TITLE 41: FIRE PROTECTION
CHAPTER III: BOARD OF BOILER AND PRESSURE VESSEL RULES

PART 2120
BOILER AND PRESSURE VESSEL SAFETY

SUBPART A: DEFINITIONS AND ADMINISTRATION

Section

SUBPART B: CONSTRUCTION, INSTALLATION, INSPECTION, MAINTENANCE, AND USE

Section

SUBPART C: REPAIR AND ALTERATION

Section

SUBPART D: STATE SPECIALS

Section

SUBPART E: REPAIR OF SAFETY AND SAFETY RELIEF VALVES

Section

SUBPART F: OWNER-USER QUALITY CONTROL REQUIREMENTS

SUBPART G: HISTORICAL BOILERS

AUTHORITY: Implementing the Boiler and Pressure Vessel Safety Act [430 ILCS 75] and authorized by Sections 2 and 2.1 of the Boiler and Pressure Vessel Safety Act [430 ILCS 75/2 and 2.1].

SOURCE: Boiler and Pressure Vessel Safety Act Rules and Regulations adopted at 4 Ill. Reg. 7, p. 126, effective January 31, 1980; codified at 5 Ill. Reg. 10677; amended at 7 Ill. Reg. 6925, effective July 1, 1983; amended at 10 Ill. Reg. 9510, effective July 1, 1985; amended at 11 Ill. Reg. 16587, effective January 1, 1988; amended at 16 Ill. Reg. 6808, effective July 1, 1992; amended at 17 Ill. Reg. 14917, effective September 1, 1993; amended at 19 Ill. Reg. 11904, effective August 15, 1995; amended at 20 Ill. Reg. 9540, effective July 3, 1996; amended at 21 Ill. Reg. 997, effective January 1, 1997; amended at 23 Ill. Reg. 162, effective January 1, 1999;

amended at 24 Ill. Reg. 18555, effective December 7, 2000; amended at 25 Ill. Reg. 11914, effective January 1, 2002; amended at 27 Ill. Reg. 518, effective January 01, 2003; emergency amendment at 27 Ill. Reg. 14855, effective September 2, 2003, for a maximum of 150 days; amended at 28 Ill. Reg. 1737, effective January 13, 2004; amended at 28 Ill. Reg. 13509, effective September 24, 2004; amended at 32 Ill. Reg. 17198, effective October 16, 2008; amended at 35 Ill. Reg. 9028, effective July 1, 2011; amended at 37 Ill. Reg. 13424, effective August 1, 2013; amended at 38 Ill. Reg. 18925, effective September 4, 2014; recodified from Chapter I, 41 Ill. Adm. Code 120, to Chapter III, 41 Ill. Adm. Code 2120, at 39 Ill. Reg. 10645; amended at 41 Ill. Reg. 846, effective January 17, 2017; amended at 42 Ill. Reg. 13457, effective July 1, 2018; amended at 44 Ill. Reg. 13968, effective August 13, 2020; amended at 46 Ill. Reg. 6907, effective May 1, 2022; amended at 48 Ill. Reg. 3420, effective February 21, 2024.

SUBPART A: DEFINITIONS AND ADMINISTRATION

Section 2120.10 Definitions

Act or the Act − the Boiler and Pressure Vessel Safety Act [430 ILCS 75].

Alteration − any change in the item described on the original Manufacturers' Data Report which affects the pressure containing capability of the boiler or pressure vessel. Non-physical changes such as an increase in the maximum allowable working pressure (internal or external) or design temperature of a boiler or pressure vessel shall be considered an alteration. A reduction in minimum temperature such that additional mechanical tests are required shall also be considered an alteration.

API 510 − the code for the maintenance, inspection, repair, alteration and re-rating of pressure vessels published by the American Petroleum Institute.

Approved − approved by the Board of Boiler and Pressure Vessel Rules.

ASME Code − the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers with revisions, amendments and interpretations made, approved and adopted by the Council of the Society and approved and adopted by the Board. Copies of the Code may be obtained from the Society at Three Park Avenue, New York NY 10016-5990.

Authorized Inspection Agency − one of the following:

A department or division established by a jurisdiction that has adopted one or more Sections of the ASME Code and whose inspectors hold valid National Board Commissions;

An insurance company authorized by the jurisdiction to insure boilers and pressure vessels that employs special inspectors who have met the requirements of this Part; or

An owner-user of boilers and pressure vessels who employs owner-user inspectors and maintains a regularly established inspection department, whose organization and inspection procedures meet the requirements of this Part.

Authorized Repairer − a holder of a Certificate of Registration issued pursuant to the Boiler and Pressure Vessel Repairer Regulation Act.

Board − the Board of Boiler and Pressure Vessel Rules created by the Act and empowered to make, alter, amend and interpret rules and regulations for the safe construction, installation, inspection, alteration, and repair of boilers and pressure vessels and for establishing fees.

Boiler − a vessel intended for use in heating water or other liquids or for generating steam or other vapors under pressure or vacuum by the application of heat resulting from the combustion of fuels, electricity, or waste gases.

Certificate Inspection − an inspection, the report of which is used by the Chief Inspector as justification for issuing, withholding or revoking the inspection certificate. The Certificate Inspection shall be an internal inspection when required; otherwise, it shall be as complete an inspection as possible.

Certificate of Competency − a certificate issued to a person who has passed the examination and meets all other requirements of this Part, as prescribed by the Board.

Certificate of Registration − a certificate issued by OSFM pursuant to the Boiler and Pressure Vessel Repairer Regulation Act.

Commission − the commission issued by OSFM to the chief, deputy, special or owner-user inspector in accordance with this Part.

Condemned Boiler or Pressure Vessel − a boiler or pressure vessel that has been inspected and declared unsafe, or disqualified by legal requirements, by the Chief or Deputy Inspector.

Division − the Division of Boiler & Pressure Vessel Safety.

Electric Boiler − a boiler in which the source of heat is electricity.

Engineer − a registered professional engineer registered in accordance with the Illinois Professional Engineering Act [225 ILCS 325] or a person who graduated from an accredited college or university and either:

holds a mechanical engineering degree; or

has five years' experience in a related field (e.g., civil engineering, metallurgical engineering, industrial engineering, design engineering, maintenance engineering, project engineering or construction, maintenance, repair or operation of high pressure boilers and pressure vessels).

Existing Installation − includes:

Any boiler installed and placed in operation within the State of Illinois before May 1, 1953.

Any hot water supply boiler installed and placed in operation within the State of Illinois on or before July 9, 1957.

Any pressure vessel installed and placed in operation within the State of Illinois on or before December 31, 1976.

External Inspection − an inspection made when a boiler or pressure vessel is in operation, if possible.

Heating Boiler − a steam boiler operated at pressures not exceeding 15 psig, or a hot water heating boiler operated at pressures not exceeding 160 psig and/or temperatures not exceeding

250° F. at or near the boiler outlet.

High Pressure Boiler − a boiler generating steam at a pressure in excess of 15 psig or a water boiler operated in excess of 160 psig and/or temperatures in excess of 250° F.

High-Temperature Water Boiler − a water boiler operating at pressures exceeding 160 psig and/or temperatures exceeding 250° F. at or near the boiler outlet.

Hot Water Supply Boiler − a boiler (including fired storage water heater) furnishing hot water to be used externally to itself at pressures not exceeding 160 psig and/or temperatures not exceeding 250° F. at or near the boiler outlet, except those exempted pursuant to the Boiler and Pressure Vessel Safety Act and this Part.

Inspection Certificate − a certification issued by the Chief Inspector for the operation of a boiler or pressure vessel, as required by the Act.

Inspector − the Chief Inspector or Deputy Inspector or Special Inspector or Owner-User Inspector.

Chief Inspector − the Chief Boiler and Pressure Vessel Inspector employed under the Act.

Deputy Inspector − any inspector employed under the provisions of the Act.

Special Inspector − an inspector holding an Illinois Certificate of Competency and who is regularly employed by an insurance company authorized to write boiler and pressure vessel insurance in this State.

Owner-User Inspector − an inspector described in Section 2120.1360 continuously employed as an inspector by an Owner-User Inspection Agency.

Internal Inspection − as complete an examination as can reasonably be made of the internal and external surfaces of a boiler or pressure vessel while it is shut down and manhole plates, handhole plates or other inspection opening closures are removed as required by the inspector.

Jurisdiction − a state, commonwealth, county or municipality of the United States or a province of Canada that has adopted one or more sections of the ASME Code and maintains a duly constituted Department, Bureau, or Division for the purpose of enforcement of the Code. In Illinois, the Division of Boiler and Pressure Vessel Safety is the jurisdiction, except for the City of Chicago.

Lined Potable Water Heater − a water heater, with a corrosion resistant lining, used to supply potable hot water.

Low Pressure Boiler − a steam boiler operated at pressures not exceeding 15 psig or a hot water boiler operated at pressures not exceeding 160 psig and/or temperatures not exceeding 250° F.

Miniature Boiler − any boiler that does not exceed any of the following limits:

16 inches inside diameter of shell;

20 square feet heating surface;

5 cubic feet gross volume, exclusive of casing and insulation;

100 psig maximum allowable working pressure.

National Board Inspection Code or NBIC − the Manual for Boiler and Pressure Vessel Inspectors published by the National Board. The NBIC is developed under the ANSI consensus process. Copies of the NBIC may be obtained from the National Board.

National Board − the National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, Ohio 43229, whose membership is composed of the Chief Inspectors of jurisdictions who are charged with the enforcement of the boiler and pressure vessel laws within their respective jurisdictions.

National Board Commission − the commission issued by the National Board to a holder of a Certificate of Competency who desires to make shop inspections or field inspections in accordance with the National Board bylaws and whose employer submits the inspector's application to the National Board for the commission.

Nationally Recognized Testing Agency − an organization concerned with product evaluation that provides uniform testing, examination, listing and labeling under established, nationally recognized standards.

New Boiler Installations − all boilers constructed, installed and placed in operation within the State of Illinois after May 1, 1953, and all hot water supply boilers installed and placed in operation after July 9, 1957.

New Pressure Vessel Installations − pressure vessels installed and placed in operation within the State of Illinois after December 31, 1976.

Non-Standard Boiler or Pressure Vessel − a boiler or pressure vessel that does not bear the ASME Code Symbol Stamp.

Operator − any individual who has charge of a boiler or pressure vessel as defined by the Act, and whose duties include operation and maintenance of those devices.

OSFM − the Office of the State Fire Marshal.

Owner or User − any person, firm or corporation legally responsible for the safe operation of any boiler or pressure vessel within the State.

Owner-User − an owner and user qualified under Section 15 of the Act.

Place of Public Assembly − a building or specific area, including outdoor areas, in which persons assemble for civic, educational, religious, social or recreational purposes or that is provided by a common carrier for passengers awaiting transportation or in which persons are housed to receive medical, charitable or other care or treatment, or are held or detained for public, civic or correctional purposes.

Portable Boiler − an internally fired boiler primarily intended for temporary location and the construction and usage of which permits it to be readily moved from one location to another.

Power Boiler − a boiler in which steam or other vapor is generated at a pressure of more than 15 psig and includes a high-pressure, high-temperature water boiler.

Pressure Vessel − a vessel in which pressure is obtained from an external source, or by the application of heat from an indirect source or from a direct source other than those boilers defined in this Section.

PSIG − pounds per square inch gauge.

Reinstalled Boiler or Pressure Vessel − a boiler or pressure vessel removed from its original setting and reinstalled at the same location within the State of Illinois or at a new location without change of ownership.

Relief Valve − an automatic pressure relieving device actuated by the static pressure upstream of the valve that opens further with the increase in pressure over the opening pressure. It is used primarily for liquid service.

Repair − work necessary to return a boiler or pressure vessel to a safe operating condition.

Re-rating − a change in the maximum allowable working pressure or temperature of a boiler or pressure vessel, regardless of whether physical work is performed on the boiler or pressure vessel. Re-rating shall be considered an alteration.

Safety Relief Valve − an automatic pressure actuated relieving device suitable for use as a safety or relief valve, depending on application.

Safety Valve − an automatic pressure relieving device actuated by the static pressure upstream of the valve and characterized by full opening pop action. It is used for gas or vapor service.

Secondhand Boiler or Pressure Vessel − a boiler or pressure vessel that has changed both location and ownership since primary use.

Standard Boiler or Pressure Vessel − a boiler or pressure vessel that bears the ASME Code Symbol Stamp.

State Special − a boiler or pressure vessel of special construction that may not be constructed in accordance with the ASME Code. See Section 2120.1100 of this Part for the procedures for granting a State Special.

Welding or Arc Welding − a group of welding processes in which coalescence is produced by heating with an arc or arcs, with or without the application of pressure, and with or without the use of filler metal.

(Source: Amended at 35 Ill. Reg. 9028, effective July 1, 2011)

Section 2120.20 Incorporation of National Standards

a) Where standards are incorporated by reference in this Part, the incorporated material does not include any later editions or amendments.

b) The Board hereby adopts the following nationally recognized standards and addenda:

1) American Petroleum Institute (API)
1220 L Street, Northwest
Washington DC 20005
API-510, Eleventh Edition, October 2022, Pressure Vessel Inspection Code: In-service Inspection, Rating, Repair, and Alteration; with Errata 1 (March 2023)

2) American Society of Mechanical Engineers (ASME)
United Engineering Center
Three Park Avenue
New York NY 10017
www.asme.org

A) ASME Boiler and Pressure Vessel Code, 2023 Edition

Section I	Rules for Construction of Power Boilers
Section II	Material Specifications – Part A – Ferrous
Section II	Material Specifications – Part B – Nonferrous
Section II	Material Specifications – Part C – Welding Rods, Electrodes and Filler Metals
Section II	Material Specifications – Part D – Properties (Customary)
Section IV	Rules for Construction of Heating Boilers
Section V	Nondestructive Examination
Section VI	Recommended Rules for the Care and Operation of Heating Boilers

Section VII	Recommended Guidelines for the Care of Power Boilers
Section VIII	Pressure Vessels – Division 1, Rules for Construction of Pressure Vessels (Including Appendix M)
Section VIII	Pressure Vessels – Division 2 – Alternative Rules
Section VIII	Pressure Vessels – Division 3 – Alternative Rules for Construction of High Pressure Vessels
Section IX	Welding, Brazing and Fusing Qualifications
Section X	Fiberglass-Reinforced Plastic Pressure Vessels

B) ASME CSD-1 2021 − Controls and Safety Devices for Automatically Fired Boilers

3) National Board of Boiler and Pressure Vessel Inspectors (NB)
1055 Crupper Avenue
Columbus OH 43229
www.nationalboard.org

National Board Inspection Code (NBIC), 2023 Edition

4) National Fire Protection Association (NFPA)
1 Batterymarch Park
Quincy MA 02269-9101
www.nfpa.org

NFPA 85	Boiler and Combustion Systems Hazards Code, 2023 Edition

(Source: Amended at 47 Ill. Reg. 14904, effective February 21, 2024)

Section 2120.30 Fees

As authorized by the Boiler and Pressure Vessel Safety Act, the Board establishes the following fees to be collected for services rendered:

Examinations	$30
Commissions	
New Issuance	$40
Renewal	$25

Chief and Deputy……	$0
All Certificates of Inspection.....	$70
Inspections Conducted by the Division	
High Pressure and High Temperature Water Boilers	
Boilers without a manhole.....	$30
Boilers with a manhole.....	$60
Low Pressure Steam and Water Boilers	
Boilers without a manhole.....	$30
Boilers with a manhole.....	$60
Hot water supply boilers.....	$30

No more than $130 shall be charged for one boiler in any one year.

Pressure Vessels
Fees are based on the product of the overall length times the width or diameter of the vessel expressed in square feet.

50 sq. ft. or less.....	$25
51 sq. ft. to 150 sq. ft.	$50
over 150 sq. ft.	$75

No more than $160 shall be charged for any one pressure vessel in any one year.

Annual Statements (Owner-Users).....	$35 per vessel

Miscellaneous

Witness a hydrostatic test	$100

Joint reviews, audits, shop inspections, other services

½ day	$300
Full day.....	$500

Plus expenses, including travel and lodging.

State Special Permits	$1,000

(Source: Amended at 37 Ill. Reg. 13424, effective August 1, 2013)

Section 2120.40 Administration

a) Applying State Serial Number. The State serial number on boilers shall be not less than $^{5}/_{16}$" in height and shall be preceded by the letter "B". The State serial number on pressure vessels shall be not less than $^{5}/_{16}$" in height and shall be preceded by the letter "U". The inspector shall make certain that the correct Illinois State serial number is affixed to the boiler or pressure vessel at the time of inspection.

b) First Time Inspection. Effective January 1, 1999, all first time inspections of boilers and pressure vessels shall be performed by the Chief or a Deputy Inspector employed by the Division.

c) Basis for Extending Certificate of Internal Inspection for Power Boilers. The Chief Inspector is authorized to extend, for a period not exceeding one year, or 2 years for power boilers having an output rated at or above 450,000 lbs/hr, the time within which power boilers are required to be internally inspected, subject to the following conditions and qualifications:

1) The analysis and treatment of feedwater for power boilers shall be under the supervision of a person qualified in the field of water chemistry.

2) The analysis and treatment of the boiler feedwater shall be for the purpose of controlling and limiting serious deteriorating, encrusting and sludging factors affecting the safety of the boiler.

3) The owner or user of power boilers must maintain, for examination by the inspector, accurate records of chemical and physical laboratory analyses of samples of the boiler water taken at regular intervals of not more than 24 hours operation and of the treatment applied. These records must specify dates and times of analyses, by whom analyzed, and the treatment applied at that time, and should be certified by the responsible authority. These records will adequately show the conditions of the water and any constituents or characteristics that are capable of producing corrosion or other deterioration of the boiler or its parts.

4) The Chief Inspector is authorized to review the qualifications of the supervisor and the acceptability of supervision in accordance with the requirements of subsections (c)(1) through (c)(3).

5) An internal inspection must have been performed during a pre-planned outage allowing appropriate time for a complete and comprehensive evaluation, including inspections of watersides, furnace area and all gas passages, with no deficiencies found that would preclude extending the internal inspection for one year, or 2 years for power boilers having an output rated at or above 450,000 lbs/hr.

6) At no time shall the period between internal inspections for boilers having an output rated at or above 450,000 lbs/hr exceed a 36-month time interval.

7) Application for extension shall be by letter setting forth facts establishing compliance with the requirements of subsections (c)(1) through (c)(7) and shall be accompanied by the report of external inspection.

d) Unsafe Boilers or Pressure Vessels. Any boiler or pressure vessel having been inspected and declared unsafe by an inspector shall have the Inspection Certificate suspended.

e) Factors of Safety for Existing Installations. An inspector shall increase the factors of safety if the condition of a boiler or pressure vessel warrants it. If the owner or user does

not concur with the inspector's decision, the owner or user may appeal to the Board.

f) Frequency of Inspection of Boilers and Pressure Vessels

1) Power boilers and high temperature water boilers shall receive a certificate inspection annually, which shall be an internal inspection where conditions permit unless authorization is granted by the chief inspector to extend the internal inspection as permitted in subsection (c). The boilers shall also be inspected externally annually while under representative operating conditions, if possible, except that a power boiler having an output rated at or above 450,000 lbs/hr may forgo the external inspection for the year the internal inspection is conducted.

2) Low pressure steam and hot water heating boilers and hot water supply boilers shall receive a certificate inspection every 2 years. Groups of heating and hot water supply boilers connected together shall be registered as one unit and receive one Inspection Certificate when the following conditions are met:

A) No unit exceeds 400,000 BTU input;

B) All units being considered in the assembled modular unit are connected to a common header or manifold; and

C) No more than 8 units can be grouped together and registered as one unit.

3) Inspection of the flame safeguard equipment shall be in conjunction with the regular inspections of boilers.

4) Pressure vessels subject to internal corrosion shall receive a certificate inspection every 3 years. This inspection shall be external and internal where conditions permit. However, owner-users qualified in accordance with Section 15 of the Act shall have the option of using API-510 or the NBIC for inspection intervals.

5) Pressure vessels not subject to internal corrosion shall receive a certificate inspection every 3 years. However, owner-users qualified in accordance with Section 15 of the Act shall have the option of using API-510 or the NBIC for inspection intervals.

g) Inspection and Inspection Certificate Fees

1) If a boiler or pressure vessel shall, upon inspection, be found to be suitable and to conform to this Part, the owner or user will be invoiced the fees established by the Board for each boiler and pressure vessel inspected. The fee must be paid before an Inspection Certificate will be issued.

2) If the owner or user of each boiler or pressure vessel required to be inspected refuses or fails to allow an inspection to be made or refuses or fails to pay the

appropriate fees, the Inspection Certificate, if it has not expired, shall be suspended by the Chief Inspector until the owner or user complies with the requirements.

3) The owner or user who causes a boiler or pressure vessel to be operated without a valid Inspection Certificate shall be guilty of a Class B misdemeanor and each day shall be deemed a separate offense in accordance with Section 12 of the Act.

h) Inspectors to Have No Other Interests. It is prohibited for any employee of the Division of Boiler and Pressure Vessel Safety to accept any compensation or remuneration from any source for acting as a consultant, engineer, safety engineer, safety specialist, etc., or under any other title. Employees of this Division shall not be engaged in the sale of any article or device that is related to boilers or pressure vessels and shall devote their full time to inspection work.

i) Installing Used or Second-hand Boilers or Pressure Vessels. A certificate inspection shall be made of all used or second-hand boilers or pressure vessels prior to operation in this State. When a boiler or pressure vessel is moved and reinstalled, the fittings and appurtenances shall be upgraded to comply with the rules for new installations.

j) Inspectors to Notify Chief Inspector of Defective Boilers and Pressure Vessels. If an inspector finds that a boiler or pressure vessel or any of the appurtenances are in an unsafe condition, the inspector shall immediately notify the Chief Inspector and submit a report of the defects.

k) Insurance Agencies to Notify the Chief Inspector of New, Cancelled or Suspended Risks. All insurance agencies shall notify the Chief Inspector within 30 days of all boiler or pressure vessel risks written, cancelled, not renewed or suspended in Illinois.

l) Manufacturers Data Reports to be Filed. Effective January 1, 1974, Manufacturers Data Reports on boilers and, as amended December 31, 1976, for pressure vessels, that are to be installed in the State of Illinois (unless otherwise exempted by this Part) shall be filed with the Chief Inspector through the National Board. Each boiler and pressure vessel for which a report is filed should be assigned a National Board number.

m) Boilers and Pressure Vessels without ASME Stamping. If the boiler or pressure vessel does not bear the ASME stamp, then the drawings, data and material showing all details of construction shall be submitted to the Chief Inspector and the Chief Inspector's approval shall be obtained before installation in this State. The Chief Inspector shall grant approval if the construction, materials and inspection requirements meet the rules, except for ASME stamp.

n) Notification of Inspection. The owner or user shall prepare each boiler or pressure vessel for internal inspection and shall prepare for and apply a hydrostatic test whenever necessary, on the date specified by an inspector, which shall be not less than 7 days after the date of notification.

o) Owner to Notify Chief Inspector in Case of Accident. Any owner or user, which includes any person, firm, partnership, corporation, or governmental entity, that knowingly fails to notify the Chief Inspector within 24 hours, or on the next business day, of an accident, explosion, event, or incident that serves to render a boiler or pressure vessel inoperative because of damage or failure or that involves any bodily injury or death to any person is guilty of a Class B misdemeanor, if a natural person, or a business offense punishable by a fine of not less than $501 and not more than $10,000, if a corporation or governmental entity.

p) Penalties. Any person, firm, partnership or corporation violating any of the provisions of this Part shall be subject to the penalties provided in the Boiler and Pressure Vessel Safety Act.

q) Registration of Boilers and Pressure Vessels. All owners or users of boilers and pressure vessels subject to the Act now in use or installed ready for use in the State of Illinois shall notify the Chief Inspector in writing giving the location, type, capacity, age and date of installation.

r) Removal of Safety Appliances

1) No person, except under the direction of an inspector, shall attempt to remove or shall do any work upon safety appliances required by this Part while a boiler or pressure vessel is in operation. Should any of these appliances be repaired during an outage of a boiler or pressure vessel, they must be reinstalled and in proper working order before the object is again placed in service.

2) No person shall in any manner load the safety valve or valves to maintain a working pressure in excess of that stated on the Inspection Certificate.

s) Stamping of Boilers and Pressure Vessels. Each boiler or pressure vessel subject to the Act shall be identified by a serial number of the State of Illinois. The number will be assigned by the Chief Inspector and applied to the boiler or pressure vessel by the inspector at the time of inspection. Also, the Code required stamping shall be kept free of paint and lagging so that it will be plainly visible and easily read by the inspector.

t) Inspections and Inspection Reports.

1) Inspection Reports shall be submitted within 10 days from the date of inspection.

2) All Inspection Reports shall be completed with all pertinent information as required, including location and actual conditions observed.

3) The Chief or a Deputy Inspector employed by the Division, and Special Inspectors, shall have up to 90 days after the expiration of the Inspection Certificate to conduct his or her inspection. *An Inspection Certificate shall*

remain valid beyond the expiration date noted on the certificate until the boiler or pressure vessel is reinspected by the authorized inspecting authorities or until the certificate is suspended by the Chief Inspector, provided that the owner or user of the boiler or pressure vessel makes it available for inspection at reasonable times. [430 ILCS 75/11(b)]

4) Validity of Inspection Certificate. The Chief Inspector may at any time suspend an Inspection Certificate when the boiler or pressure vessel for which it was issued may not continue to be operated without menace to public safety, or when the boiler or pressure vessel is found not to comply with this Part. A Special Inspector shall have authority to request suspension of an Inspection Certificate for boilers or pressure vessels insured by the employing company. Suspension of an Inspection Certificate shall continue in effect until the boiler or pressure vessel has been made to conform to this Part.

u) For all boiler systems installed after December 1, 2014, the intake and exhaust points for all boiler ventilation piping shall be located outside of the building served and at least 36 inches above grade.

(Source: Amended at 41 Ill. Reg. 846, effective January 17, 2017)

Section 2120.50 Inspectors, Examinations, Certificate of Competency and Commission.

a) Examinations

1) Examinations for Certificate of Competency and Commission as an Inspector of Boilers and Pressure Vessels shall be held the first Wednesday of the months of March, June, September and December. Special examinations will be held when considered necessary by the Board. A passing score on the examination for a National Board Commission issued through the National Board shall satisfy the examination requirement for an Inspector Commission issued by OSFM under this Part and Section 9 of the Boiler and Pressure Vessel Safety Act [430 ILCS 75/9].

2) Applicants for examination for a Special Inspector shall have 3 years experience in the construction, maintenance, repair or operation of high pressure boilers and pressure vessels. A credit of 2 years of the required experience will be given to applicants holding a Mechanical Engineering degree from a college of engineering and one year's credit will be given for all other types of engineering degrees.

3) Application for examination for Certificate of Competency and Commission shall be written upon a form to be furnished by OSFM stating the educational background of the applicant, a list of employers, period of employment and position held with each employer. Applications containing willful falsification or untruthful statements shall be rejected. If the applicant's education and experience meet the requirements of the Board, the applicant shall be given the written examination dealing with the construction, installation, operation, maintenance and repair of boilers, pressure vessels and their appurtenances. If the applicant is successful in meeting the requirements of the Board, a Certificate of Competency and Commission will be issued by OSFM. An applicant who fails to pass the examination will be notified and permitted to take another written examination.

b) Commissions

1) A Commission as an Inspector and an identifying commission card shall be issued by the State Fire Marshal as provided in the Act.

2) Commissions issued to inspectors in the employ of insurance companies or of owner-users shall be held at the office of the employing company. The Commission and the identifying commission card shall be returned to the Chief Inspector when suspended or revoked or the inspector to whom the Commission was issued is no longer employed by the insurance company or self-insurer.

3) A Commission issued to an Inspector may be suspended or revoked by the State Fire Marshal as provided in the Act.

4) Reciprocal Commissions. A Reciprocal Commission as an Inspector may be issued by the State Fire Marshal as provided in the Act.

(Source: Amended at 46 Ill. Reg. 6907, effective May 1, 2022)

SUBPART B: CONSTRUCTION, INSTALLATION, INSPECTION, MAINTENANCE, AND USE

Section 2120.100 New Installations of Boilers, Miniature Boilers, Heating Boilers and Hot Water Supply Boilers

No boiler, except those exempted by the Act, or by this Part, shall be installed in this State unless it has been constructed and inspected in conformity with the applicable section of the ASME Code and is inspected and registered in accordance with the requirements of these Rules. Existing non-standard boilers may not be installed or reinstalled in a different location.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.200 New Installations of Pressure Vessels

No Pressure Vessel, except those exempted by the Act or this Part shall be installed in this State unless it has been constructed and inspected in conformity with the applicable section of the ASME Boiler and Pressure Vessel Code, and inspected and registered in accordance with the requirements of this Part. Existing non-standard pressure vessels may not be installed or reinstalled in a different location.

Section 2120.300 Existing Installations of Power Boilers

Maximum Allowable Working Pressure for Standard Boilers. The maximum allowable working pressure for standard boilers shall be determined in accordance with the applicable provisions of the edition of the ASME Code under which they were constructed and stamped. Existing installations of non-standard power boilers and miniature boilers shall comply with this Section.

a) Maximum Allowable Working Pressure for Nonstandard Boilers.

1) The maximum allowable working pressure on the shell of a nonstandard boiler shall be determined by the strength of the weakest section of the structure, computed from the thickness of the plate, the tensile strength of the plate, the efficiency of the longitudinal joint or tube ligaments, the inside diameter of the weakest course and the factor of safety permitted below.

$$\frac{TS \times t \times E}{(R \times FS)} = MaximumAllowableWorking\,\mathrm{Pr}essure, PSIG$$

Where:

TS = ultimate tensile strength of shell plates, psi.

t = minimum thickness of shell plate, in weakest course, inches.

E = efficiency of longitudinal joint:

For Fusion-Welded and Brazed Joints:

Single lap welded	40
Double lap welded	60
Single butt welded	60
Double butt welded	75
Forge welded	70
Brazed steel	80

For riveted construction, E shall be determined by the rules given in Section I, Part PR, of the 1971 Edition ASME Code.

For seamless construction, E shall be considered 100 percent.

R = inside radius of the weakest course of the shell, in inches.

FS = factor of safety permitted.

2) Tensile Strength. When the tensile strength of steel or wrought iron shell plates is not known, it shall be taken as 55,000 psi for steel and 45,000 psi for wrought iron.

3) Bearing Strength of Mild Steel. The resistance to crushing of mild steel shall be taken at 95,000 psi of cross-sectional area.

4) Factors of Safety. The following factors of safety shall be increased by the Inspector if the condition and safety of the boiler demand it: The lowest factor of safety permissible on existing installations shall be 5, except for horizontal return tubular boilers having continuous longitudinal lap seams more than 12 ft. in length, when the factor of safety shall be 8; when this latter type of boiler is removed from its existing setting, it shall not be reinstalled for pressures in excess of 15 psig. Reinstalled or second-hand boilers shall have a minimum factor of safety of 6 when the longitudinal seams are of lap riveted construction, and a minimum factor of safety of 5 when the longitudinal seams are of butt and double-strap construction.

b) Repairs and Renewals of Boiler Fittings and Appurtenances. Whenever repairs are made to fittings or appurtenances or it becomes necessary to replace them, including burners and all associated controls, the work shall comply with current ASME/National Board Code requirements or the requirement of the ASME Codes in effect at the time of construction.

c) Recommendations for Operation. It is recommended that the applicable Section of the ASME Code, Section VI, Recommended Rules for the Care of Heating Boilers or Section

VII, Recommendations and Rules for the Care of Power Boilers be used as a guide for proper and safe operating practices.

d) Conditions not Covered by this Part. All cases not specifically covered by this Part shall be treated as new installations. Existing standard and non-standard boilers shall be governed by current ASME/National Board Code requirements or the requirement of the ASME Codes in effect at the time of construction. Questions concerning existing nonstandard boilers may be referred to the Chief Inspector. Appeal of a decision of the Chief Inspector may be made to the Board.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.400 Operation of Boilers and Pressure Vessels

a) Designation of Operators. Owners of boilers and pressure vessels as defined in the Act shall designate an operator to discharge the duties of operation and maintenance of such devices.

b) Maintenance Requirements. Owners of boilers and pressure vessels shall maintain such devices in accordance with manufacturers specifications and this Part pertinent to such devices.

c) Operational Requirements. Owners of boilers and pressure vessels shall perform periodic checks and operational maintenance of such devices to ensure the structural and technical integrity of the device. Frequency of checks and operational maintenance shall be determined by the manufacturer of the device and this Part. Depending on the size and use of a boiler or pressure vessel, checks and maintenance must be made at designated intervals by the operator. The designated interval and checks shall be as prescribed by, but need not be limited to, the manufacturers specification(s) and ASME CSD 1 (Controls and Safety Devices for Automatically Fired Boilers). Operators responsible for the maintenance and operation of boilers and pressure vessels shall have the skills necessary to perform those tasks at the level to ensure the safe operation of regulated devices. It is recommended that all operators of boilers and pressure vessels obtain training in the proper operation and maintenance of such devices; training may be obtained through local community colleges, mechanical insurers, trade associations, trade unions, and manufacturers and distributors of such devices.

d) Recordkeeping. Owners of boilers and pressure vessels shall maintain records of operation and maintenance of devices and make such records available upon request of the inspector. Such records shall include, but not be limited to, the following information:

1) Maintenance history of the device.

2) Operational check and maintenance logs.

3) Permits, licenses and other regulatory compliance information.

4) Problems and operational disruptions due to failure of the device or a device accessory.

Appendix A contains examples of operational and maintenance logs. Records shall be maintained for a period of no less than 3 years from the date of recording.

(Source: Added at 23 Ill. Reg. 162, effective January 1, 1999)

Section 2120.500 Existing Installation of Pressure Vessels

Maximum Allowable Working Pressure for Standard Pressure Vessels. The maximum allowable working pressure for standard pressure vessels shall be determined in accordance with the applicable provisions of the ASME Code under which they were constructed and stamped.

a) Maximum Allowable Working Pressure for Nonstandard Pressure Vessels.

1) For Internal Pressure. The maximum allowable working pressure on the shell of a nonstandard pressure vessel shall be determined by the strength of the weakest course computed from the thickness of the plate, the tensile strength of the plate, the efficiency of the longitudinal joint, the inside diameter of the course and the factor of safety set by this Part.

$$\frac{TS \times t \times E}{(R \times FS)} = MaximumAllowableWorking\,\mathrm{Pr}essure, PSIG$$

Where:

TS = ultimate tensile strength of shell plates, psi. When the tensile strength of steel plate is not known, it shall be taken as 55,000 psi for temperature not exceeding 650F.

t = minimum thickness of shell plate of weakest course, inches.

E = efficiency of longitudinal joint, depending upon construction. Use the following values:

For Fusion-Welded and Brazed Joints:

Single lap welded 40
Double lap welded 60
Single butt welded..... 60
Double butt welded 75
Forge welded..... 70
Brazed steel 80

For riveted joints − calculate riveted joint efficiency in accordance with rules given in Section I, Part PR, of the 1971 Edition ASME Code.

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

FS = factor of safety permitted shall be a minimum of 5.0.

2) For External Pressure. The maximum allowable working pressure for cylindrical nonstandard pressure vessels subjected to external or collapsing pressure shall be determined by the Rules in Par. UG-27 and UG-28 of Section VIII of the ASME Code.

3) Factors of Safety. The minimum factor of safety may be increased when deemed necessary by the Inspector to assure the operation of the vessel within safe limits. The condition of the vessel and the particular service to which it is subject will be determining factors.

4) End Closures. The maximum allowable working pressure permitted for formed heads under pressure shall be determined by using the appropriate formulas from Par. UG-32, UG-33, or UG-35 of Section VIII, ASME Code and the tensile strength and factors of safety given above.

b) Repairs and Renewals of Fittings and Appurtenances. Whenever repairs are made to fittings and appurtenances or it becomes necessary to replace them, the work must comply with the requirements for new installations.

c) Conditions Not Covered by This Part. All cases not specifically covered by this Part shall be treated as new installations. Existing standard and non-standard pressure vessels shall be governed by current ASME/National Board Inspection Code requirements or the requirement of the ASME Codes in effect at the time of construction. Questions concerning existing non-standard pressure vessels may be referred to the Chief Inspector. Appeal of a decision of the Chief Inspector may be made to the Board.

(Source: Amended at 19 Ill. Reg. 11904, effective August 15, 1995)

SUBPART C: REPAIR AND ALTERATION

Section 2120.1000 Repairs and Alterations to Boilers and Pressure Vessels by Welding

a) Introduction. This Subpart covers rules for repairs and alterations to boilers and pressure vessels by welding. Where applicable rules for a repair or alteration are not given, it is intended that, subject to approval of the Inspector, details of design and construction, insofar as practicable, will be consistent with the rules of the ASME Code or the rules for repairs contained in the National Board Inspection Code or the Code to which the item was originally constructed.

b) General Requirements for Repairs and Alterations. The requirements of this Subpart apply to all repairs and alterations to boiler and pressure vessel pressure retaining parts, except that an owner-user of pressure vessels qualified in accordance with Section 15 of the Act shall have the option of using the provisions of API-510 for the inspection, repair, alteration, or rerating of pressure vessels. Organizations authorized in accordance with the Boiler and Pressure Vessel Repairer Regulation Act need not meet the requirements of Section 2120.1010, 2120.1020, 2120.1030 or 2120.1040.

c) All boilers and pressure vessels covered by the Act and repaired after July 31, 1997, must be repaired by one of the following:

1) By an organization holding a valid Certificate of Registration issued by the State Fire Marshal.

2) An organization authorized by the Division of Boiler and Pressure Vessel Safety pursuant to this Subpart to repair boilers or pressure vessels for their own use.

d) All boilers and pressure vessels covered by the Act altered after July 31, 1997, shall be altered in accordance with Section 2120.1041(b).

(Source: Amended at 21 Ill. Reg. 997, effective January 1, 1997)

Section 2120.1010 Authorization to Repair Boilers and Pressure Vessels

Realizing the importance of the proper repair of boilers and pressure vessels, the Board of Boiler and Pressure Vessel Rules authorized the development of procedures and rules for the issuance and use of the Certificate of Authorization for repair for those organizations requesting authorization for their own use to repair boilers and pressure vessels under Section 2120.1000(c)(2). The Division shall review the repair organization's Quality Control Manual and shall require a demonstration of the repair organization's Quality Control System as described in this Subpart.

(Source: Amended at 21 Ill. Reg. 997, effective January 1, 1997)

Section 2120.1020 Issuance and Renewal of the Certificate

Authorization to repair boilers and pressure vessels will be granted by the Division of Boiler and Pressure Vessel Safety, Office of the State Fire Marshal, pursuant to the provisions of the following administrative procedures and rules:

a) A Certificate of Authorization will be issued for a period of three years. The certificate shall indicate authorization to repair either boilers or pressure vessels or both, as covered by the repair organization's Quality Control Manual. The Certificate will be signed by the Chief Inspector.

b) The applicant shall apply to the Division for renewal of authorization and reissuance of the Certificate at least six (6) months prior to the date of expiration.

c) Before issuance or renewal of the Certificate of Authorization, the repair organization shall demonstrate its Quality Control System to a representative of the Division.

d) It is the responsibility of the repair organization to make arrangements for this review. Certificates cannot be issued nor renewed until the Division has completed this review.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1030 Changes to Certificates of Authorization

When an organization authorized by the Division to repair boilers and pressure vessels for their own use changes location and/or ownership or name, the Office of the State Fire Marshal, Division of Boiler and Pressure Vessel Safety shall be notified. When a repair organization changes location, name or ownership, a review of its Quality Control System is required.

(Source: Amended at 21 Ill. Reg. 997, effective January 1, 1997)

Section 2120.1040 Quality Control Requirements

a) General

1) Before issuance or renewal of a Certificate of Authorization, the repair organization must meet all requirements including an acceptable Quality Control System, outlined in a written Quality Control System Manual, which shall include material control, fabrication, welding, nondestructive examination, testing and inspection.

2) The Quality Control System Manual shall also include provisions for making revisions, posting and dating changes in the program enabling the System to be kept current as required.

3) The description and information relating to the System may be brief or voluminous, depending upon the circumstances.

4) In general, the Quality Control System Manual shall describe and explain what documents and procedures the repair firm will use to validate a repair.

5) A review of the repair organization's Quality Control System and Manual will be performed by a representative of the Division. The review will include a demonstration of the implementation of the provisions of the repair organization's Quality Control System.

6) Each repair organization to which a Certificate of Authorization is issued shall maintain thereafter an up-to-date copy of its accepted Quality Control System Manual and keep a current copy on file with the Division. Revisions to the Manual shall not be implemented until such revisions are accepted by the Division.

b) The following sets the minimum requirements for a Quality Control System for repairs of boilers and pressure vessels. Each repair organization shall develop its own Quality Control System which is designed to meet the requirements of the organization. Requirements for the individual Quality Control System Manuals include:

1) Title Page – The title page shall include the name and address of the repair organization to which the Certificate of Authorization is to be issued. It shall also list the Sections of the ASME Code to which the repairs apply.

2) Revision Log – A revision log is required to assure control over revisions in the Quality Control System Manual. The log shall contain sufficient space for date, description and section of revision, repair organization approval and Division acceptance.

3) Contents Page – The contents page shall list and reference, by paragraph and page number, the subjects and exhibits contained within the System.

4) Statement of Authority and Responsibility – A statement of authority and responsibility shall appear on organization letterhead, dated and signed by an officer of the organization:

A) Directing that disagreements in the implementation of the written Quality Control System shall be referred to a higher authority in the organization for resolution; and

B) Listing the title of the individual authorized to approve revisions to the written Quality Control System Manual and the method by which such revisions are to be submitted to the Division for acceptance before implementation.

5) Organizational Chart – The organizational chart shall include all departments or divisions within the repair organization that perform functions affecting the

quality of the repair and show the relationship.

6) Scope of Work – The scope of work section shall clearly indicate the scope and type of repairs the organization is capable of and intends to perform. The scope can be limited by engineering, machine tools, welding processes, heat treatment facilities, testing facilities, nondestructive examination (NDE) techniques or qualified personnel.

7) Drawings and Specification Control – The drawings and specification control system shall provide procedures assuring that the latest applicable drawings, specifications and instructions required are used for repair, inspection and testing.

8) Material Control – The material control section shall describe procurement of material with request for mill test certification as required. It shall describe receiving, storage and issuance, as well as the following:

   A) The title of the individual responsible for the procurement of all material.

   B) The title of the individual responsible for certification and other records as required.

   C) Procedures for checking all incoming material and parts for conformance with the purchase order and, where applicable, the material specifications or drawings. The material section shall indicate how the material or part is identified and how identity is maintained by the Quality Control System.

9) Repair and Inspection Program – The repair and inspection program section shall include reference to a document (such as a report, traveler or checklist) which outlines the specific repair and inspection procedures used in the repair. The document shall be retained for a period of at least five years. The document shall include the material check and a description of items such as the welding procedure specifications (WPS), fit-ups, NDE technique, heat treatment, and hydrostatic/pneumatic pressure test methods used. There shall be a space for "sign-offs" at each operation to verify that each step has been properly performed.

10) Welding, NDE and Heat Treatment – The Quality Control System Manual shall indicate the title of the person(s) responsible for the development and approval of the welding procedure, specifications, and their qualifications as well as the qualifications of welders and welding operators. Welding procedure, specifications, welders and welding operators shall be qualified under the requirements specified in the ASME Boiler and Pressure Vessel Code, Section IX. Similarly, NDE and heat treatment techniques must be described in the Quality Control System Manual. When outside services are used, the contracted service provider shall perform in accordance with the Quality Control System Manual and shall meet the requirements of the applicable section of the ASME Code.

11) Calibration of Measurement and Test Gauges – The calibration of measurement and test gauges system shall include the periodic (indicate time schedule) calibration of measuring instruments and pressure gauges.

A) Pressure gauges are to be checked periodically by the person authorized (indicate title). The method of gauge testing is to be indicated and results recorded.

B) Periodically, all master instruments shall be calibrated, preferably but not necessarily, to measuring equipment that is traceable to the National Bureau of Standards.

12) Nonconformities – The system shall establish measures for the identification, documentation, evaluation, segregation and disposition of nonconformities. A nonconformity is a condition of any material, item, product or process in which one or more characteristics do not conform to the established requirements. These may include, but are not limited to, data discrepancies, procedural and/or documentation deficiencies or material defects. Also, the title(s) of the individual(s) involved in this process shall be included.

13) Controlled Copy – An up-to-date copy of the written Quality Control Systems Manual shall be submitted to the Division for review and acceptance. Revisions shall also be submitted for acceptance prior to being implemented.

14) Sample Forms – Forms used in the Quality Control System shall be included in the Manual with a written description. Forms exhibited shall be marked "SAMPLE" and completed in a manner typical of actual repair procedures.

15) Individuality Important – It is extremely important that the Quality Control System and Manual be tailored to the operations of the individual repair organization while meeting the requirements of this Subpart.

(Source: Amended at 23 Ill. Reg. 162, effective January 1, 1999)

Section 2120.1041 Repair and Alteration Requirements

a) Repairs. Except as permitted for low pressure boilers, no repair to a pressure vessel or high pressure boiler shall be initiated without the authorization of the Inspector who shall be satisfied that the welding procedures and welders are qualified and that the repair methods are acceptable. The Inspector may give prior approval for repairs of a routine nature. In every case, however, the Inspector shall be advised of each repair under such prior agreement.

b) Alterations. Except as permitted for owner-users in Section 2120.1000(b), alterations to boilers and pressure vessels shall be performed by an authorized repairer. No alteration

to a boiler or pressure vessel shall be initiated without the authorization of the Inspector who shall be satisfied that the alteration methods and calculations are acceptable. If the Inspector considers it necessary, the Inspector shall make an inspection of the object before granting such authorization.

c) Welded Repairs to Low Pressure Boilers. All welded repairs to low pressure boilers shall be performed by an authorized repairer and shall comply with all the rules as required by the Board, except no third party inspection is required. Prior to the start of any low pressure boiler repair, the authorized repairer shall contact the Division and request a low pressure boiler repair permit authorization number and inform the Division of the physical location of the boiler to be repaired. Upon completion of the repair, the authorized repairer will submit a completed "Low Pressure Boiler Repair Form" (LP-1) to the Division.

d) Acceptance of Repairs and Alterations. Provided that repairs or alterations are acceptable to the Authorized Inspection Agency responsible for the boiler or pressure vessel, acceptance of repairs and alterations may be made by an Inspector employed by any of the following:

1) The Division.

2) The Inspection Agency of record of the organization making the repair or alteration.

3) The Authorized Inspection Agency, provided the work was not performed by the Agency employing the Inspector, except as provided in subsection (f) of this Section.

e) Acceptance Inspection. It shall be the responsibility of the organization making the repair or alteration to coordinate the acceptance inspection of the repair or alteration. Except for repairs of a routine nature, a completed record of welding repairs shall be submitted to the Division by those organizations authorized under Section 2120.1000(c)(2). Authorized repairers shall submit the appropriate National Board Form to the Division upon completion of repairs or alterations.

f) Owner-User Acceptance Inspection of Repairs. An Owner-User Inspector may perform acceptance inspections of repairs and alterations to boilers and pressure vessels when such repairs and alterations have been performed by the Inspector's employer, provided the repair organization and inspection procedures have the Division's specific approval. Such acceptance inspection procedures shall be subject to the concurrence of the Authorized Inspection Agency responsible for the boiler or pressure vessel.

g) Replacement Pressure Parts. In general, replacement pressure parts may be classified as follows:

1) Replacement parts subject to internal or external pressure that consist of materials

which may be formed or assembled to the required shape by bending, forging or other forming methods, but on which no shop fabrication welding is performed may be supplied as material. Material and part identification shall be supplied in the form of bills of material and drawings with ASME Code compliance.

2) Replacement parts subject to internal or external pressure that are fabricated preassembled by welding, but on which shop inspection is not required by the ASME Code, shall have the welding performed in accordance with Section IX and other applicable Sections of the ASME Code. The replacement part assembly identification shall be supplied in the form of bills of material and drawings. The supplier or manufacturer shall certify that the material, design and fabrication are in accordance with the applicable Section of the ASME Code.

3) Replacement parts subject to internal or external pressure fabricated by welding which require shop inspection by an Authorized Inspector shall be fabricated by a manufacturer having an ASME Certificate of Authorization and the appropriate Code Symbol Stamp. A Manufacturer's Partial Data Report shall be supplied by the manufacturer.

h) Pressure Tests

1) Repairs. The Inspector may require a pressure test after the completion of a repair to a boiler or pressure vessel when in the Inspector's judgment one should be conducted.

2) Alterations. A pressure test in accordance with the National Board Inspection Code shall be applied to the boiler or pressure vessel on the completion of an alteration.

i) Repair Methods. Repair methods in this Section shall be used in conjunction with the general requirements in Section 2120.1000(b) of this Part.

j) Defect Repairs

1) General. A repair of a defect, such as a crack in a welded joint or base material, shall not be made until the defect has been removed. A suitable nondestructive method shall be used to assure its complete removal. If the defect penetrates the full thickness of the material, the repair shall be made with a complete penetration weld such as double butt weld or a single butt weld with or without backing. Before repairing a cracked area, care shall be taken to investigate its cause and to determine its extent.

2) Unstayed Boiler Furnace Cracks. Cracks at the knuckle or at the turn of the flange of the furnace opening require immediate replacement of the affected area or specific approval of repairs by the Authorized Inspection Agency.

3) Rivet or Staybolt Hole Cracks. Cracks radiating from rivet or staybolt holes may be repaired if the plate is not seriously damaged. If the plate is seriously damaged, it shall be replaced.

4) Minor Defects. Minor cracks, isolated pits, and small plate imperfections shall be examined to determine the extent of the defect and whether welding is required. When welding is required, these defects shall be prepared for welding by removing to solid metal. Liquid penetrant or magnetic particle examination may be used before and/or after welding.

5) Defective Bolting. Defective bolting material shall not be repaired but shall be replaced with suitable material which meets the specifications of the applicable Section of the ASME Code.

k) Wasted Areas

1) Shells, Drums, Headers. Wasted areas in stayed and unstayed shells, drums and headers may be built up by welding provided that in the judgment of the Inspector the strength of the structure will not be impaired. Where extensive weld build-up is employed, the Inspector may require an appropriate method of NDE (nondestructive examination) for the complete surface of the repair. For repairs of minor defects see Section 2120.1041(j)(4) of this Part.

2) Access Openings. Wasted areas around access openings may be built up by welding or they may be repaired. In boilers, the area to be so repaired shall not be closer than 2 inches (50.8mm) from any knuckle.

3) Flanges. Wasted flange faces may be cleaned thoroughly and built up with weld metal. They should be machined in place if possible to a thickness not less than that of the original flange or that required by calculations in accordance with the provisions of the applicable Section of the ASME Code. Wasted flanges may also be remachined in place without building up with weld metal provided the metal removed in the process does not reduce the thickness of the flange to a measurement below that calculated above. Flanges which leak because of warpage or distortion and which cannot be remachined shall be replaced with new flanges which have at least the dimensions conforming to the applicable Section of the ASME Code.

4) Tubes. Wasted areas on tubes may be repaired by welding provided that in the judgment of the Inspector the strength of the tube will not be impaired.

5) Corrosion, Grooving.

A) Localized corrosion that produced a groove, especially along or immediately adjacent to a joint, could be more serious than a similar amount of corrosion on solid plate away from the joint. Grooving and

cracks along longitudinal joints are especially significant as they are likely to occur where the material is more highly stressed. Severe corrosion is likely to occur at points where the circulation of the corrosive fluid is poor; such places shall be examined most carefully.

B) For the purposes of estimating the effect of corrosion or other defects upon the strength of a shell, comparison shall be made with the efficiency of the longitudinal joint of the boiler or pressure vessel, the strength of which is always less than that of a solid sheet.

C) All flanging shall be inspected thoroughly, particularly the flanges of heads that are not stayed. Internal grooving in the fillets of such heads and external grooving in the outer surfaces of heads concave to pressure are very common since there is a slight movement in heads of this character which produces this kind of defect. Some types of boilers or pressure vessels have the ogee or reversed-flange construction in a few of their parts that may be inaccessible to the eye, but the conditions shall be determined by the insertion of a borescope, fiber optics or a mirror which, at a proper angle, will reflect back to the eye the condition of such a part.

D) On new vessels and on vessels for which service conditions are being changed, one of the following methods shall be employed to determine the probable rate of corrosion from which the remaining wall thickness at the time of the next inspection can be estimated:

i) The corrosion rate as established by accurate data collected by the owner or user on vessels in the same or similar service.

ii) If accurate data for the same or similar service are not available, the probable corrosion rate as estimated from the Inspector's knowledge and experience on vessels in similar service.

iii) If the probable corrosion rate cannot be determined by either of the above mentioned methods, thickness determinations shall be made after approximately 1000 hours of service, or one normal run if longer than this; subsequent sets of thickness measurements shall be taken after additional similar intervals until the corrosion rate is determined by this method; the corrosion data indicated by the first inspection may be used as a first approximation of the corrosion rate but shall be excluded from all subsequent computations of the corrosion rate, since attack on the initial surfaces may not be indicative of subsequent attack on corroded surfaces.

l) Seal Welding

1) Seal Welding of Tubes. Tubes may be seal welded provided the ends of the tubes

have sufficient wall thickness to prevent burn through and the requirements of the appropriate Sections of the ASME Code are satisfied.

2) Seal Welding of Riveted Joints. Edges of butt straps, plate laps and nozzles, or of connections attached by riveting may be restored to original dimensions by welding. Seal welding of riveted joints, butt straps or rivets shall require the approval of the Authorized Inspection Agency.

m) Re-Ending or Piecing Pipes and Tubes. Re-ending or piecing pipes and tubes is permitted provided the thickness of the remaining tube or pipe is not less than 90 percent of that required by the applicable Section of the ASME Code.

n) Patches

1) Flush Patches. The weld around a flush patch shall be a full penetration weld and the accessible surfaces shall be ground flush where required by the applicable Section of the ASME Code. Flush welded patches shall be subjected to an appropriate nondestructive examination which shall be consistent with the original construction requirements.

2) Tube Patches. In some situations it is necessary to weld a flush patch on a tube, such as when replacing tube sections and accessibility around the complete circumference of the tube is restricted or when it is necessary to repair a small bulge. This is referred to as a window patch.

3) Stays. Threaded stays may be replaced by welded-in stays provided that, in the judgment of the Inspector, the plate adjacent to the staybolt has not been materially weakened by deterioration or wasting away. All requirements of the applicable Section of the ASME Code governing welded-in stays shall be met.

o) Alteration Methods. Alteration methods shall comply with the general requirements of Section 2120.1000(b) of this Part.

p) Replacement Drums and Shells. Major replacement of pressure parts, including drums and shells, which are fabricated by welding and for which a Manufacturer's Data Report is required by the applicable Code Section shall be fabricated by a manufacturer having an ASME Certificate of Authorization and the appropriate Code Symbol Stamp. The item shall be inspected, stamped with the applicable Code Symbol and the word "PART", and reported on the appropriate Manufacturer's Partial Data Report.

q) Replaced Stamping. When a repair or alteration requires removal of that part of a boiler or pressure vessel containing the Code Stamping, the Inspector shall, subject to the approval of the jurisdiction, witness the making of a facsimile of stamping, the obliteration of the old stamping and the transfer of the stamping to the new part. When the stamping is on a nameplate, the Inspector is to witness the transfer of the nameplate to the new part. The Code Symbol is not to be restamped.

r) Rerating of a Boiler or Pressure Vessel. Rerating of a boiler or pressure vessel by increasing the maximum allowable working pressure (internal or external) or temperature, or decreasing the minimum temperature such that additional mechanical tests are required, shall be considered an alteration and shall be done only after the following requirements have all been met to the satisfaction of the Authorized Inspection Agency:

1) Revised calculations verifying the new service conditions shall be required from the original manufacturer for review and acceptance by the Authorized Inspection Agency. When such calculations cannot be obtained from this source, they may be prepared by an Engineer and forwarded for review and acceptance by the Authorized Inspection Agency.

2) All ratings shall be established in accordance with the requirements of the Code to which the boiler or pressure vessel was built or by computation using the appropriate formulas in the latest edition of the ASME Code if all essential details are definitely known to comply with the edition of the Code to which the object was built.

3) Current inspection records verify that the boiler or pressure vessel is satisfactory for the proposed service conditions.

4) The boiler or pressure vessel has been pressure tested for the rerated condition as required by subsection (h)(2) of this Section.

s) Suggestions

1) The Inspector should be well informed of the natural and neglectful causes of defects and deterioration of boilers and pressure vessels. The Inspector should be conscientious and extremely careful in observing, taking sufficient time to make the examinations thorough in every way, taking no one's statement as final as to conditions not personally observed, and, in the event of inability to make thorough inspections, the Inspector should note it in the report and not accept the statements of others.

2) The Inspector shall make a general observation of the conditions of the boiler room and apparatus, as well as of the attendants, as a guide in forming an opinion of the general care of the equipment.

3) The Inspector shall weigh very carefully the condition of any defects in order to determine their relation to, or influence upon, the safety of the inspected boiler or pressure vessel. The Inspector shall question responsible employees as to the history of old boilers or pressure vessels, their peculiarities and behavior; ascertain what, if any, repairs have been made; ascertain the character of repairs; and investigate and determine whether repairs were made properly and safely.

(Source: Amended at 21 Ill. Reg. 997, effective January 1, 1997)

SUBPART D: STATE SPECIALS

Section 2120.1100 Procedure for the Issuance of a State Special Permit

a) The Board of Boiler and Pressure Vessel Safety may issue special permits for boilers and pressure vessels which for some reason were not or cannot be constructed in accordance with an applicable ASME Code.

b) Individuals, corporations, partnerships, joint ventures, and other entities may petition the Board at least 30 days prior to the next meeting of the Board for a permit for the installation of an object not constructed in accordance with the applicable ASME Code.

c) The Board may grant a special installation permit upon consideration of the following information that must be submitted by the petitioner:

1) A statement of relief sought with all specific information as to why a State Special is requested. This statement must be signed by:

A) An attorney licensed to practice law in the State of Illinois, including the attorney's license number;

B) An officer of the corporation, indicating the office, if the entity seeking the State Special is a corporation; or

C) The owner or partner, if the entity seeking the State Special is a sole proprietorship or a partnership, respectively.

2) Full details of design and construction showing equivalency to the ASME Code.

3) All data pertaining to the physical and chemical properties of all material used in construction.

4) All calculations showing in detail how the maximum allowable working pressure was derived.

5) A report showing in detail the purposes for which the object is to be used.

6) Any other information the Board may deem necessary to make a decision.

d) The Board may, by regulation, issue special installation permits to a class of objects meeting the above criteria when it deems that the public interest would be best served by application of the class of objects rather than individual case-by-case determination.

e) The Board may, as a condition to issuance of a special permit, require the installation of additional safety features or prescribe certain operating procedures to be followed or require that additional maintenance and/or inspections be performed in addition to the

requirements contained in this Part. The Board will use relevant safety data in determining the need for additional safety features or special operating procedures or additional maintenance and/or inspections. The owner shall provide the Division copies of special maintenance reports and/or inspections at time intervals identified with the issuance of the special permit.

f) All information requested by the Board shall be sent to the Division of Boiler and Pressure Vessel Safety with 10 copies provided.

g) In addition to the other requirements of this Section, the petitioner will be required to provide a certified stenographic reporter at the hearing at the petitioner's expense and one copy of the original transcript of the proceedings shall be sent to the Board. If a special meeting is necessary, the petitioner must agree to pay all travel and costs associated with the special meeting.

(Source: Amended at 35 Ill. Reg. 9028, effective July 1, 2011)

SUBPART E: REPAIR OF SAFETY AND SAFETY RELIEF VALVES

Section 2120.1200 Authorization for Repair of Safety & Safety Relief Valves

All National Board capacity certified ASME Code Section I, "V" stamped and Section VIII, "UV" stamped safety and safety relief valves that are repaired after January 1, 1987, must be repaired by one of the following:

a) The manufacturer of the valve who is in possession of a valid ASME "V" or "UV" Certificate of Authorization.

b) By an organization in possession of a valid "VR" Certificate of Authorization issued by the National Board of Boiler and Pressure Vessel Inspectors.

c) An organization authorized by the Division of Boiler and Pressure Vessel Safety to repair safety and safety relief valves pursuant to this Subpart.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1210 Authorization to Repair ASME and National Board Stamped Safety and Safety Relief Valves

Realizing the importance of the proper repair of safety and safety relief valves, the Board of Boiler and Pressure Vessel Rules authorized the development of procedures and rules for the issuance and use of the Certificate of Authorization for Valve Repair for those organizations requesting authorization to repair safety and safety relief valves under Section 2120.1200(c). The Division shall review the repair organization's Quality Control System Manual and shall require a demonstration of the repair organization's Quality Control System as described in this Subpart.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1220 Issuance and Renewal of the Certificate

Authorization to repair all ASME Section I and Section VIII safety and safety relief valves will be granted by the Division of Boiler and Pressure Vessel Safety, Office of the State Fire Marshal, pursuant to the provisions of the following administrative procedures and rules:

a) A Certificate of Authorization will be issued expiring on the triennial anniversary date. The certificate shall indicate authorization to repair either Section I or Section VIII valves or both, as verified by testing and as covered by the repair organization's Quality Control System Manual. The Certificate will be signed by the Chief Inspector;

b) The applicant should apply to the Division for renewal of authorization and reissuance of the Certificate at least six (6) months prior to the date of expiration;

c) Before issuance or renewal of the Certificate of Authorization for Valve Repair, the repair organization and its facilities demonstrate its Quality Control System to a representative of the Division;

d) It is the responsibility of the valve repair organization to make arrangements for this review. Certificates cannot be issued nor renewed until the Division has completed this review;

e) Before the Certificate of Authorization for Valve Repair will be issued or renewed, two valves which have been repaired by the applicant at his repair facility, and selected at random by a representative of the Division, must successfully complete operational verification tests prior to issuance or renewal. The valve selection (one steam and one air or gas where steam and gas valves are repaired) shall be such as to cause a minimum disruption to the repair organization. However, the valves shall be typical of those repaired by the organization. Tests conducted must be witnessed by a representative of the Division. The purpose of the tests is to ensure that the repairs have been satisfactorily carried out and the function and operation of the valves meet the requirements of the Section of the ASME Code to which they were manufactured.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1240 Changes to Certificates of Authorization

When a valve repair organization changes, location and/or ownership or name, the Office of the State Fire Marshal, Division of Boiler & Pressure Vessel Safety shall be notified. When a valve repair organization changes location, name or ownership, a review of its facilities and Quality Control System Manual shall be required.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1250 Repairs to Safety and Safety Relief Valves

a) Repair of a safetyor safety relief valve is considered to be the replacement, remachining or cleaning of any critical part as described in 2120.1260(b)(8)(D), lapping of seat and disc or any other operation which may affect the flow passage, capacity, function or pressure retaining integrity. Disassembly, reassembly and/or adjustments which affect the safety or safety relief valve function are also considered a repair. The initial installation, testing and adjustments of a new safety valve or a safety relief valve on a boiler or pressure vessel are not considered a repair.

b) The Division shall authorize properly trained and qualified employees of boiler or pressure vessel users or their designees (see Section 2120.1285) to make adjustments to set pressure provided the adjusted settings and the date of the adjustment are recorded on a metal tag secured to the seal wire. All external adjustments shall be resealed showing the identification of the organization making the adjustments.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1260 Quality Control System

a) General

1) Before issuance or renewal of the Certificate of Authorization, the applicant must meet all requirements, including an acceptable written Quality Control System that shall include, but not be limited to, material control, fabrication, welding, nondestructive examination, testing and inspection.

2) The written Quality Control System shall also include provisions for making revisions, posting and dating changes in the program, enabling the system to be kept current as required.

3) The description and information of the system may be brief or voluminous, depending upon:

A) whether the organization's quality control manual accurately describes who is responsible for maintaining quality control; and

B) the size of the company holding the authorization and the number of employees assigned specific quality control duties.

4) In general, the Quality Control System shall describe and explain what documents and procedures the repair firm will use to validate a valve repair.

5) A review of the applicant's Quality Control System will be performed by a representative of the Division. The review will include a demonstration of the implementation of the provisions of the applicant's Quality Control System.

6) Each applicant to whom a Certificate of Authorization is issued shall maintain thereafter an up to date copy of its accepted Quality Control System Manual with the Division. Revisions to the Quality Control System Manual shall not be implemented until the revisions are accepted by the Division.

b) The following are the minimum requirements of the Division for a written Quality Control System for repairs of ASME safety and safety relief valves. It is essential that each valve repair organization develop its own Quality Control System that meets the requirements of its organization. For this reason, it is not possible to develop one Quality Control System that could apply to more than one organization. Some of these requirements are:

1) Title Page – The title page shall include the name and address of the company to which the Certificate of Authorization is to be issued. It shall also list the Sections of the ASME Code to which the repairs will apply.

2) Revision Log – A revision log is required to assure revision control of the Quality Control System Manual. The log shall contain sufficient space for date, description and section of revision, company approval and Division acceptance.

3) Contents Page – The contents page shall list and reference, by paragraph and page number, the subjects and exhibits contained in the manual.

4) Statement of Authority and Responsibility – A statement of authority and responsibility shall appear on company letterhead, dated and signed by an officer of the company verifying the following:

   A) If there is a disagreement in the implementation of the written Quality Control System, the matter is referred to a higher authority in the company for resolution; and

   B) The title of the individual authorized to approve revisions to the written Quality Control System and the method by which revisions are to be submitted to the Division for acceptance before implementation.

5) Organizational Chart – The organizational chart shall include all departments or divisions within the company that perform functions affecting the quality of the valve repair and show the relationship among the various departments or divisions.

6) Scope of Work – The scope of work section shall clearly indicate the scope and type of valve repairs the organization is capable of and intends to carry out, and shall include the type and sizes of valves that can be repaired. In addition, the testing media (steam, air, water, etc.) and pressure ranges should be included. The scope can be limited by engineering, machine tools, welding processes, heat treatment facilities, testing facilities, non-destructive examination (NDE) techniques or qualified personnel.

7) Drawings and Specification Control – The drawings and specification control system shall provide procedures assuring that the latest applicable drawings, specifications and manufacturer's available instructions required are used for valve repair, inspection and testing.

   A) Specific reference shall be made to the materials used for the repair of the various valve parts (PG-73.2.3, Section I and UG-136(b)(3), Section VIII, Division 1 of the ASME Code).

   B) Mechanical requirements shall comply with the ASME Code. See applicable Code Section.

8) Material and Part Control – The material and part control section shall describe

procurement of parts from the original valve manufacturer or their designated representative, if applicable, and of material with request for mill test certification as required. It shall also describe receiving, storage and issuance, as well as the following:

A) State the title of the individual responsible for the procurement of all material and parts.

B) State the title of the individual responsible for certification and other records as required.

C) All incoming material and parts shall be checked for conformance with the purchase order and, when applicable, the material specifications or drawings. Indicate how the material or part is identified and how identity is maintained by the Quality Control System.

D) All critical parts shall be fabricated by the valve manufacturer. Critical parts are defined as any part that may affect the flow passage, capacity, pressure rating or valve function.

9) Repair and Inspection Program – The repair and inspection program section shall include reference to a document (such as a report, traveler or checklist) that outlines the specific repair and inspection procedures to be used in the repair of safety and safety relief valves. Provisions shall be made to retain this document for a period of at least five years as a part of quality control traceability documents.

A) Each valve or group of valves shall be accompanied by the document referred to in subsection (b)(9) for processing through the plant.

B) The document referred to in subsection (b)(9) shall include material check, reference to items such as the welding procedure specifications (WPS), fit-ups, NDE technique, heat treatment, and pressure test methods to be used. There shall be a space for "sign-offs" at each operation to verify that each step has been properly performed for each valve.

C) The system shall include a method of controlling the repair or replacement of critical valve parts. The method of identifying each spring shall be indicated.

10) Welding, NDE and Heat Treatment (when applicable) – When welded repairs are made by the Certificate holder, the Quality Control System Manual shall indicate the titles of the persons responsible for the development and approval of the welding procedure specifications and their qualifications, and the qualifications of welders and welding operators. Welding procedures specifications and welders and welding operators shall be qualified under the requirements of the ASME

Boiler and Pressure Vessel Code, Section IX. Similarly, NDE and heat treatment techniques must be covered in the Quality Control System Manual. When outside services are used, the Quality Control System Manual shall describe the system by which the use of those services meets the requirements of the applicable Section of the ASME Code.

11) Valve Testing and Setting – The Quality Control System Manual shall include provisions that each valve shall be tested and set and all external adjustments sealed according to the requirements of the valve manufacturer and as required by this Section. The seal shall identify the repair organization. Abbreviations or initials are permitted.

12) Valve Repair Nameplates – An effective valve stamping system shall be established to ensure proper stamping of each valve as required by Section 2120.1270. The Quality Control System Manual shall include a description or a drawing of the nameplate.

13) Calibration of Measurement and Test Gauges – The calibration of the measurement and test gauges system shall include the periodic calibration of measuring instruments and pressure gauges.

    A) Pressure gauges used for setting valves are to be checked periodically (indicate time schedule) by the person authorized (indicate title). The method of gauge testing is to be indicated and results recorded.

    B) Periodically, all master instruments shall be calibrated preferably, but not necessarily, to measuring equipment traceable to the National Bureau of Standards.

14) Controlled Copy – An up to date copy of the written Quality Control System Manual shall be submitted to the Division for review and acceptance. Revisions shall also be submitted for acceptance prior to being implemented.

15) Nonconformities – The system shall establish measures for the identification, documentation, evaluation, segregation and disposition of nonconformities. A nonconformity is a condition of any material, item, product or process in which one or more characteristics do not conform to the established requirements. These may include, but are not limited to, data discrepancies, procedural and/or documentation deficiencies, or material defects. Also, the titles of the individuals involved in this process shall be included.

16) Sample Forms – Forms used in the Quality Control System shall be included in the manual with a written description. Forms exhibited shall be marked "SAMPLE" and completed in a manner typical of actual valve repair procedures.

17) Individuality Important – It is extremely important that the manual describe and

the operation implement the system of each repair organization firm while meeting the requirements of this Subpart.

(Source: Amended at 32 Ill. Reg. 17198, effective October 16, 2008)

Section 2120.1270 Nameplates

a) When a safety or safety relief valve is repaired, a metal repair nameplate stamped with the information required by subsection (b) shall be attached and sealed by wire and lead or metal seal stamped to the valve either above, adjacent to or below the original stamping. See Section 2120.1250(b) for exception.

b) As a minimum, the information on the valve repair nameplate shall include the name of the repair organization and the date of repair. If set pressure has been changed, then the new pressure setting, as well as the blowdown (for "V" stamped valves), and new capacity shall be indicated. The original nameplate or stamping shall be marked out but left legible. The new capacity shall be based on that for which the valve was originally certified.

c) Illegible or Missing Nameplates

1) When the information on the original manufacturer's or assembler's nameplate or stamping is illegible, the nameplate or stamping shall be augmented or replaced by a nameplate stamped "duplicate" that contains all information that originally appeared on the nameplate or valve, as required by the applicable Section of the ASME Code, except the "V" or "UV" symbol and the National Board mark. The repair organization's nameplate and other required data specified in subsection (b) will make the repair organization responsible to the owner and the Division for the information on the duplicate nameplate being correct.

2) When the original valve nameplate is missing, the repair organization is not authorized to perform repairs to the valve under the program unless positive identification can be made to that specific valve and verification that the valve was originally stamped with a "V" or "UV" stamp. Valves that can be positively identified shall be equipped with a duplicate nameplate as described in subsection (c)(1), in addition to the repair organization stamped nameplate. The repair organization responsibilities for accurate data as defined in subsection (c)(1) shall apply.

3) When a duplicate nameplate is affixed to a valve as required by subsection (c)(1) or (c)(2), it shall be marked "Sec I" or "Sec VIII", as applicable, to indicate the original ASME Code stamping.

(Source: Amended at 32 Ill. Reg. 17198, effective October 16, 2008)

Section 2120.1275 Field Repair

a) Field repairs are defined as any repair conducted outside a fixed repair shop location. Field repairs may be conducted with the aid of mobile facilities with repair capabilities with or without testing capabilities. Field repairs may be conducted in user facilities without use of mobile facilities as described above.

b) Organizations that obtain certification for in-shop/plant repairs may also perform field repairs to safety and safety relief valves provided that:

1) Technicians trained as required by Section 2120.1285 in the employ of the certificate holder perform such repairs;

2) Quality Control System meeting Section 2120.1260 with procedures for field repairs is maintained;

3) All functions affecting the quality of the repaired valves are supervised from the location where the certification is issued;

4)

A) Periodic audits of the work carried out in the field are made by quality control personnel of the Certificate holder to ensure that the requirements of the quality control system are met; this audit shall include but not be limited to testing by the Certificate holder of sample valves which were repaired in the field. Sample valves shall be tested using the Certificate holder's in-shop/plant testing facilities.

B) Provided the above provisions are met, verification testing of field repaired valves shall not be required.

C) Organizations that only perform field repairs must demonstrate field repair capabilities to representatives of the Division. Two valves, one steam and one air as applicable, must be repaired in the field and tested for verification. A Quality Control System Manual must be prepared describing all field repair activities that affect the performance of the repaired valves as specified in Section 2120.1260(b).

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1280 Performance Testing of Repaired Valves

Repaired valves shall meet the performance criteria equivalent to the standard for new valves.

a) Valves marked for steam service or having special internal parts for steam service shall be tested on steam. Valves marked for general service may be tested with air or gas. Each valve shall be tested to demonstrate set pressure, response to blowdown, if required, and seat tightness in accordance with the requirements of the applicable Sections of the

ASME Code.

b) When valves are repaired by the owner for the owner's own use and not for resale, valves for steam service may be tested on air or nitrogen for set pressure and, if possible, blowdown adjustment, provided manufacturer's corrections for differential in set pressure between steam and testing medium are applied to the set pressure.

c) A hydraulic or pneumatic device may be used to apply an auxiliary lifting load on the spring of a repaired valve which has been installed on a boiler or pressure vessel to establish the set pressure of the valve in lieu of the tests required in subsection (a) and (b) above, provided calibrated testing equipment and testing procedures are followed. In such cases, the manufacturer's recommendations shall be used to establish blowdown.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1285 Training of Valve Repair Personnel

It is essential that valve repair organizations insure that their personnel making repairs to safety and safety relief valves are knowledgeable and qualified. The repair organization shall provide for documented in-house training for these persons.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1290 ASME "V", "UV" or National Board "VR" Certificate Holders

a) A manufacturer, assembler or other organization in possession of a valid ASME "V" or "UV" Code Symbol Stamp or an organization in possession of a National Board Certificate of Authorization for use of a National Board "VR" Stamp for the repair of ASME-National Board stamped safety and safety relief valves are authorized by these rules to repair such valves in accordance with these rules and such repairs must be within the scope of the organization's Certificate of Authorization whether issued by the ASME or the National Board.

b) A manufacturer or repair firm may perform field repairs of safety and safety relief valves covered by his Certificate of Authorization provided that:

    1) Technicians are trained as required by Section 2120.1285 in the employ of the manufacturer or repair firm perform such repairs;

    2) Quality Control System meeting Section 2120.1260 with procedures for field repairs is maintained;

    3) All functions affecting the quality of the repaired valves are controlled from the location for which the certificate was issued;

    4) Periodic audits of work carried out in the field are made by quality control

personnel of the manufacturer or repair firm to ensure that the requirements of the Quality Control System are met; this audit may include, but not be limited to, witnessing the test of field repaired valves.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

SUBPART F: OWNER-USER QUALITY CONTROL REQUIREMENTS

Section 2120.1300 Introduction

The Illinois State Fire Marshal shall authorize as Owners-Users only those firms which meet all the requirements of Section 15 of the Act, and who have a written Quality Control System acceptable to the Chief Inspector. The applicant shall apply to the Division of Boiler and Pressure Vessel Safety for Owner-User status. After the Chief Inspector has reviewed the applicant's Quality Control System, he will submit a recommendation to the Board of Boiler and Pressure Vessel Rules for their consideration. Upon review of the Chief Inspector's recommendation, the Board will make a determination for acceptance or rejection of the applicant's status as an Owner-User. After acceptance as an Owner-User, the Division of Boiler and Pressure Vessel Safety shall provide for an annual audit of the program. This Subpart is a guide to the features which must be covered in the written description of the Quality Control System Manual.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1301 Authority and Responsibility

The authority and responsibility of those in charge of the inspection department shall be established. Persons performing inspection functions shall have sufficient and well defined responsibility, authority, and the organizational freedom to identify problems and to initiate, recommend and provide solutions.

(Source: Added at 11 Ill. Reg. 16587, effective January 1, 1988)

Section 2120.1305 Organization

a) An organization chart showing the relationship between management, engineering, purchasing, manufacturing, and inspection, is required to reflect the actual organization. The purpose of this chart is to identify and associate the various organizational groups with the particular function for which they are responsible. This requirement does not intend to encroach on the Owner-User's right to establish, and from time to time, alter whatever form of organization the Owner-User considers appropriate for its work.

b) The inspector(s) shall be under the supervision of one or more regularly employed engineer(s).

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1310 Inservice Inspection Program

The Owner-User Quality Control System shall include provisions to ensure that inspections are carried out in accordance with written procedures. These procedures must delineate all sources and references of pertinent information to be furnished by the Inspector. Included should be a

statement that other sources of qualified help will be made available to the Inspector. These procedures shall highlight the degree of inspection required for the types of vessels involved. As a minimum these procedures shall include provisions for reporting the following:

a) Internal or external inspection.

b) Location and thickness of sample areas.

c) Location and extent of corrosion, bulging, blistering or cracks in shells, head, welding seams, and/or weld heat affected zones.

d) Type and extent of non-destructive examination employed.

e) Setting and condition of safety valve, safety relief valve, or rupture disks.

f) Provisions for complying with the report requirements of the Boiler and Pressure Vessel Safety Act.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1320 Drawings, Design Calculations and Specification Control

The Owner-User Quality Control System shall provide procedures which will ensure that the latest applicable drawings, design calculations, specifications, and instructions required, as well as authorized changes, are used for inspection and repair.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1325 Material Control

The Owner-User shall include a system of material receiving control that requires verification that the material received conforms to order requirements and that the identification of the materials corresponds to the material certifications or material test reports. The system shall ensure that only the intended material is used in repairs.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1330 Examination and Inspection Program

The Owner-User Quality Control System shall describe the repair operations, including examinations, sufficiently to permit the inspector to determine at what stages specific inspections are to be performed. The system shall include a checklist, traveler or process sheet which lists important stages in the repair procedure which will allow the inspector to designate his desired inspections. As a minimum the stages shall permit the inspector to indicate his verification of the following:

a) Calculations are available.

b) Materials used comply with the ASME Code.

c) Welding procedures have been qualified in accordance with Section IX, ASME Code.

d) Welders and welding operators have been qualified in accordance with Section IX, ASME Code.

e) Heat treatment, including post weld heat treatment, as applicable, has been performed.

f) Material imperfections have been acceptably repaired.

g) Weld defects have been acceptably repaired.

h) Nondestructive examinations have been performed and results are acceptable.

i) Material identification markings have been properly transferred.

j) There are no material or dimensional imperfections.

k) Performance of internal and/or external inspections and witnessing hydrostatic or pneumatic test.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1335 Correction of Nonconformities

There shall be a system agreed upon with the inspector for correction of nonconformities. A nonconformity is any condition which does not comply with the applicable provisions of this Part. Nonconformities must be corrected or eliminated in some way before the completed component can be considered to comply.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1340 Welding

The Quality Control System shall include provisions for indicating that welding conforms to requirements of Section IX, of the ASME Code.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1345 Nondestructive Examination

The Quality Control System shall include provisions for identifying nondestructive examination procedures which will apply. Procedures utilized and personnel performing nondestructive

examinations shall meet the requirements of Section V, ASME Code.

(Source: Added at 11 Ill. Reg. 16587, effective January 1, 1988)

Section 2120.1350 Calibration of Measurement and Test Equipment

The Owner-User Quality Control System shall include provisions for the calibration of examination, measuring, and test equipment used in fulfillment of requirements.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1355 Records

The Owner-User Quality Control System shall describe the procedures to be followed to ensure the following records are maintained for the life of the pressure vessel or boiler.

a) Inservice Inspection Records:

1) ASME data reports if applicable

2) Date object was placed in service

3) Record of inservice inspections including inspector's signature

b) Repair Record:

1) Calculations

2) Material test reports

3) Traveler

4) Welding procedure specifications

5) Welding procedure qualification records

6) Welder qualification records

7) Heat treat procedure

8) Time-temperature charts

9) NDE procedures

10) NDE examination reports including NDE technician signature

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

Section 2120.1360 Inspectors

The Quality Control System shall include a definition of inspector. The inspector as referenced in this Subpart D, Owner-User Quality Control Requirements shall meet the requirements of Section 8 and pass an examination in accordance with Section 9 of the Boiler and Pressure Vessel Safety Act. The inspector must carry out his duties in complete compliance with this Division. The inspector must have the authority to take necessary action if an unsafe condition is found.

a) The Owner-User inspector must:

1) Be a full-time employee of the Owner-User.

2) Be provided with the necessary tools and equipment to properly conduct his inspection duties.

3) Be provided with adequate space and necessary office equipment.

4) Be provided with proper and adequate training in order that he may effectively perform his duties. Provisions shall be made for additional training if needed in order to assure effective performance of his duties.

b) The Owner-User inspector shall not perform inspections on equipment for which he has operation or maintenance responsibilities.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)

SUBPART G: HISTORICAL BOILERS

Section 2120.1400 Scope

This Subpart covers historical boilers, including steam tractors, traction engines, hobby steam boilers, portable steam boilers, and other boilers that require inspection under the definition of historical boilers. This Subpart is to be enforced in accordance with the requirements of the National Board Inspection Code (NBIC), Part 2, Section 6, Supplement 2 – Historical Boilers, unless excepted.

(Source: Amended at 38 Ill. Reg. 18925, effective September 4, 2014)

Section 2120.1410 Historical Boiler Definition

a) An "historical boiler" means a boiler capable of generating steam for motive power when operated for public display, exhibition and/or educational purposes, without regard for its actual physical age or its method of construction. Historical boilers are owned and operated by steam hobbyists and are not used in commercial or any other applications that require an annual inspection by the State of Illinois. Historical boilers include steam-powered conveyances such as: traction engines, portable and stationary engines, road rollers, automobiles, watercraft, and railroad locomotives not regulated by the Federal Railroad Administration.

b) Model steam engines whose boiler barrels are 12 inches or greater in inside diameter and/or whose firebox grate area is 1½ square feet or greater shall be subject to inspection.

c) Exempted from inspections are any historical boilers that are used only for static presentations, i.e., unfired, and not subject to internal vessel pressure greater than atmospheric.

(Source: Added at 37 Ill. Reg. 13424, effective August 1, 2013)

Section 2120.1420 Historical Boiler Inspections

a) Frequency of Inspection. Historical boilers shall be inspected every two years.

b) Preparation for Inspection

    1) It is the responsibility of the owner to assure the historical boiler is properly prepared for inspection.

    2) As much preparation as possible shall be completed prior to the arrival of the inspector.

    3) Standards of inspection shall be the requirements of the National Board Inspection Code (NBIC) and this Subpart.

4) Preparation for internal inspection shall be as required by the NBIC, including:

A) The boiler must be at ambient temperature and dry.

B) Fireside open and grates must be removed.

C) Fireside tubesheets and tubes must be thoroughly cleaned of soot and ash.

D) Waterside drained and hand holes, plugs and inspection openings must be removed.

E) Sediment, scale and mud must be flushed.

F) Insulation or jackets must be removed, as appropriate.

5) When there is limited or no access for visual inspection, remote camera or fiber optic devices may be used.

c) Inspection Sequence

1) Initial Inspection. In addition to initial internal and external visual inspection, a baseline full grid ultrasonic testing (UT) inspection, as required by NBIC, shall be performed. The boiler shall be equipped with a fusible plug.

2) Subsequent Inspections

A) A certificate inspection two years following the initial inspection shall be performed. The certificate inspection will consist of a hydro test of between 100% and 125% of the calculated maximum allowable working pressure, along with an external visual inspection both at rest and under pressure.

i) The owner shall provide the pump, water, water temperature and expertise to safely complete the test, including proper protection from the elements as needed.

ii) A powered mechanical pump must have a safety relief device between the pump discharge and the boiler inlet.

iii) The State of Illinois will not be responsible for damage occurring as a result of the hydro test.

B) A certificate inspection shall be performed two years following the hydro test and shall consist of a detailed internal and external visual inspection with a spot check of approximately 10% UT coverage on all stayed and un-stayed surfaces.

C) Subsequent certificate inspections shall be performed every 2 years and shall follow a cycle of first performing a hydro test and then performing a detailed internal and external visual inspection with a spot check of approximately 10% UT coverage on all stayed and unstayed surfaces.

D) At no time shall the interval for internal inspection exceed 4 years.

E) If 4 consecutive years of inspections (2 certificate inspections) are not conducted, the next inspection shall be an initial inspection (see subsection (c)(1)), with full grid UT inspection performed by a certified American Society for Nondestructive Testing (ASNT) Level II UT Inspector. The owner will be responsible for this second full grid UT inspection.

d) In-service Inspection Option at the Discretion of the Inspector. In lieu of the hydro test, an Inspector may choose to witness the object in operation. The following examinations and tests shall be performed while the boiler is in operation:

1) Two independent means of boiler feed water delivery systems shall be demonstrated to the Inspector. Observance is to be performed at an operating pressure no less than 90% of the safety valve set point of the boiler. If the boiler is equipped with more than one feed water tank, each feed water device must be able to take water out of either feed water tank. Pumped feed water shall be preheated prior to entering the boiler.

2) Demonstration of operable try-cocks that show a level of water that correlates with that shown in the gauge glass.

3) Demonstration of operating gauge glass upper and lower shutoff valves.

4) Demonstration of an operating gauge glass blow down valve.

5) Verification that the gauge glass is visually clear and fully operational.

6) Visual inspection for leaks.

7) Safety Valve Test. Safety valves shall be tested by having the operator raise boiler pressure to the safety valve popping point. Popping point pressure and blow down will be observed to ensure they are within tolerances (see NBIC Part 2, S2.8). A certification acceptable under Section 2120.1210 may also be used for verification of set pressures.

e) Additional Inspection as May Be Required. The boiler may be subjected to other methods of inspection, at the owner's expense, as deemed necessary by the boiler inspector to determine soundness and to assure the safety of the operators and citizens of the State of Illinois.

f) Display of Inspection Certificate. The current Inspection Certificate shall be posted in a visible area near the point of operation.

(Source: Added at 37 Ill. Reg. 13424, effective August 1, 2013)

Section 2120.1430 Fees

Fees shall be those established in Section 2120.30.

(Source: Added at 37 Ill. Reg. 13424, effective August 1, 2013)

Section 2120.1440 Repairs and Alterations

Repairs and alterations shall be performed in accordance with Subpart C of this Part.

(Source: Added at 37 Ill. Reg. 13424, effective August 1, 2013)