#).

### Boiler and Pressure Vessels Covered by Iowa Law

Coverage depends on location, pressure, size, and type of the equipment. Pressure vessel coverage is limited to unfired steam pressure vessels. Some water heaters are regulated as boilers. Read about [coverage of the Boiler and Pressure Vessels Laws](#).

### Owner or Users of a Covered Boiler or Pressure Vessels

- Make sure inspections are performed on time by an inspector authorized by the Iowa Division of Labor
- Post the current annual operating certificate in the room with the boiler or pressure vessel
- Obtain proper repairs, some repairs and alterations must get prior approval
- Notify the [Iowa Division of Labor](#) in the event of an explosion or accident
- Keep your equipment in safe and proper working order according to the manufacturer's specifications

### Boiler and Pressure Vessel Safety Board

The [Boiler and Pressure Vessel Safety Board](#) has authority to write rules, review inspection reports, grant waivers from rules, and more.

### Quick Links

[Advance Notice of Boiler Installation Form](#)

[Initial Internal Inspection](#)

[Hot Water Heating Boiler Log](#)

[Steam Heating Boiler Log](#)

[High Pressure Power Boiler Log](#)

[Special Inspector Commission Application](#)

[Safety Complaint Form](#)

[Advance Notice of Conversion](#)

[ASME CSD-1 Manufacturer's/Installing Contractor's Report](#)

[Interpretation Regarding Ball Valve Installations](#)

[Frequently Asked Questions](#)

[American Society of Mechanical Engineers](#)

[National Board of Boiler & Pressure Vessel Inspectors](#)

[PDF and Webpage Issues](#)

[Contact the Boiler Staff](#)

# Chapter 92

## Power Boilers

- **875—92.1(89)** *Scope.* This chapter applies to all power boilers, and **applies to miniature power boilers installed on or after September 20, 2006.** 875—Chapter 93 applies to miniature power boilers installed prior to September 20, 2006.
- **875—92.4(89)** *Maximum allowable working pressure for steel boilers.* Power boilers installed prior to July 1, 1983. A boiler constructed with fusion-welded seams and not radiographed and stress relieved during construction shall not be operated at a pressure in excess of 15 pounds per square inch. Boilers with fusion-welded seams that are radiographed and stress relieved and constructed to ASME Code requirements in effect when the boiler was constructed may be operated at a pressure as established in sub rule 92.4(1) and 92.4(2).

# Chapter 93

## Miniature Power Boilers Installed Prior to September 20, 2006

**875—93.1(89)** *Scope.* This chapter sets forth requirements in addition to those contained in 875—Chapter 92 for boilers that:

- Have a heating surface of 20 square feet or less;
- Have a gross volume of 5 cubic feet or less, excluding casing and insulation;
- Have an inside shell diameter of 16 inches or less;
- Have 100 psig maximum allowable working pressure; and
- Installed prior to September 20, 2006.



# Chapter 94

## Steam Heating Boilers, Hot Water Heating Boilers and Hot Water Supply Boilers

**875—94.3(89)** *General requirements.* This rule applies to all objects covered by this chapter and installed prior to September 20, 2006.

**875—94.4(89)** *Steam heating boilers installed before July 1, 1960.* All steam heating boilers installed before July 1, 1960, shall be constructed and installed in accordance with this rule.

**875—94.5(89)** *Hot water heating boilers installed before July 1, 1960.* Hot water heating boilers installed before July 1, 1960, shall be constructed and installed in accordance with this rule.

**875—94.6(89)** *Hot water supply boilers installed before July 1, 1960.*

**94.6(1)** *Scope.* This rule establishes minimum requirements for installation, operation, and inspection of hot water supply boilers installed before July 1, 1960, when any of the following limitations are exceeded:

- Heat input of 200,000 Btu's per hour
- Water temperature of 210°F
- Water containing capacity of 120 gallons

# Chapter 95

## Water Heaters

**875—95.1(89)** *Scope.* This chapter applies to water heaters supplying potable hot water when the heat

- Input is greater than 50,000 Btu's per hour or the water-containing capacity is greater than 50 gallons.
- However, if the heat input is equal to or greater than 200,000 Btu's per hour or the water-containing
- Capacity is equal to or greater than 120 gallons, 875—Chapter 94 shall apply instead of this chapter.

**875—95.2(89)** *Recognized standard.* All water heaters shall be in accordance with a recognized

- Standard such as those promulgated by the Canadian Standards Association, American National
- Standards Institute Z21.10.1 and Z21.10.3, Underwriters Laboratories, American Gas Association,
- Gas Appliance Manufacturers Association, or the applicable ASME Code adopted by reference at rule 875—91.1(89).

# Chapter 96

## Pressure Vessels

**875—96.1(89)** *Codes adopted by reference.* The codes listed in 875—Chapter 91 apply to objects covered by this chapter.

**875—96.2(89)** *Objects installed prior to July 1, 1983.*

# Program Discussions

- Valve color coding and steam saturation tables/pressure relationships
- PRV-Review and calculations
- Class Valve Values 150, 300, 600, etc.
- PVC vs. CPVC Discharge Piping (Jan 5<sup>th</sup>)
- Unfired Steam Pressure Vessel Inspections (Jan 9<sup>th</sup>)
- Reinstallation of Boilers- (Jan 12<sup>th</sup>) Effective April 22, 2015 new definition of re-installation.
- What does foaming do and how does affect the system (Jan 16<sup>th</sup>)
- Low Water cutoff's (Jan 29<sup>th</sup>)
- Boiler Room Safe conditions (Feb. 13<sup>th</sup>)
- Replacement of Stamped ASME nameplate
- Safety Valve replacement and requirements (logs, recertification per NBIC - 2.5.7 and HG-401.3)

# Program Discussions

- Boiler Drains High Pressure Boilers B31.1 - 122.1,5 (Same as above in bullet point)
- Blow-down Requirements B31.1 122.7 (c)
- Expansion Tank Requirements for HLW Water Heaters (HLW-809)
- Overdue and 60 day requirements (Letters to owner/user)
- New Installation, re-installations or moved objects at the same locations requirements (see new requirements administrative rules)
- Internal Inspections of new or second hand boilers, and pressure vessels with openings (see new requirements administrative rules)
- Exemptions for M (Stamped) boilers that have less than 6 gals (89.4)
- Non Mandatory Appendix D "Recommended Preventive Maintenance Schedule" CSD-1

# Ending

- Training Venues
- Open Forum Q&A
- Thank you for listening and participating