
The State of Utah

Boiler and Pressure Vessel Compliance Manual



Effective

March 2020

Issued by

**Utah Labor Commission
Division of Boiler, Elevator, and Coal Mine Safety**

**The State of Utah
Labor Commission**

Boiler and Pressure Vessel Compliance Manual



**THE UTAH LABOR COMMISSION
Division of Boiler, Elevator, and Coal Mine Safety
160 East 300 South, 3rd Floor
P.O. Box 146620
Salt Lake City, Utah 84114-6620
(801) 530-6850
(801) 530-6874**

www.laborcommission.utah.gov

TABLE OF CONTENTS

INTRODUCTION	1
PART I - DEFINITIONS OF TERMS	3
PART II - ADMINISTRATION.....	9
A-1 Minimum Construction Standards	9
A-2 Exemptions	9
A-3 National Board Commission.....	10
A-4 Examination Fees.....	10
A-5 Certificate of Competency	10
A-6 Conflict of Interest	10
A-7 Inspections	11
A-8 Inspection Reporting.....	11
A-9 Canceled or Suspended Insurance	12
A-10 Owner-User Inspections.....	12
A-11 Fees	13
A-12 Re-stamping Boilers and Pressure Vessels	13
A-13 Reinstallation of Boilers or Pressure Vessels	14
A-14 Nonstandard Boilers or Pressure Vessels	14
A-15 Used or Secondhand Boilers or Pressure Vessels.....	14
A-16 Working Pressure for Existing Installations	14
A-17 Repairs and Alterations.....	14
A-18 Repairs to Pressure Relief Valves.....	14
A-19 Repair, Modification or Replacement of Nuclear Components.....	14
A-20 Riveted Patches.....	15
A-21 Safety Appliances	15
A-22 New Installations	15
A-23 Application of State Issued U and/or UV Numbers.....	15
A-24 Penalties	15
PART III - GENERAL REQUIREMENTS	16
G-1 Pressure Test	16
G-2 Boiler Blowoff Equipment.....	16
G-3 Location of Discharge Piping Outlets.....	16
G-4 Supports	16
G-5 Clearance.....	16
G-6 Suggestions for Operations.....	16
G-7 Combustion Air Supply and Ventilation of Boiler Room	16
G-8 Gas Burners.....	17
G-9 Gas Venting	17
G-10 Emergency Shutdown Switches.....	17
G-11 Stacks	18
G-12 Special Inspections.....	18
G-13 Conditions Not Covered	18

PART IV - POWER BOILERS	19
B-1 Maximum Allowable Working Pressure for Nonstandard Boilers.....	19
B-2 Safety Valves	19
B-3 Boiler Feeding.....	19
B-4 Water Level Indicators.....	19
B-5 Water Columns	19
B-6 Gauge Glass Connections	19
B-7 Pressure Gauges	19
B-8 Stop Valves	19
B-9 Repairs and Renewals of Boiler Fittings and Appliances.....	20
B-10 Conditions Not Covered By These Requirements	20
 PART V - HEATING BOILERS.....	 21
H-1 Potable Water Heaters.....	21
H-2 Oil Field Boiler	21
H-3 Steam Boiler Safety Valves	21
H-4 Steam Boiler Steam Gauges.....	21
H-5 Hot Water Boiler Pressure or Altitude Gauges and Thermometers.....	21
H-6 Steam Boiler Water Gauge Glasses	21
H-7 Stop Valves	21
H-8 Feedwater Connections.....	21
H-9 Water Column and Water Level Control Pipes	21
H-10 Repairs and Renewals of Fittings and Appliances.....	22
 PART VI - PRESSURE VESSELS	 23
P-1 Pressure Vessels Not Requiring Certificates of Operation	23
P-2 Inspection Frequency for Pressure Vessels Required to have a Certificate of Inspection.....	23
P-3 Application of Vessel Identification Numbers	23
P-4 Inspection of Inaccessible Parts	24
P-5 Overpressure Protection.....	24
P-6 Owner/User Inspection	24
P-7 Owner/User Certification.....	25
P-8 Owner/User Inspectors.....	25
P-9 Certification Revocation	25
P-10 Fees	25
P-11 Owner/User Inspection Program Audits.....	26
P-12 Repairs and Renewals of Fittings and Appliances.....	26

Record of Revision

Revision Number	Purpose	Effective Date
---	Original issue as “General Safety Orders Section 97 - Boilers and Unfired Pressure Vessels”	July 1, 1967
0	Revised to “State of Utah Boiler and Pressure Vessel Rules and Regulations”	July 1, 1975
0a	Revised to mandate that boilers and pressure vessels be registered with the National Board	May 1, 1978
1	Update to be consistent with latest revision of NB-132	July 1, 1979
2	Update to mandate boilers above 400,000 BTU comply with ASME CSD-1	January 1, 1984
3	Update to be consistent with latest revision of NB-132	October 1, 1988
4	Update to be consistent with latest revision of NB-132 and to incorporate changes in Utah Code 34A-7	October 1, 1997
5	Incorporate revised certification fee schedule; incorporate new boiler clearance requirements, reorganize Part II	July 1, 1998
6	Title change of document, incorporate pressure vessel inspection program requirements	November 15, 1999
7	Incorporate revised certification fee schedule; various minor administrative changes	March 1, 2001
7a	Incorporate revised certification fee schedule; various minor administrative changes	July 1, 2002
7b	Incorporate ASME 2002 Addenda	December 16, 2002
7c	Incorporate Editorial Changes	June 16, 2003
7d	Revision in accordance with R616.2.7.	June 18, 2004
8	Remove Appendices A & B	June 1, 2005
8a	Incorporate Gas Pressure Switches, Autoclaves and Oil Field Boiler information; various minor administrative changes	June 1, 2006
8b	Minor administrative changes	February 11, 2008
9	Editorial Changes	April 3, 2010
10	Removal of verbiage/content to align with Utah Code	January 1, 2011
10A	Editorial/board member changes	June 3, 2013
11	Editorial/board member changes	June 3, 2015

12	Editorial/Board Member Changes	July 2017
13	Editorial Changes/Remove Public Participation	January 2019
14	Errata Changed Only	March 2020

INTRODUCTION

History

The Boiler and Pressure Vessel Safety program has been in place since Utah was a territory, but the first major milestone occurred on July 1, 1967, when the Utah Legislature enacted the Boiler and Pressure Vessel Act and authorized the Industrial Commission to administer the Act's provisions. In May 1978, the Utah Boiler and Pressure Vessel Rules and Regulations implemented the requirement that all boilers and pressure vessels installed after that date be registered with the National Board of Boiler and Pressure Vessel Inspectors (National Board) and bear a National Board number. On July 1, 1997, the Industrial Commission was replaced by the Utah Labor Commission (Labor Commission). Through its Division of Boiler, Elevator and Coal Mine Safety (Division), the Labor Commission enforces the provisions of the Utah Boiler and Pressure Vessel Act.

Relationship of Utah Code, Labor Commission Rules and Boiler and Pressure Vessel Compliance Manual

The Utah Code consists of all statutes enacted by the Legislature, including the Utah Boiler and Pressure Vessel Act. The Act, found in Title 34A Chapter 7, establishes the minimum standards for installation and operation of boilers and pressure vessels in Utah. The Boiler and Pressure Vessel Rules clarify boiler and pressure vessel requirements. Like the Boiler and Pressure Vessel Act itself, these rules have the force of law. The Utah Boiler and Pressure Vessel Compliance Manual (previously the Utah Boiler and Pressure Vessel Regulations) provides details as to how the Division has implemented the Utah Boiler and Pressure Vessel Act.

The Utah Boiler and Pressure Vessel Compliance Manual was developed to provide architects, engineers, building officials, boiler/pressure vessel installation contractors and boiler/pressure vessel owners and users with an easy to use guide for compliance with Utah's boiler and pressure vessel laws.

National Standards Adopted

Utah has adopted the following codes and standards to provide guidance for the regulation of boilers and pressure vessels in Utah:

Note: Utah Code Title 34A - Chapter 7 - Part 1 and Rule R616-2-3 should be consulted for the latest code edition formally adopted through the rulemaking process.

ASME Boiler and Pressure Vessel Code Sections I, IV, VIII Div 1., ASME B31.1
Power Piping Code

Incorporated by Reference:

ASME Boiler and Pressure Vessel Code Sections II, III (1), III (2),
III (3), V, VI, VII, VIII (2), VIII (3), IX, X, XI, XII

National Board Inspection Code NB-23 Part 3

Controls and Safety Devices for Automatically Fired Boilers, CSD-1 (heat input greater than 400,000 BTU but less than 12,500,000 BTU)

NFPA 85 Boiler and Combustion Systems Hazards Code

Recommended Administrative Boiler and Pressure Safety Rules and Regulations, NB-132

ANSI/API 510

The Utah Boiler and Pressure Vessel Compliance Manual is largely a reproduction of NB-132 with various editorial changes designed to clarify the application of NB-132 in the State of Utah.

PART I - DEFINITIONS OF TERMS

1. **ACT** - the Boiler and Pressure Vessel Safety Act which was enacted as Title 34A Chapter 7 Utah Code Annotated.
2. **ALTERATION** - any change in the item described on the original Manufacturer's Data Report which affects the pressure containing capability of the boiler or pressure vessel. Nonphysical 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. See NBIC/NB-23 for complete list.
3. **API Certified Inspector** - an inspector who is certified by the American Petroleum Institute to perform functions specified in API-510.
4. **API-510, Pressure Vessel Inspection Code** - the code for maintenance inspection, repair, alteration, and re-rating procedures for pressure vessels used by the petroleum and chemical process industries. API-510 is published by the American Petroleum Institute and is an approved ANSI standard.
5. **API/ASME CODE** - the American Petroleum Institute (API) in conjunction with the ASME Code as used in this manual shall mean the Code for Unfired Pressure Vessels for Petroleum Liquids and Gases, that existed from 1934-1956, and is no longer in use.
6. **APPROVED** - approved by the Labor Commission.
7. **ASME** - the American Society of Mechanical Engineers (ASME), 345 E. 47th Street, New York, NY 10017.
8. **ASME CODE** - The Boiler and Pressure Vessel Code published by the American Society of Mechanical Engineers.
9. **AUTHORIZED INSPECTION ORGANIZATION** - one of the following:
 - A. a department or division established by a jurisdiction which has adopted and does administer as legal requirement, one or more sections of the ASME Code, one of which shall be Section 1, and whose inspectors hold valid commissions issued by The National Board of Boiler and Pressure Vessel Inspectors;
 - B. an insurance company which has been licensed or registered by the appropriate authority of a state of the United States or a province of Canada to write and does write boiler and pressure vessel insurance, and to provide inspection service of boilers and pressure vessels in such state or province and whose inspectors hold valid commissions issued by The National Board of Boiler and Pressure Vessel Inspectors.

- C. an owner-user inspection organization which has been approved by the appropriate authority of a state of the United States or province of Canada to provide inspection service of boilers and/or pressure vessels in such state or province and whose inspectors hold valid commissions issued by The National Board of Boiler and Pressure Vessel Inspectors, or whose inspectors are certified by the American Petroleum Institute.
10. **BOILER** - a closed vessel in which water or other liquid is heated, steam or vapor is generated, steam or vapor is superheated, or any combination of these, under pressure or vacuum by the direct application of energy. The term boiler includes fired units for heating or vaporizing liquids other than water, but does not include fired process tubular heaters and systems.
- A. Power Boiler - a boiler in which steam or other vapor is generated at a pressure of more than 15 psig except jacketed kettles. (Also known as a high pressure boiler in Utah.)
 - B. High-Temperature Boiler - a boiler in which water or other liquid is heated and intended for operation at pressures in excess of 160 psig and/or temperatures in excess of 250°F. (Also known as a high pressure boiler in Utah.)
 - C. Heating Boiler - a steam or vapor boiler operating at a pressure not exceeding 15 psig or a boiler in which water or other liquid is heated and intended for operation at pressures not exceeding 160 psig or temperatures not exceeding 250°F.
 - D. Electric Boiler - a boiler which uses electricity as the source of heat.
 - E. Miniature Boiler - a power boiler or high-temperature boiler which does not exceed the following limits:
 - 1) 16 inch inside diameter of shell;
 - 2) 20 square feet heating surface (not applicable to electric boilers);
 - 3) 5 cubic feet gross volume exclusive of casing and insulation;
 - 4) 100 psig maximum allowable working pressure.
 - F. Unfired Boiler - an unfired steam or other vapor generating system or liquid heating system using heat from the operation of a processing system or other indirect heat source.
 - G. Hot Water Supply Boiler - a boiler completely filled with water that furnishes hot water for external usage at pressures not exceeding 160 psig or at temperatures not exceeding 250°F at or near the boiler outlet.

- H. Low Pressure Boiler - a boiler of any type that does not meet the pressure and temperature requirements of a power boiler or a high temperature boiler.
 - I. Portable Boiler - a boiler whose construction and usage permits it to be readily moved from one location to another.
 - J. Water Heater - a boiler used to supply potable hot water which is heated by the combustion of fuels, electricity or any other source and withdrawn for use external to the system at pressures not exceeding 160 psig, and shall include all controls and devices necessary to prevent water temperatures from exceeding 210°F and does not exceed 200,000 BTU/hr.
 - K. Modular Boiler - a steam or hot water heating assembly consisting of a grouping of individual boilers called modules intended to be installed as a unit with no intervening stop valves. Modules may be under one jacket or may be individually jacketed. The individual modules shall be limited to a maximum input of 400,000 BTU/hr (117,228 W) (gas), 3 gph (11.4 liter/hr) (oil), or 115 kW (electric).
 - L. Autoclave Package Unit - a single unit containing a fired steam generator supplying steam to an autoclave which is within the same casing.
11. **CERTIFICATE OF COMPETENCY** - a certificate issued to a person who has passed the examinations prescribed by the Labor Commission.
- A. In Service Certificate of Competency - required for all inspectors that inspect boilers/pressure vessels in operation in order for a Certificate of inspection and Permit To Operate to be issued.
 - B. Shop Only Certificate of Competency - required for all inspectors that perform inspections related to the acceptance of boiler/pressure vessel construction, repairs or alterations.
 - C. Owner/User Certificate of Competency - required for all inspectors that perform inspections under an approved Owner/User program.
12. **CERTIFICATE OF INSPECTION** - a certificate issued by the Labor Commission for the operation of a boiler or pressure vessel as required by the Act.
13. **CERTIFICATE INSPECTION** - an inspection, the report of which is used by the Labor Commission as justification for issuing, withholding or revoking the Certificate of Inspection. This certificate inspection can be an internal inspection when required; otherwise, it shall be as complete an inspection as possible.
- A. **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.

- B. **EXTERNAL INSPECTION** - an inspection made when a boiler or pressure vessel is in operation. This inspection shall include the testing of all safety apparatuses and shall be witnessed by the inspector
14. **COMMISSION** - the Labor Commission of the State of Utah.
15. **COMMISSIONER** - the Commissioner of the Labor Commission.
16. **DIVISION** - the Utah Labor Commission Division of Boiler, Elevator and Coal Mine Safety
17. **EXISTING INSTALLATION** - includes any boiler or pressure vessel constructed, installed, and placed in operation which has completed its initial inspection by a State inspector.
18. **HOT WATER STORAGE TANK** - a closed vessel connected to a water heater used exclusively to contain potable water.
19. **INSPECTOR** - State inspector, any deputy inspector, owner-user inspector or authorized inspector.
20. **JURISDICTION** - having legal authority per Utah Code.
21. **LINED POTABLE WATER HEATER** - a water heater with a corrosion resistant lining used to supply potable hot water.
22. **MODIFICATION** - the process of changing an item that requires revision of the existing design requirements and may also require a revision to the design specification.
23. **NATIONAL BOARD** - The National Board of Boiler and Pressure Vessel Inspectors, (NB) 1055 Crupper Avenue, Columbus, Ohio 43229, whose membership is composed of the Chief Boiler Inspectors of jurisdictions who are charged with the enforcement of the provisions of a Boiler and Pressure Vessel Safety Act.
24. **NATIONAL BOARD INSPECTION CODE (NBIC/NB-23)** - the Code for jurisdictional authorities, inspectors, users, and organizations performing repairs and alterations to pressure retaining items. It is published by the National Board and is developed under procedures accredited as meeting the criteria for American National Standards.
25. **NATIONAL BOARD COMMISSION** - a certificate issued by the National Board to an individual who has passed the National Board examination, who

- holds a valid certificate of competency and who is regularly employed by an Authorized Inspection Organization.
26. **NATIONAL BOARD COMMISSIONED INSPECTOR** - an individual who: holds a valid Certificate of Competency to perform in-service, repair and/or alteration inspections as defined by the National Board Inspection Code; holds a National Board Commission, and; is regularly employed as an inspector by an Authorized Inspection organization.
27. **NEW BOILER/PRESSURE VESSEL INSTALLATION** - includes all boilers or pressure vessels until the initial State of Utah inspection has been completed.
28. **NONSTANDARD BOILER or PRESSURE VESSEL** - a boiler or pressure vessel that does not bear a stamp acceptable to the jurisdiction or otherwise does not comply with Utah Code.
29. **OIL FIELD BOILER** – a fired boiler which is located at isolated oil/gas wells located in designated oil/gas fields. See H-2
30. **ORIGINAL CODE OF CONSTRUCTION** - documents promulgated by recognized national standards writing bodies that contain technical requirements for construction of pressure retaining items or equivalent to which the pressure retaining item was certified by the original manufacturer.
31. **OWNER OR USER** - any person, firm or corporation legally responsible for the safe installation, operation and maintenance of any boiler or pressure vessel within Utah.
32. **OWNER-USER INSPECTION ORGANIZATION** - an owner or user of pressure vessels who maintains a regularly established inspection department, whose organization and inspection procedures meet the requirements of the National Board rules or API-510, as applicable and are acceptable to the Division.
33. **PORTABLE** - capable of being carried or moved about without the use of special lifting equipment.
34. **POTABLE WATER** - fit to drink.
35. **PRESSURE VESSEL** - a vessel in which the 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 as previously defined.
36. **PSIG** - pounds per square inch gauge.
37. **REINSTALLED BOILER or PRESSURE VESSEL** - a boiler or pressure vessel removed from its original setting and reinstalled at the same location or at a new location without change of ownership. In the State of Utah each move is considered a new installation.

38. **RELIEF VALVE** - a pressure relief valve actuated by inlet static pressure having a gradual lift generally proportional to the increase in pressure over opening pressure. It may be provided with an enclosed spring housing suitable for closed discharge system application and is primarily used for liquid service.
39. **REPAIR** - the work necessary to restore a pressure retaining item to a safe and satisfactory operating condition.
40. **REPAIR/PRESSURE RELIEF VALVE** - the replacement, re-machining or cleaning of any critical part, lapping of seat and disk or any other operation which may affect the flow passage, capacity function or pressure retaining ability of the valve. Disassembly, reassembly and/or adjustments which affect the pressure relief valve function are also considered a repair.
41. **REPLACEMENT**- the installation of renewal components, appurtenances and subassemblies or parts of a component or system not affecting existing design requirements.
42. **SAFETY RELIEF VALVE** - a pressure relief valve characterized by rapid opening or pop action or by opening in proportion to the increase in pressure over opening pressure, depending on application.
43. **SAFETY VALVE** - a pressure relief valve actuated by inlet static pressure and characterized by rapid opening or pop action.
44. **SECONDHAND BOILER or PRESSURE VESSEL** - a boiler or pressure vessel which has changed both location and ownership since primary use.
45. **STANDARD BOILER or PRESSURE VESSEL** - a boiler or pressure vessel which bears the stamp of Utah, the ASME stamp, the API/ASME stamp, both the ASME and National Board stamp, or the stamp of another jurisdiction which has adopted a standard of construction equivalent to that required by the Division.
46. **UTAH ADMINISTRATIVE CODE** - also known as Rules, requirements promulgated by the Labor Commission in accordance with the requirements of the Administrative Rules Act of Utah Code. When promulgated, Rules have the force of law.
47. **UTAH CODE** - legislation enacted by the Utah Legislature and signed into law by the Governor.

PART II - ADMINISTRATION

A-1 Minimum Construction Standards

All new boilers, pressure vessels, water heaters and storage tanks, unless otherwise exempt, to be operated in Utah shall be designed, constructed, inspected, stamped and installed in accordance with the adopted ASME Code Section, National Board Inspection Code, Utah Code and Utah Administrative Code. Water heaters shall comply with ASME Code Section IV, HLW, unless exempt under HLW-101.

Boilers and pressure vessels installed in Utah after May 1, 1978, which require an ASME Manufacturer's Data Report shall bear the manufacturer's "NB" number as registered with the National Board. A copy of the Manufacturer's Data Report signed by the manufacturer's representative and the National Board authorized inspector shall be filed with the National Board and, when requested, with the Division.

All high pressure piping, installed in Utah after May 1, 1978, which is external (from the boiler to the first stop valve for a single boiler and to the second stop valve in a battery of two or more boilers having manhole openings) to power boilers shall comply with ASME Boiler and Pressure Vessel Code, Section I, ASME Code B31.1 Power Piping, and this manual.

All boiler and pressure vessel installations, including reinstalled and secondhand boilers and pressure vessels, shall be installed in accordance with the requirements of the adopted safety codes and this manual. Boiler installations shall also comply with the Controls and Safety Devices for Automatically Fired Boilers (ASME CSD-1) when the boiler heat input is greater than 400,000 BTU, but less than 12,500,000 BTU. This includes tube type boilers that bear the stamping HLW. Boiler installations with heat input greater than 12,500,000 BTU shall comply with NFPA 85 Boiler and Combustion Systems Hazards Code as applicable.

A-2 Exemptions

The following boilers and pressure vessels shall be exempt from the Act.

See: Utah Code §34A-7-101(2) This part does not apply to:

- (a) a boiler or pressure vessel subject to inspection, control, or regulation under the terms of any law or regulation of the federal government or any of its agencies;
- (b) an air tank located on a vehicle used for transporting passengers or freight;
or
- (c) a boiler or pressure vessel that is excluded from the Boiler and Pressure Vessel Code published by the American Society of Mechanical Engineers.

In any circumstance, the owner or user may confer with the Division regarding exemption or non-exemption.

Note: Pressure vessels containing liquefied petroleum gas (LPG) under the scope of Utah Code Annotated, Title 53 Chapter 7 Part 3 "Liquefied Petroleum Gas Act". These vessels fall under the jurisdiction of the State Fire Marshal's office.

A-3 National Board Commission

Utah requires that all boiler and pressure vessel inspectors in the State be commissioned by the National Board except those API certified inspectors conducting owner-user pressure vessel inspections.

A-4 Examination Fees

A fee will be charged for each applicant taking the examination for a Certificate of Competency. This fee is charged each time an applicant takes the respective exam.

A-5 Certificate of Competency

A Utah Certificate of Competency and an identification card may be issued by the Division to:

- A. an inspector employed by the State of Utah;
- B. an inspector who is employed by an insurance company which is authorized to insure and does insure boilers and pressure vessels in Utah;
- C. an inspector employed as described in either (A) or (B) above who conducts shop or field inspections of new boilers, pressure vessels, or nuclear components in accordance with the applicable ASME Code requirements;
- D. an inspector who is continuously employed by a company which operates pressure vessels in Utah and has a valid owner-user inspection organization agreement provided that the applicant has satisfactorily passed the National Board commissioning or API examination.

A-6 Conflict of Interest

An inspector shall not engage in the sale of any services, article, or device relating to boilers, pressure vessels, or their appurtenances.

A-7 Inspections

See: Utah Code §34A-7-103

Except as permitted below, power boilers and high-temperature water boilers (high pressure boilers) shall receive an internal and external inspection annually. Either inspection may be the certificate inspection. The inspection period for power boilers, high temperature water boilers and high pressure water boilers may be extended by the Division upon written application of the owner/user, with the recommendation of an inspector. Such extensions will be granted in writing by the Division.

Jacketed kettles, regardless of operating pressure, are inspected biennially (every 2 years).

Low pressure boilers and water heaters covered by this manual shall receive a certificate inspection biennially.

- A. For steel steam boilers, this inspection shall include an internal and an external inspection. The external inspection shall be performed while the boiler is in service.
- B. Hot water heating and hot water supply boilers shall have an external inspection biennially and where construction permits, an internal inspection at the discretion of the inspector.

Internal inspections, if used as a certification inspection, shall be carried out prior to the expiration date of the certificate and at a time mutually agreeable to the inspector and owner/user. External inspections may be performed by a State of Utah inspector during reasonable hours and without prior notification. In accordance with Utah Administrative Rule R616-2-8B “For boilers or pressure vessels inspected by a deputy inspector employed by an insurance company, the deputy inspector’s right of entry on the premises where the boiler or pressure vessel is located is subject to the agreement between the insurance company and the owner or operator of the boiler or pressure vessel.”

When, as a result of external inspection or determination by other objective means, in the inspector's judgment that continued operation of the boiler or pressure vessel constitutes a menace to public safety, the inspector may request an internal inspection, an appropriate pressure test, or both, to evaluate conditions. In such instances, the owner or user shall prepare the boiler or pressure vessel for such inspections or tests as the inspector may designate.

A-8 Inspection Reporting

Inspection reports shall be submitted via the Division’s web page within 30 days from date of the completion of the inspection.

A-9 Canceled or Suspended Insurance

All insurance companies shall notify the Division within 30 days of all boilers or pressure vessels on which insurance is written, canceled, not renewed or suspended because of unsafe conditions. Notifications shall be on the appropriate National Board form or equivalent.

A-10 Owner-User Inspections

Any person, firm, partnership, or corporation operating pressure vessels in Utah may seek approval and registration as an owner-user inspection organization by filing an application with the Division on prescribed forms and request approval by the Division. Each application shall be accompanied by a fee.

The application and registration shall show the name of the organization, its principal address in Utah, and the name and address of the person or persons having supervisory responsibility over the inspections. Changes in supervisory personnel shall be reported to the Division within 30 days after the change.

Each owner-user inspection organization shall:

- A. conduct inspections of the pressure vessels utilizing only qualified inspection personnel;
- B. retain on file at the location where equipment is inspected a true record of each inspection including the signature (or the electronic equivalent) of the inspector;
- C. maintain inspection records which will include a list of pressure vessels covered by the Act, showing a serial number and an abbreviated description necessary for identification, the date of the last inspection of each unit, and the approximate date for the next inspection within a 60 month period. Such inspection records shall be readily available for examination by the Division during business hours;
- D. transmit an annual inspection statement including the number of vessels covered by this Act inspected during the year and certifying that each inspection was conducted in accordance with the inspection requirements provided for by the Act. The statement shall be signed by the individual having supervisory responsibility for the inspections and shall be accompanied by a filing fee as established by the Division (see P-10).

Inspection certificates are not required for pressure vessels inspected by an owner-user inspection organization, when all of the above requirements are met.

A-11 Fees

Fees that will be charged as required by Utah Code §34A-7-104, for the operating certificate (Certificate of Inspection) of a boiler or pressure vessel are set by the Utah legislature. These fees shall be paid by the owner or user unless other contractual arrangements exist. Failure to pay the fees may lead to a legal injunction to prevent the operation of the boiler or pressure vessel. The fee schedule for boiler and pressure vessel certificate inspections as follows:

Certification/Inspection	Fee
New Pressure Vessel Certificate	\$ 45.00
Pressure Vessel Certificate	\$ 30.00
Existing Jacketed Kettles and Boiler Certificate ($\leq 250,000$ BTU)	\$ 30.00
New Jacketed Kettles and Boiler Certificate ($\leq 250,000$ BTU)	\$ 45.00
Existing Boiler Certificate ($> 250,000$ BTU but $\leq 4,000,000$ BTU)	\$ 60.00
New Boiler Certificate ($> 250,000$ BTU but $\leq 4,000,000$ BTU)	\$ 90.00
Existing Boiler Certificate ($> 4,000,000$ BTU but $\leq 20,000,000$ BTU)	\$ 150.00
New Boiler Certificate ($> 4,000,000$ BTU but $\leq 20,000,000$ BTU)	\$ 225.00
Existing Boiler Certificate ($> 20,000,000$ BTU)	\$ 300.00
New Boiler Certificate ($> 20,000,000$ BTU)	\$ 450.00
Special Inspection	\$60.00/hour + expenses

If, during the initial inspection, the boiler/pressure vessel passes the inspection, the owner will be invoiced only for the appropriate certificate fee. If the inspector finds non-compliance items, he/she will explain the deficiencies to the boiler/pressure vessel owner and request that the owner schedule a follow-up inspection when the items have been corrected.

A-12 Restamping Boilers and Pressure Vessels

When the stamping on a boiler or pressure vessel becomes illegible or indistinct, the inspector shall inform the owner or user that it needs to be restamped. The request for permission to restamp the boiler or pressure vessel shall be made to the Division on National Board Form NB-136. Proof of the original stamping shall be submitted with the restamping request. Restamping shall be done only in the presence of a State of Utah Boiler and Pressure Vessel Inspector, and shall be identical with the original stamping except for the ASME Code symbol stamp. The inspector who witnessed the restamping on the boiler or pressure vessel shall submit a notice of completion (form NB-136) which includes a facsimile of the

stamping applied to the Division. The witnessing of restamping will be billed as a Special Inspection.

A-13 Reinstallation of Boilers or Pressure Vessels

When a stationary boiler or pressure vessel is moved and reinstalled within Utah, the attached fittings and appurtenances shall comply with the requirements for new installations.

A-14 Nonstandard Boilers or Pressure Vessels

The installation, operation, sale or the offering for sale of nonstandard boilers or pressure vessels in Utah is strongly discouraged.

A-15 Used or Secondhand Boilers or Pressure Vessels

Before a used or secondhand boiler or pressure vessel may be placed in operation in Utah, an inspection should be made by a State of Utah inspector. Such boilers or pressure vessels, when installed in Utah, shall be equipped with fittings and appurtenances that comply with the requirements for new installations.

A-16 Working Pressure for Existing Installations

Any boiler/pressure vessel inspector may decrease the working pressure on an existing installation if the condition of the boiler or pressure vessel warrants it.

A-17 Repairs and Alterations

Repairs and alterations to boilers and pressure vessels shall be made in accordance with the latest adopted edition of the National Board Inspection Code (NB-23).

All companies will have to obtain a National Board “R” Certificate of Authorization (“R” stamp) prior to conducting welded repairs on boilers or pressure vessels.

A-18 Repairs to Pressure Relief Valves

Repairs to pressure relief valves shall be made only by an organization which holds a valid Certificate of Authorization for use of the National Board Pressure Relief Valve Repair "VR" symbol stamp.

A-19 Repair, Modification or Replacement of Nuclear Components

Repair, modification or replacement of nuclear components shall be made only by an organization which holds a valid Certificate of Authorization for use of the National Board nuclear "NR" symbol stamp.

A-20 Riveted Patches

In applying riveted patches, the design of the patch and method of installation shall be in accordance with the National Board Inspection Code (NB-23).

A-21 Safety Appliances

No person shall attempt to remove or do any work on any safety appliance prescribed by this manual while the appliance is subject to pressure.

If any of these appliances are removed during an outage of a boiler or pressure vessel, they must be reinstalled and in proper working order before the object is returned to service.

No person shall alter any safety or safety relief valve or pressure relief device in any manner.

A-22 New Installations

No boiler or pressure vessel shall be installed in Utah unless it has been constructed in accordance with the ASME Code, registered with the National Board and installed in conformity with this manual except:

- A. those exempted by Utah Code §34A-7-101;

The stamping shall not be concealed by lagging, paint, or any other covering and shall be exposed at all times unless a suitable record is kept of the location of the stamping so that it may be readily uncovered.

A-23 Application of State Issued U and/or UV Numbers

Upon completion of the installation of a boiler or pressure vessel, or at the time of the initial certificate inspection of an existing installation, each boiler or pressure vessel shall be identified by a number unique to that item (the “U” or “UV” number in Utah).

A-24 Penalties

Any person, firm or corporation violating any of the provisions of Utah Code or the Utah Administrative Code as they apply to boiler and pressure vessels may be subject to the provisions of Utah Code §34A-7-105.

PART III - GENERAL REQUIREMENTS

G-1 Pressure Test

A pressure test, when applied to boilers or pressure vessels, shall be performed to the requirements of ASME and/or National Board Inspection Code.

G-2 Boiler Blowoff Equipment

The blowdown from a boiler or boilers that enters a sanitary sewer system or blowdown which is considered a hazard to life or property should pass through some form of blowoff equipment that will reduce pressure and temperature

G-3 Location of Discharge Piping Outlets

The discharge of safety valves, blowoff pipes and other outlets shall be located and supported as to prevent injury to personnel.

G-4 Supports

Each boiler and pressure vessel shall be supported by masonry or structural supports of sufficient strength and rigidity to safely support the boiler or pressure vessel and its contents. There shall be no excessive vibration in either the boiler, pressure vessel or its connecting piping.

G-5 Clearance

When boilers are replaced or new boilers are installed in either existing or new buildings manufacturer's requirements shall be met and, in addition to meeting the required clearance, all boilers shall be located so that adequate space will be provided for the proper operation of the boilers and their appurtenances. This includes the inspection of all surfaces, tubes, waterwalls, economizers, piping, valves and other equipment, maintenance of all related equipment and repair and/or replacement of tubes.

G-6 Suggestions for Operations

It is suggested that the Recommended Rules for Care of Power Boilers, Section VII, and the Recommended Rules for Care and Operation of Heating Boilers, Section VI, of the ASME Code, be used as a guide for proper and safe operating practices.

G-7 Combustion Air Supply and Ventilation of Boiler Room

A permanent source of outside air shall be provided for each boiler room to permit satisfactory combustion of the fuel as well as proper ventilation of the boiler room under normal operating conditions.

Louvers and grilles shall be fixed in the open position or interlocked with the equipment so that they are opened automatically during equipment operation. The interlock shall be placed on the driven member.

- A. The total requirements of the burners for all fired pressure vessels in the boiler room must be used to determine the net louvered area in square feet (see the following table and equation):

Input	Required Air	Minimum Net Louvered Area
500,000	125	1.0
1,000,000	250	1.0
2,000,000	500	1.6
3,000,000	750	2.5
4,000,000	1,000	3.3
5,000,000	1,250	4.1
6,000,000	1,500	5.0
7,000,000	1,750	5.8
8,000,000	2,000	6.6
9,000,000	2,250	7.5
10,000,000	2,500	8.3

(BTU/10,000) X 2.5 = CFM/300 CFM per square foot of net required area

- B. When mechanical ventilation is used to supply combustion and ventilation air to the boiler room, the fan must be running for the firing device to operate. The velocity of air through the ventilating fan shall not exceed 500 feet per minute and the total air delivered shall be equal to or greater than calculated in paragraph (A).
- C. Fuel-burning appliances that are listed and labeled for direct combustion air connection to the outdoors shall be installed in accordance with the manufacturer’s installation instructions.

G-8 Gas Burners

For installations which are gas fired, the burners used shall conform to the applicable requirements of nationally recognized standards.

G-9 Gas Venting (Units above 400,000 btus/hr)

See: ASME, Controls and Safety Devices (CSD-1) and/or National Fire Protection Association Code (NFPA-85)

G-10 Emergency Shutdown Switches (Units above 400,000 btus/hr)

See: ASME Controls and Safety Devices (CSD-1)

G-11 Stacks

See: International Fuel Gas Code (IFGC, 503.10.7)

The boiler's vent connector, for its entire length, shall be equal to or greater than the outlet vent collar provided by the manufacturer, unless otherwise specified, by the boiler/vent manufacturer.

When two or more vent connectors are joined together, the area of the vent shall not be less than the area of the largest vent connector inlet plus 50% of the areas of all additional inlets.

Every portion of a vent connector's horizontal run shall have a rise of not less than 1/4 inch per linear foot from the boiler to the vertical vent.

G-12 Special Inspections

Special inspections such as shop inspections, shop reviews, audits and inspections of secondhand or used boilers or pressure vessels made by the Division shall include a fee as specified in A-11.

G-13 Conditions Not Covered

For any conditions not covered by these requirements, the applicable provisions of the adopted sections of the ASME Boiler and Pressure Vessel Code, the National Board Inspection Code, the National Fire Protection Association Standards, or the American Petroleum Institute Pressure Vessel Inspection Code shall apply.

PART IV - POWER BOILERS

B-1 Maximum Allowable Working Pressure for Nonstandard Boilers

The maximum allowable working pressure for boilers fabricated by riveting shall be determined by the applicable rules of the 1971 Edition of ASME Code Section I - Power Boilers.

The maximum allowable working pressure for boilers of welded construction in service may not exceed that allowable in ASME Code Section I - Power Boilers of the same construction.

B-2 Safety Valves

The safety and safety relief valves of all steam and hot water boilers shall conform to the ASME Code Section I - Power Boilers.

B-3 Boiler Feeding

Boiler feed shall conform to the requirements if ASME Code Section I - Power Boilers.

B-4 Water Level Indicators

Automatic shutoff valves shall conform to the requirements of ASME Code Section I - Power Boilers.

B-5 Water Columns

Water Columns shall conform to the requirements if ASME Code Section I - Power Boilers.

B-6 Gage Glass Connections

The gage glass connections shall conform to the requirements of ASME Code Section I - Power Boilers.

B-7 Pressure Gages

Each boiler shall have a pressure gage located so that it is easily readable. The pressure gage shall be installed so that it indicates the pressure in the boiler at all times.

B-8 Stop Valves

Stop valves shall conform to the requirements of ASME Code Section I - Power Boilers.

B-9 Repairs and Renewals of Boiler Fittings and Appliances

Whenever repairs are made to fittings or appliances or it becomes necessary to replace them, the work shall comply with the requirements for new installations.

B-10 Conditions Not Covered By These Requirements

All cases not specifically covered by these requirements shall be treated as new installations.

**Note: For conditions not addressed in this Compliance Manual refer to the most recent adopted edition of ASME Section I*

PART V - HEATING BOILERS

H-1 Potable Water Heaters

A potable water heater shall not be installed or used at pressures exceeding 160 psig or water temperatures exceeding 210°F. Water heaters may be used to simultaneously provide potable hot water and space heat in combination as long as the heat input does not exceed 200,000 BTUs.

H-2 Oil Field Boiler

Designated oil field boilers will be required to have all instruments, fittings and controls mandated by the original code of construction.

H-3 Steam Boiler Safety Valves

The Safety and safety relief valves of all steam and hot water heating boilers shall conform to the requirements of ASME Code Section IV- Heating Boilers.

H-4 Steam Boiler Steam Gages

Steam gages shall conform to the requirements of ASME Code Section IV- Heating Boilers.

H-5 Hot Water Boiler Pressure or Altitude Gages and Thermometers

Pressure or altitude gages and thermometers shall conform to the requirements of ASME Code Section IV- Heating Boilers.

H-6 Steam Boiler Water Gage Glasses

Steam boiler water gage glasses shall conform to the requirements of ASME Code Section IV - Heating Boilers

H-7 Stop Valves

Stop Valves shall conform to the requirements of ASME Code Section IV - Heating Boilers.

H-8 Feedwater Connections

Feedwater Connections shall conform to the requirements of ASME Code Section IV - Heating Boilers.

H-9 Water Column and Water Level Control Pipes

Water column and water level control pipes shall conform to the requirements of ASME Code Section IV - Heating Boilers.

H-10 Repairs and Renewals of Fittings and Appliances

Whenever repairs are made to fittings or appliances or it becomes necessary to replace them, the work shall comply with the requirements for new installations.

**Note: For conditions not addressed in this Compliance Manual refer to the most recent adopted edition of ASME Section IV*

PART VI - PRESSURE VESSELS

P-1 Pressure Vessels Not Requiring Certificate of Inspection

The following pressure vessels are subject to the provisions of the Act, but are not required to be uniquely identified or be issued a Certificate of Operation.

- A. Pressure vessels attached to a low pressure boiler system (e.g. expansion tanks in a hot water heating system or storage tanks in a hot water supply system).
- B. Portable air receivers with no compressing unit attached.
- C. Pressure vessels containing Freon which are connected to a refrigeration or air conditioning system.
- D. Heat exchangers connected to low pressure boiler systems.

P-2 Inspection Frequency for Pressure Vessels Required to have a Certificate of Inspection

Pressure vessels shall be inspected on the applicable frequency listed below unless an extension is granted in writing by the Division.

- A. Heat exchangers that operate from high pressure steam or high temperature water plants shall be inspected every twenty-four (24) months.
- B. Autoclaves that operate above 15 psi steam pressure shall be inspected every twenty-four (24) months.
- C. All other pressure vessels which fall under the jurisdiction of the Division shall be inspected every forty-eight (48) months.

These inspections will be external inspections. In connection with a regularly scheduled inspection, or at any other time deemed necessary by the inspector, an internal inspection may also be conducted, pressure vessel construction permitting.

P-3 Application of Vessel Identification Numbers

When a new vessel has been inspected and determined to be in full compliance with Utah Code requirements, the inspector will apply a unique identification number to that vessel. These numbers (UV numbers) are assigned to each inspector by the Division.

The UV number may be applied by any of the following ways:

- A. Stamped in vessel data plate
- B. Stamped on a metal tag attached to or hung on the vessel
- C. Marked on the vessel with a permanent marker

P-4 Inspection of Inaccessible Parts

Where, in the opinion of the inspector, as the result of conditions disclosed at the time of inspection, it may be necessary to remove interior or exterior lining, covering or brickwork to expose certain parts of the vessel not normally visible, the owner or user shall remove such material to permit proper inspection and to determine remaining thickness.

P-5 Overpressure Protection

The safety and safety relief valves of all pressure vessels shall conform to the requirements of ASME Code Section VIII - Unfired Pressure Vessels. In accordance with ASME Section VIII Division I isolation block valves may be utilized before and/or after safety relief valves if the authority having jurisdiction has approved the program set forth by the Owner/User. Contact the Division for submittal of such a program.

In all cases the pressure relieving device shall be ASME/NB approved and certified.

P-6 Owner/User Inspection

An Owner/User of pressure vessels may perform periodic safety inspections on their own unfired pressure vessels provided the following requirements are met:

- A. Each vessel above ground shall be given a certificate inspection, preferably while in operation, at least every 5 years (60 months) or at the same interval as the required internal inspection, whichever is less.
- B. Have a Utah certified owner/user Inspection Agency, and;
- C. Have Utah certified inspectors, and;
- D. Provide the Division with an annual vessel inspection summary, and;
- E. Maintain complete inspection reports prepared by the Inspection Agency which shall be available for Division review at any reasonable time, and;
- F. Receive successful annual audits by the Division.
- G. An Owner/User inspector may sign off on repairs provided they have met the requirements of the National Board and all requirements set forth by the Division.

**Note: For conditions not addressed in this Compliance Manual refer to the most recent adopted edition of ASME Section VIII*

P-7 Owner/User Certification

An Owner/User may be certified by the Division as an Owner/User Inspection Agency by submitting a written application to the Division.

P-8 Owner/User Inspectors

An inspector employed by an Owner/User Inspection Agency may be issued a Utah certificate of competency by submitting a written request to the Division. The request shall certify that the inspector has a valid ANSI/API 510 or National Board of Boiler and Pressure Vessel Inspectors certification. The Inspector must pass an examination administered by the Division. A Utah certificate of competency issued to an Owner/User inspector will be valid for a period of one year to expire on December 31st of each year, and only if the inspector remains in the employment of the same Owner/User. Certificates of competency issued to Owner/User inspectors must be renewed annually.

Owner/User inspectors shall not receive any compensation from the State.

P-9 Certification Revocation

The Division may revoke, for cause, any Owner/User Inspection Agency certifications.

P-10 Fees

See Utah Code 34A-7-104 Fees for Owner/User Inspection Agency certifications are:

- A. Owner/User Inspection Agency Certification Initial Application (- \$250.00
- B. Inspector Certificate of Competency (Initial Issue) - \$25.00
- C. Inspector Certificate of Competency (Annual Renewal) - \$20.00

Utah Boiler and Pressure Vessel Compliance Manual – Revision 13

Fees for Owner/User Inspection Agency Annual Inspection Summaries are:

- A. For inspection programs up to twenty five vessels - \$5.00 per vessel
- B. For inspection programs more than twenty five, but less than one hundred vessels - \$100.00
- C. For inspection programs more than one hundred, but less than five hundred - \$200.00
- D. For inspection programs more than five hundred vessels - \$400.00

P-11 Owner/User Inspection Program Audits

To assure that the Owner/User inspection program is achieving pressure vessel safety equal to or exceeding the inspection program of the Division, the Division will perform annual audits of each Owner/User inspection program.

P-12 Repairs and Renewals of Fittings and Appliances

Whenever repairs are made to fittings and appliances or it becomes necessary to replace them, the work must comply with the requirements for new installation

