# Chapter ILHR 41

# ADMINISTRATION, INSPECTION AND GENERAL INSTALLATION REQUIREMENTS

Note: Chapter ILHR 41 as it existed on February 29, 1988 was repealed and a new chapter ILHR 41 was created effective March 1, 1988.

## Subchapter I — Scope, Definitions and Administration

**ILHR 41.01 Purpose.** Pursuant to s. 101.17, Stats., the purpose of chs. ILHR 41 and 42 is to protect the health, safety and welfare of the public and employes by establishing minimum standards for the design, construction, installation, operation, inspection, testing, maintenance, alteration and repair of boilers and pressure vessels installed in all public buildings and places of employment.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.02 Scope.** (1) BOILERS AND PRESSURE VESSELS. The provisions of chs. ILHR 41 and 42 shall apply to boilers and piping components associated with boilers, and to pressure vessels and power piping, in use at places of employment and in public buildings. The provisions of these chapters are not retroactive unless specifically stated in the administrative rule. Where different sections of these chapters specify different requirements, the most restrictive requirement shall govern.

Note: Section 101.01 (2), Stats., provides that the phrase "place of employment" means and includes every place, whether indoors or out or underground and the premises appurtenant thereto where either temporarily or permanently any industry, trade or business is carried on, or where any process or operation, directly or indirectly related to any industry, trade or business, is carried on, and where any person is, directly or indirectly employed by another for direct or indirect gain or profit, but does not include any place where persons are employed in private domestic service which does not involve the use of mechanical power or in farming. "Farming" includes those activities specified in s. 102.04 (3), Stats., and also includes the transportation of farm products, supplies or equipment directly to the farm by the operator of said farm or his employes for use thereon, if such activities are directly or indirectly for the purpose of producing commodities for market, or as an accessory to such production. When used with relation to building codes, "place of employment" does not include a previously constructed building used as a community-based residential facility as defined in s. 50.01 (1), Stats., which serves 20 or fewer unrelated residents, except for the purposes of s. 101.11, Stats.

(2) OTHER VESSELS. The provisions of chs. ILHR 41 and 42 shall apply to vessels used for the storage and transportation of flammable liquids, liquefied petroleum gas, liquefied natural gas, compressed natural gas, anhydrous ammonia and refrigerants, unless these vessels are covered by other Wisconsin administrative codes or federal codes.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.04 Definitions.** The definitions contained in this section shall be applicable throughout chs. ILHR 41 and 42.

(1) "Alteration" means a change in a boiler or pressure vessel that substantially alters the original design and that requires consideration of the effect of the change on the original design. "Alteration" does not include the addition to a boiler or pressure vessel of nozzles smaller than an unreinforced opening size.

(31) "Pressure vessel" means a container for the containment of internal or external pressure which may be obtained from an external source or by the application of heat from a direct or indirect source, or any combination thereof.

(32) "Relief valve" means an automatic pressure relieving device actuated by the static pressure upstream of the valve which opens further with the increase in pressure over the opening pressure.

Note: A relief valve is used primarily for liquid service.

(33) "Repair" means work necessary to restore a boiler or pressure vessel to a safe operating condition.

(34) "Rupture disk" means a nonmechanical overpressure relief device that releases pressure when its preestablished rating is attained.

(35) "Safety relief valve" means an automatic pressure-actuated relieving device suitable for use either as a safety valve or relief valve, depending upon application.

(36) "Safety valve" means an automatic pressure relieving device actuated by the static pressure upstream of the valve and characterized by full-opening pop action.

Note: A safety valve is used for gas or vapor service.

(37) "Secondhand vessel" means a boiler or pressure vessel that has changed location subsequent to the original installation.

(38) "Water heater" means a closed vessel in which water is heated by the combustion of fuels, electricity or other energy source, and withdrawn for use external to the system at pressures not exceeding 160 psig, including the apparatus by which heat is generated and all controls and devices necessary to prevent water temperatures from exceeding 210°F.

Note: For further explanation of definitions, see the ASME code section VIII, scope and appendix 3.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88; am. (37), Register, February, 1990, No. 410, eff. 3-1-90.

**ILHR 41.05 Petition for variance.** (1) PROCEDURE. The department shall consider and may grant a variance to an administrative rule upon receipt of a fee, a completed petition for variance form from the owner and, where applicable, a completed position statement from the chief of the local fire department, provided an equivalency is established in the petition for variance which meets the intent of the rule from which a variance is being petitioned. The department may impose specific conditions in the petition for variance to promote the protection of the health, safety and welfare of the employes or the public. Violation of those conditions under which the variance is granted constitutes a violation of chs. ILHR 41 and 42.

Note #1: Copies of the petition for variance form (SB-8) and the position statement (form SB-8A) are available from the Division of Safety and Buildings, P.O. Box 7969, Madison, Wisconsin 53707.

Note #2: Section 101.02 (6), Stats., and ch. ILHR 3 outline the procedures for submitting petitions to the department and the department's procedures for hearing petitions.

Note #3: See ch. Ind 69 for fee requirements.

(2) PETITION PROCESSING TIME. Except for priority petitions, the department shall review and make a determination on a petition for variance within 30 business days of receipt of all calculations, documents and fees required to complete the review. The department shall process priority petitions within 10 business days of receipt of the required items.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.06 Penalties.** Penalties for violations of chs. ILHR 41 and 42 shall be assessed in accordance with s. 101.02, Stats.

Note #1: Section 101.02 (13) (a), Stats., indicates penalties will be assessed against any employer, employe, owner or other person who fails or refuses to perform any duty lawfully enjoined, within the time prescribed by the department, for which no penalty has been specifically provided, or who fails, neglects or refuses to comply with any lawful order made by the department, or any judgment or decree made by any court in connection with ss. 101.01 to 101.25, Stats. For each such violation, failure or refusal, such employe, owner or other person must forfeit and pay into the state treasury a sum not less than $10 nor more than $100 for each violation.

Note #2: Section 101.02 (12), Stats., indicates that every day during which any person, persons, corporation or any officer, agent or employe thereof, fails to observe and comply with an order of the department will constitute a separate and distinct violation of such order.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.07 Appeals.** (1) APPEAL OF LOCAL ORDER. Any person affected by a local order which may be in conflict with a rule of the department may petition the department for a hearing on the grounds that the local order is unreasonable and in conflict with the rule of the department.

Note: Section 101.01 (1) (g), Stats., defines "local order" as any ordinance, order, rule or determination of any common council, board of aldermen, board of trustees or the village board, of any village or city, or the board of health of any municipality, or an order or direction of any official of such municipality, upon any matter over which the department has jurisdiction.

(2) PETITION OF ADMINISTRATIVE RULE. Pursuant to s. 227.12, Stats., any municipality, corporation or any 5 or more persons having an interest in an administrative rule may petition the department requesting the adoption, amendment or repeal of that rule.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.08 Fees.** Fees for the registration, inspection, certificate of operation and other services performed by the department pertaining to boilers and pressure vessels shall be submitted as specified in ch. Ind 69. The owner shall be responsible for the payment of fees.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.10 Adoption of ASME standards.** (1) CONSENT TO INCORPORATE. Pursuant to s. 227.21, Stats., consent has been granted by the attorney general and the revisor of statutes to incorporate by reference the rules contained in the standards and addenda listed in Table 41.10.

(2) ADOPTION. The standards and addenda listed in Table 41.10 are hereby incorporated by reference into chs. ILHR 41 and 42.

(3) FILING OF STANDARDS. (a) Copies of the standards in reference are on file in the offices of the department, the secretary of state and the revisor of statutes.

(b) Copies may be on file at public and university libraries.

(4) AVAILABILITY OF STANDARDS. Copies of the standards in reference may be procured for personal use from the American Society of Mechanical Engineers (ASME) Order Department, 22 Law Drive, P.O. Box 2300, Fairfield, New Jersey 07007-2300.

TABLE 41.10

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|---|---|---|
| | | **ASME Boiler and Pressure Vessel Code (1989 edition)** |
| 1. Section | I | Power Boilers |
| 2. Section | II | Material Specifications |
| | a. | Part A - Ferrous Material |
| | b. | Part B - Nonferrous Material |
| | c. | Part C - Welding Rods, Electrodes and Filler Metals |
| 3. Section | III | Nuclear Power Plant Components, Divisions 1 and 2 |
| | a. | Subsection NCA - General Requirements Division 1 |
| | a. | Subsection NB - Class 1 Components |
| | b. | Subsection NC -Class 2 Components |
| | c. | Subsection ND - Class 3 Components |
| | d. | Subsection NE - Class MC Components |
| | e. | Subsection NF - Component Supports |
| | f. | Subsection NG - Core Support Structures |
| | g. | Appendices Division 2 |
| | a. | Concrete Reactor Vessels and Containments |
| 4. Section | IV | Heating Boilers |
| 5. Section | V | Nondestructive Examination |
| 6. Section | VIII | Pressure Vessels |
| | a. | Division 1 - Pressure Vessels |
| | b. | Division 2 - Alternative Rules |
| 7. Section | IX | Welding and Brazing Qualifications |
| 8. Section | X | Fiberglass-Reinforced Plastic Pressure Vessels |
| 9. Section | XI | Rules for Inservice Inspection of Nuclear Power Plant Components, Division 1 |
| | | **ANSI/ASME Standards** |
| 10. Power Piping (ANSI/ASME B31.1 - 1986 edition, including addenda B31.1a - 1986, B31.1b - 1987 and B31.1c - 1988) | | |

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88; r. and recr. Table 41.10, Register, February, 1990, No. 410, eff. 3-1-90.

## Subchapter II — Inspections

**ILHR 41.12 Inspector certifications required.** Any person performing an inspection and submitting an inspection report for the purpose of meeting inspection requirements covering a boiler or pressure vessel shall hold a valid certificate of competency or in-service field inspector authorization issued by the department.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.13 Certificate of competency as an inspector.** (1) ELIGIBILITY. An applicant for a certificate of competency as a boiler or pressure vessel inspector shall be an employe of the department, a municipality, an insurance company, or owners or operators of boilers and pressure vessels authorized to make their own inspections.

(2) QUALIFICATIONS. An applicant shall have one of the following combinations of education and experience requirements:

(a) A degree in engineering plus one year experience in design, construction, operation or inspection of high pressure boilers and pressure vessels; or

(b) An associate degree in mechanical technology plus 2 years experience in design, construction, operation or inspection of high pressure boilers and pressure vessels; or

(c) Three years experience in high pressure boiler and pressure vessel construction or repair, in supervision of high pressure boiler and pressure vessel operation, or in the inspection of high pressure boilers and pressure vessels.

(3) APPLICATION. (a) All applications for certification or recertification shall be made to the department together with the payment of the application and examination fees.

Note #1: Application form no. SB-37 is available from the Division of Safety and Buidings, P.O. Box 7969, Madison, Wisconsin 53707.

Note #2: See ch. Ind 69 for fee requirements.

(b) Upon receipt of the application form, the department shall review and evaluate the application and make all necessary notifications to the applicant.

(4) ISSUANCE OF CERTIFICATE. Certificates of competency for a boiler or pressure vessel inspector shall be issued by the department to eligible applicants who have received a grade of 70% or greater on the examination prescribed by and conducted by the department. The department shall issue the certificate within 15 business days of passage of the examination.

(a) The certificate shall bear the name of the applicant, certificate number and expiration date. The certificate shall be valid for the remainder of the calendar year in which it is issued.

(b) Applicants failing the examination may apply to retake the examination.

(c) Holders of certificates who do not apply for renewal in any 5-year period may be required to pass a scheduled examination.

(5) RENEWAL OF CERTIFICATE. Upon receipt of written notice of expiration, certification may be renewed. The request for renewal, together with the payment of the renewal fee, shall be filed with the department on or before January 1 of the calendar year for which the certificate is to be valid.

Note: See ch. Ind 69 for fee requirements.

(6) DENIAL OF CERTIFICATE. (a) Upon denial of certification or recertification, the department shall notify the applicant within 15 business days in writing stating the reasons for denial. The notice of denial shall be made by certified mail sent to the address filed with the application. Service shall be verified by the certified mail receipt.

(b) Upon receipt of the notice of denial, the applicant may submit a written request for hearing. The right to hearing shall be waived if the applicant fails to submit the request within 30 business days of receipt of

the notice of denial. Hearings shall be conducted by the department and the proceedings recorded.

(7) SUSPENSION OR REVOCATION OF CERTIFICATION. The department may suspend or revoke the certification of any inspector for:

(a) Fraud or deceit in obtaining certification;

(b) Any negligence, incompetence or misconduct in the discharge of the duties required under chs. ILHR 41 and 42; or

(c) Conviction of a criminal charge, misdemeanor or violation of a local regulation substantially related to the circumstances of the certified inspection activity or adjudication of mental incompetence by the courts.

(8) SUSPENSION AND REVOCATION PROCEEDINGS. (a) The department shall investigate alleged violations at its own initiative or upon the filing of a complaint. If it is determined that no further action is warranted, the department will notify the persons affected. If the department determines that there is probable cause for suspension, it shall order a hearing and notify, by mail, the persons affected.

(b) Upon receipt of hearing notice, the charged party may respond to the charges in writing. Failure to respond within 30 business days or failure to appear at the hearing may result in the charges being taken as true.

(c) All hearings shall be conducted by persons selected by the department.

(d) Any findings shall be in writing and shall be binding unless appealed to the secretary of the department.

(e) All arguments shall be submitted in writing.

(9) RECIPROCITY. A certificate of competency may be granted by the department to a boiler or pressure vessel inspector who holds a certificate issued by the national board of boiler and pressure vessel inspectors and a certificate of competency from a city or state which has adopted the ASME boiler and pressure vessel code and which requires a written examination similar to that required by the department.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.14 In-service field inspectors.** (1) ELIGIBILITY. An applicant for an in-service field inspector authorization shall be an employe of the department, a municipality, an insurance company, or owners or operators of boilers and pressure vessels authorized to make their own inspections.

(2) QUALIFICATIONS. An applicant shall have one of the following education and experience qualifications:

(a) A bachelor's degree in engineering from an accredited college or university, which is deemed to be the equivalent of 2 years experience in design, construction, operation or inspection of high pressure boilers and pressure vessels; or

(b) An associate degree in mechanical technology plus one year of actual experience in design, construction, operation or inspection of high pressure boilers and pressure vessels; or

(c) Two years of practical experience in the construction, installation, repair, maintenance, operation or inspection of high pressure boilers and pressure vessels.

(3) APPLICATION. (a) All applications for an in-service field inspector authorization shall be made to the department together with the payment of the application and examination fees.

Note #1: Application form no. SB-37 is available from the Division of Safety and Buildings, P.O. Box 7969, Madison, Wisconsin 53707.

Note #2: See ch. Ind 69 for fee requirements.

(b) Upon receipt of the application form, the department shall review and evaluate the application and make all necessary notifications to the applicant.

(4) ISSUANCE OF AUTHORIZATION. In-service field inspector authorizations shall be issued by the department to eligible applicants who have received a grade of 70% or greater on the examination prescribed by and conducted by the department. The department shall issue the authorization within 15 business days of passage of the examination.

(a) The authorization shall bear the name of the applicant, authorization number and expiration date. The authorization shall be valid for a period of 15 months from the date of issuance.

(b) Applicants failing the examination may apply to retake the examination.

(c) The authorization shall be nonrenewable.

(5) INSPECTION WORK. (a) The in-service field inspector authorization may be utilized by the holder only while in the continuous employ of the authorized inspection agency by whom employed at the time of application.

(b) The authorized in-service field inspector may perform only field inspection work and the work shall be performed while accompanied by an authorized field inspector during the first 3 months of employment and under the direct supervision of an authorized field inspector for the following 12 months.

(c) If the authorized inspection agency specified in par. (a) is an insurance company, then the authorized in-service field inspector may perform field inspection work only upon objects covered by the insurance company.

(d) Inspection of repairs and alterations shall be performed by an authorized inspector in possession of a certificate of competency.

(6) APPLICATION FOR CERTIFICATE OF COMPETENCY. Upon completion of one year of experience as an authorized in-service field inspector while in the continuous employ of the authorized inspection agency by whom employed at the time of application, the holder of a valid authorization, through the employer, may apply for a certificate of competency. In the event the applicant's experience is with more than one authorized inspec-

tion agency, the department may accept the accumulated inspection experience.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.15 General inspection requirements.** (1) ALL INSPECTIONS. The authorized inspectors of the department, upon presenting appropriate credentials to the owner, operator, or agent in charge, may:

(a) Enter without delay and at reasonable times any factory, plant, establishment, construction site, or other area, workplace or environment where work is performed by an employe of an employer; and

(b) Inspect and investigate during regular working hours and at other reasonable times, and within reasonable limits and in a reasonable manner, any place of employment and all pertinent conditions, structures, machines, apparatus, devices, equipment, and materials therein, and to question privately any employer, owner, operator, agent or employe.

(2) REPRESENTATION. The inspector, before making an inspection, shall contact the employer or employer's representative who shall be given an opportunity to accompany the inspector during the physical inspection of any workplace under sub. (1).

Note: The department procedure is not to give advance notice, but in the scheduling and in the act of inspecting it may not always be possible to avoid advance notice or to obtain accompaniment, but otherwise these rules will be diligently observed.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.16 Initial inspections.** (1) BOILER AND PRESSURE VESSEL INSPECTIONS. (a) Except as provided in par. (b), boilers and pressure vessels shall be inspected by an authorized inspector before they are placed in operation.

Note: See s. ILHR 41.41 for installation registration requirements.

(b) The inspections specified in par. (a) are not required for boilers and pressure vessels exempted from periodic inspections in s. ILHR 41.18.

(c) Where the boilers or pressure vessels specified in par. (a) are installed in a city of the first class and inspections are made by the city, the city shall keep a record of the inspections and shall submit a copy to the department.

(d) Where the inspections specified in par. (a) are performed by an authorized inspector other than a department inspector, the authorized inspector shall file an inspection report with the department and shall affix the Wisconsin registration number as required in s. ILHR 41.36. Inspection reports shall be made on forms SBD-7678 and SBD-7679.

Note: Form SBD-7678 is used for reporting inspections of pressure vessels, and Form SBD-7679 is used for reporting inspections of boilers. See Appendix A for copies of these forms.

(2) POWER PIPING INSPECTIONS. (a) Except as provided in par. (b), all power piping systems not covered by ASME code section I and required to be constructed in accordance with the ANSI standard for power piping as listed in Table 41.10, shall receive an initial inspection by an authorized inspector employed by the department or, if installed in a city of the first class, by the city. Documented inspections, including the initial inspection, made by authorized inspectors not employed by the department shall be acceptable to the department.

(b) The inspections specified in par. (a) are not required for:

1. Power piping of 2 inches nominal pipe size and smaller;

2. Power piping replacements, modifications and alterations to existing systems and for new installations, any of which do not exceed 50 feet in length; and

3. Underground power piping systems which are not located in a walk-in tunnel.

(c) The installing contractor shall notify the department, the city of the first class or the authorized inspector employed by an insurance company prior to the start of construction of the power piping system so that inspections may be arranged. The department or the city shall be given a minimum of 2 business days notice to arrange for inspection.

(d) A power piping inspection shall be made after the piping material is delivered to the job site and prior to the start of construction of the power piping system. Power piping systems may not be insulated or placed in service without receiving an inspection.

(e) Evidence shall be provided to the authorized inspector that all prefabricated piping complies with the ANSI standard for power piping as listed in Table 41.10.

(f) The owner of the power piping system may request power piping inspections in addition to the minimum inspections.

(g) Inspection fees for the power piping inspections shall be assessed by the department or by the city of the first class.

Note: For inspection fees, see ch. Ind 69.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.17 Periodic inspections.** (1) INSPECTION OF BOILERS. (a) Except as provided in sub. (3) and s. ILHR 41.18, boilers shall be subjected to either a regular internal or external inspection at least once every 12 months by an authorized inspector.

(b) Where an internal inspection of a power boiler is not possible because of the construction of the boiler, an external inspection shall be acceptable.

(2) INSPECTION OF PRESSURE VESSELS. Except as provided in s. ILHR 41.18, pressure vessels shall be subjected to a regular internal or external inspection at least once every 36 months by an authorized inspector.

(3) INSPECTION OF LOW PRESSURE STEAM AND HOT WATER HEATING BOILERS. Except as provided in s. ILHR 41.18, low pressure steam boilers and hot water heating boilers shall be subjected to a regular internal or external inspection at least once every 36 months by an authorized inspector.

(4) INSPECTION OF SAFETY VALVES AND SAFETY RELIEF VALVES. The authorized inspectors shall satisfy themselves that safety valves and safety relief valves have been operated at least once every 12 months.

(5) EXTENSION OF PERIOD BETWEEN INSPECTIONS. If operating conditions require, an extension of periods not to exceed 3 months between inspections of boilers, pressure vessels, safety valves and safety relief

valves may be approved by the department upon a written request from the owner or user for an extension. The authorized inspection agency shall concur with the owner's request for extension by letter to the department.

Note: For inspection fees, see ch. Ind 69.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.18 Exemptions from periodic inspections.** (1) EXEMPTED EQUIPMENT. Except as provided in sub. (2), periodic inspections are not required for:

(a) Boilers or pressure vessels which receive regular inspections by United States government inspectors;

(b) Heating boilers located in private residences or in apartment buildings having less than 3 living units;

(c) Expansion tanks for hot water heating boilers;

(d) Boilers used exclusively for agricultural purposes;

(e) Pressure vessels having an inside diameter not exceeding 6 inches with no limit on pressure;

(f) Pressure vessels having a volume of less than 5 cubic feet and an operating pressure of less than 250 psig;

(g) Pressure vessels with a volume of less than 1-1/2 cubic feet with no limit on pressure;

(h) Pressure vessels having an internal or external operating pressure of not more than 15 psig with no lmitations on size;

(i) Hot water supply boilers and water heaters, and hot water storage tanks in which the temperature does not exceed 210°F;

(j) Vessels used for the storage or processing of cold water, including those with air cushions;

(k) Pressure vessels which are used in accordance with the regulations of the United States department of transportation;

(l) Air receivers having a volume of less than 12 cubic feet and an operating pressure of less than 250 psig; and

(m) Pressure vessels used in processing and storing of fermented beverages at temperatures not exceeding 140°F.

(2) EXCEPTIONS. In individual cases, the boilers and pressure vessels exempted in sub. (1) shall be subject to inspection by or on order of the department upon the complaint of any person or upon the initiative of the department when there is reasonable cause to suspect that the construction, installation, maintenance or operation of the vessel is not in keeping with the general purpose and intent of chs. ILHR 41 and 42.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.19 Preparation for internal inspection.** (1) GENERAL REQUIREMENTS. The owner or user of a boiler or a pressure vessel subject to inspection shall prepare the vessel for internal inspection after due notice from the inspector. To prepare a vessel for an internal inspection all man-

hole plates, all wash-out plugs, and a sufficient number of handhole plates to permit a satisfactory inspection shall be removed. The shell and heads shall be thoroughly cleaned and exposed when so requested. Each steam boiler shall be thoroughly drained of water and all fire side surfaces cleaned before an internal inspection is made.

(2) PREPARATION PROCEDURE. The following procedure shall be required for preparation for inspection:

(a) Before entering any part of a boiler which is connected to a common header with other boilers, the required steam or water system stop valves shall be closed, tagged and preferably padlocked, and drain valves or cocks between the 2 closed stop valves shall be opened. The feed valves shall be closed, tagged, and preferably padlocked, and drain valves or cocks located between the 2 valves shall be opened.

(b) After draining the boiler, the blowoff valves shall be closed, tagged and preferably padlocked. Blowoff lines, where practicable, shall be disconnected between pressure parts and valves. All drains and vent lines shall be opened.

(3) RIGHT TO REFUSE ENTRY. The authorized inspector shall have the right to refuse to enter a boiler or pressure vessel if in the inspector's judgement it is unsafe to do so.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.20 Inspections by insurance companies.** Inspections of boilers and pressure vessels by insurance companies may be accepted by the department under the following conditions:

(1) AUTHORITY. The boiler and pressure vessel inspectors employed by the insurance company shall hold certificates of competency or in-service field inspector authorizations issued by the department.

(2) REPORTS. The insurance company shall report inspections of boilers and pressure vessels to the department as required in s. ILHR 41.23.

(3) PROCEDURES. The inspection procedures used by the insurance company shall conform to the regulations of chs. ILHR 41 and 42.

(4) COVERAGE. The insurance company shall report to the department within 30 calendar days when insurance coverage is started or discontinued on a boiler or pressure vessel. The reason for discontinuing the coverage shall be given on the report. If the boiler or pressure vessel is installed in a city of the first class which provides boiler and pressure vessel inspections, the report shall also be provided to the city.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.21 Inspections by cities.** Inspections of boilers and pressure vessels by cities of the first class may be accepted by the department under the following conditions:

(1) AUTHORITY. The boiler and pressure vessel inspectors employed by the city shall hold certificates of competency or in-service field inspector authorizations issued by the department.

(2) REPORTS. The city shall keep a record of the inspections and shall submit a copy to the department.

(3) PROCEDURES. The inspection procedures used by the city shall conform to the regulations of chs. ILHR 41 and 42.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.22 Inspections by companies or corporations.** Inspections by companies or corporations of boilers or pressure vessels which they own or operate may be accepted by the department under the following conditions:

(1) AUTHORITY. The boiler and pressure vessel inspectors employed by the company or corporation shall hold certificates of compentency or in-service field inspector authorizations issued by the department.

(2) REPORTS. The company or corporation shall report inspections of boilers and pressure vessels to the department as required in s. ILHR 41.23.

(3) PROCEDURES. The inspection procedures used by the company or corporation shall conform to the regulations of chs. ILHR 41 and 42.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.23 Reporting of periodic inspections.** (1) REPORTING PROCESSING TIME. Reports of periodic internal or external inspections of boilers and pressure vessels shall be sent to the department within 30 calendar days from the date of inspection.

(2) INSPECTION REPORT FORMS. (a) Required periodic inspections shall be reported to the department on forms SBD-7678 and SBD-7679.

Note: Form SBD-7678 is used for reporting inspections of pressure vessels, and Form SBD-7679 is used for reporting inspections of boilers. See Appendix A for copies of these forms.

(b) A group of pressure vessels of the same design and use that are interconnected or are operated so as to form a unit, machine or apparatus may be included in a single inspection report. The report shall contain the number, description and use of the vessel.

(c) The inspection report shall explain any violation or unsafe condition with references to code section numbers. Recommendations to the owner or user of the vessel, relating to code violations, shall be included in the report to the department.

(d) The inspection report shall be legible and complete .

(3) EXTERNAL INSPECTIONS. External inspections shall be reported only when either of the following conditions is found:

(a) An internal inspection is not possible because of the construction of the vessel. In these cases the external inspection shall be reported to the department in the same manner as an internal inspection. The report shall be marked "external" and the reason for making an external inspection instead of an internal shall be given; or

(b) When violations of chs. ILHR 41 and 42 or unsafe conditions involving the safety of the vessel are found.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.24 Certificate of operation.** (1) RESPONSIBILITY. (a) The owner or user of the boiler or pressure vessel shall be responsible for obtaining and maintaining a valid certificate of operation.

(b) The certificate of operation shall be posted on the premises by the owner or user of the boiler or pressure vessel.

(2) ISSUANCE. After each initial or periodic inspection for boilers and pressure vessels found to be in compliance with chs. ILHR 41 and 42, a certificate of operation shall be issued by the department to the owner or user of the boiler or pressure vessel. The department shall issue the certificate within 15 business days of determination of compliance.

(3) ALLOWABLE PRESSURE. The certificate of operation shall give the maximum allowable working pressure as determined using the regulations of chs. ILHR 41 and 42.

(4) EXPIRATION. The certificate of operation shall be valid until the next required periodic inspection.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

## Subchapter III — General Rules for All Installations

**ILHR 41.27 Application.** The provisions of ss. ILHR 41.27 to 41.39 shall apply to all boilers and pressure vessels existing prior to, or installed after, the effective date of this section.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.28 Safety rules.** (1) MAXIMUM ALLOWABLE WORKING PRESSURE. No boiler or pressure vessel may be operated at a pressure in excess of the maximum allowable working pressure stated on its current certificate of operation.

(2) ALTERATION TO SAFETY DEVICES. No unauthorized person may remove or tamper with any connected safety device.

(3) INSTALLATION LOCATION. Boilers and pressure vessels shall be so installed that there will be sufficient room between the vessel and any ceiling, wall, partition or floor to facilitate the connection and operation of valves, pipes and other appurtenances, and shall be installed in a manner that will not block any inspection opening.

Note: To assure proper installation, alteration or repair of a boiler or pressure vessel, it may be necessary to comply with other applicable Wisconsin Administrative Code sections in addition to the Wisconsin Boiler and Pressure Vessel Code. Some of the Wisconsin Administrative Code sections to be considered are as follows:

Sections ILHR 54.14, 55.29, 56.15, 57.14, 58.24, 58.62, 59.21, 60.25, 60.37, 61.24, 62.32 and 62.78 (boiler room requirements).

Section ILHR 64.09 (combustion air intake requirements).

Sections ILHR 64.20 to 64.23 (installation and safety control requirements).

Sections ILHR 64.45 to 64.50 (chimney and smokestack requirements).

Section ILHR 64.51 (equipment location and protection requirements).

Wisconsin Administrative Codes may be obtained by contacting the State Department of Administration, Document Sales and Distribution, P.O. Box 7840, Madison, Wisconsin 53707.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.29 Safety controls.** (1) GENERAL. Oil-fired, gas-fired and electrically-heated boilers shall be equipped with primary safety controls, safety limit switches, and burners or electric elements that bear the

stamp, monogram or other evidence of compliance with a nationally recognized standard.

Note: Typical acceptable stamps are the American Gas Association (AGA) and the Underwriters Laboratories (UL).

(2) PRESSURE AND TEMPERATURE CONTROLS. Compliance with the following requirements is optional for boilers installed prior to January 1, 1957:

(a) *Pressure controls.* Each automatically-fired steam boiler or system of commonly connected steam boilers shall have at least one steam pressure control device that will shut off the fuel supply to each boiler or system of commonly connected boilers when the steam pressure reaches a preset maximum operating pressure. In addition to the operating pressure control, each individual automatically-fired steam boiler shall have a high steam pressure limit control that will prevent generation of steam pressure in excess of the maximum allowable working pressure. Each limit control and operating control shall be clearly separated, and have its own sensing element and operating switch.

(b) *Temperature controls.* Each automatically-fired hot water boiler or system of commonly connected hot water boilers shall have at least one temperature actuated control to shut off the fuel supply when the system water reaches a preset operating temperature. In addition to the operating temperature control, each individual automatically-fired hot water boiler unit shall have a high temperature limit control that will prevent the water temperature from exceeding the maximum allowable temperature. Each limit control and operating control shall be clearly separated, and have its own sensing element and operating switch.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.30 Low-water cutoff and water feeder.** (1) GENERAL REQUIREMENTS. (a) Every automatically-fired power boiler which does not have a full-time attendant and every automatically-fired low-pressure steam boiler shall be equipped with an automatic low-water fuel cutoff or other device which will perform a similar function, so located as to automatically cut off the fuel supply when the surface of the water falls to the lowest safe water line.

(b) If a water-feeding device is installed, it shall be so constructed that the water inlet valve cannot feed water into the boiler through the float chamber and so located as to supply requisite feed water. The lowest safe water line shall be not lower than the lowest visible part of the water glass.

(2) BOWL DESIGNS. Designs embodying a float and float bowl, or probe control installed in a bowl or chamber externally to the boiler, shall have a vertical straightway valved drain pipe at the lowest point in the water equalizing pipe connections by which the bowl or chamber and the equalizing pipe can be flushed and the device tested.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.31 Boiler blowoff equipment.** (1) PRESSURE-TEMPERATURE LIMITS. The blowdown from a boiler that enters a sewer system or blowdown which is considered a hazard to life or property shall pass through some form of blowoff equipment that will reduce pressure and temperature as specified in pars. (a) and (b).

(a) The temperature of the water leaving the blowoff equipment may not exceed 140° F.

(b) The pressure of the blowdown leaving the blowoff equipment may not exceed 5 psi.

(2) PIPING AND FITTINGS. The blowoff piping and fittings between the boiler and the blowoff tank shall comply with s. ILHR 41.42 or the code in effect at the time of construction.

(3) TANKS. The blowoff tank shall be designed in accordance with s. ILHR 41.42 or the code in effect at the time of construction for a working pressure of at least one-fourth the maximum allowable working pressure of the boiler to which it is connected.

(4) GENERAL REQUIREMENTS. All blowoff equipment, except centrifugal blowdown separators, shall be fitted with openings to facilitate cleaning and inspection and shall have:

(a) A pressure gage graduated from 0-25 psi;

(b) A thermometer well located near the water outlet connection and in contact with the retained water in the tank;

(c) A gauge glass at least ½-inch in diameter with the lower connection to the glass at a point about 6 inches below the water line and the upper connection at a point about 6 inches above the water line;

(d) A drain connection of at least 2-inch standard pipe size;

(e) Connections designed so that freezing will not close the inlet, the outlet or the vent; and

(f) Vent piping, full size, piped to the outside atmosphere and discharged to a safe location.

Note: Blowoff equipment designed in accordance with the boiler blowoff equipment rules issued by the National Board of Boiler and Pressure Vessel Inspectors will meet the requirements of this section. Other methods of designing blowoff equipment may be used if approved by the department.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.32 Pressure gages for air receivers.** (1) GAGE LOCATION. Air receivers shall be equipped with an indicating pressure gage so located as to be readily visible.

(2) GAGE DIAL. The dial of the pressure gage shall be graduated to approximately double the pressure at which the safety valve is set, but may not be less than one and one-half times that pressure.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.33 Protection of vessels supplied through pressure reducing valves.** The following requirements shall be used for determining the sizes of safety valves on pressure vessels such as, but not limited to pressure cookers, indirect hot water heaters and equipment in heating systems, which are supplied through pressure reducing valves from boilers carrying a higher steam pressure. Where a pressure reducing valve is supplied from a boiler, the capacity of the safety valves on the low pressure side of the system need not exceed the capacity of the boiler.

(3) UNLAWFUL USE. It shall be unlawful for any person, firm, partnership or corporation to use, operate, or offer for sale for operation within the state any condemned boiler or pressure vessel.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

## Subchapter IV — General Rules for New Installations

**ILHR 41.40 Application.** The provisions of ss. ILHR 41.40 to 41.48 shall apply to all boilers and pressure vessels installed after the effective date of this section.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.41 Installation registration.** (1) BOILER OR PRESSURE VESSEL INSTALLATION REGISTRATION. (a) Except as provided in par. (b), the installation of any boiler or pressure vessel shall be registered with the department by the owner or user before the operation of the boiler or pressure vessel. Registration shall be in writing on form SBD-6314.

Note: See Appendix A for a copy of form SBD-6314.

(b) Registration with the department is not required for:

1. Boilers and pressure vessels exempted from periodic inspections in s. ILHR 41.18; and

2. Installations in cities of the first class if an installation registration form has been filed with the appropriate city official.

(2) POWER PIPING INSTALLATION REGISTRATION. (a) Except as provided in par. (b), the installation of any power piping system shall be registered with the department by the owner or user before the operation of the piping system. Registration shall be in writing on form SB-5204.

Note: See Appendix A for a copy of form SB-5204.

(b) Registration is not required for:

1. Power piping of 2 inches nominal pipe size and smaller;

2. Installations in cities of the first class if an installation registration form has been filed with the appropriate city official;

3. Underground power piping systems which are not located in a walk-in tunnel; and

4. Replacements, modifications and alterations to existing systems and for new installations, any of which do not exceed 50 feet in length.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.42 ASME code vessels.** (1) ASME CODE COMPLIANCE. Except as provided in ss. ILHR 41.43, 41.44 and 41.45, boilers and pressure vessels shall be constructed and installed in accordance with the ASME standards adopted under s. ILHR 41.10. Electric boilers shall be constructed and installed in accordance with ASME section I or IV as applicable.

Note: The department will recognize the applicable "case interpretations" of the ASME boiler and pressure vessel code as being acceptable.

(2) FILING WITH NATIONAL BOARD. Boilers and pressure vessels constructed and installed in accordance with the ASME standards adopted

in s. ILHR 41.10 shall have the manufacturer's data report filed with the National Board and shall bear a National Board number.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.43 Wisconsin special vessels.** Where it is not possible or practical to construct a boiler or pressure vessel in strict compliance with s. ILHR 41.42, the department may grant a variance to the owner or user to permit the installation of the boiler or pressure vessel as a Wisconsin special within the state of Wisconsin. The department shall consider a variance request upon receipt of a completed petition for variance form and the required fee. The variance may be granted under the following conditions:

Note: See s. ILHR 41.05 for further explanatory information.

(1) COMPARABLE SAFETY. (a) When the method of designing or constructing the boiler or pressure vessel is not covered by the ASME codes listed in s. ILHR 41.10, the department may approve the installation provided adequate proof of comparable safety of the design or construction is shown.

(b) Complete plans, calculations and specifications in duplicate shall be submitted to and approved by the department before installation.

(c) The boiler or pressure vessel shall be stamped "Wisconsin Special" if approved by the department.

(d) All other applicable requirements of the ASME code listed in s. ILHR 41.10 shall be met.

(2) OWNER-BUILT. (a) When the boiler or pressure vessel is to be built by an owner for the owner's use, the department may waive the stamping required by the ASME codes listed in s. ILHR 41.10.

(b) Complete plans, calculations and specifications in duplicate shall be submitted to and approved by the department before installation.

(c) The boiler or pressure vessel shall be stamped "Wisconsin Special" if approved by the department.

(d) All other applicable requirements of the ASME code listed in s. ILHR 41.10 shall be met.

(3) LIMITED QUANTITY. (a) When a small number of boilers or pressure vessels is to be built by a manufacturer, the department may waive the stamping required by the ASME codes listed in s. ILHR 41.10.

(b) Complete plans, calculations and specifications in duplicate shall be submitted to and approved by the department before installation.

(c) The boiler or pressure vessel shall be stamped "Wisconsin Special" if approved by the department.

(d) All other applicable requirements of the ASME code listed in s. ILHR 41.10 shall be met.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.44 U.S. department of transportation vessels.** Pressure vessels bearing the stamping of the United States department of transportation are not permitted as permanent storage containers, but may be used as

replaceable service cylinders and as cylinders for storage of compressed natural gas.

Note: Complete requirements for storage of compressed natural gas are contained in the National Fire Protection Association (NFPA) standard number NFPA 52, available from the NFPA, Batterymarch Park, Quincy, MA 02269.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.45 Noncode vessels.** (1) EXEMPTED VESSELS. The following vessels are not required to be constructed and installed in accordance with the ASME codes listed in Table 41.10:

(a) Water heaters used exclusively for hot water service and hot water storage tanks, provided they bear the stamp, monogram or other evidence of compliance with a nationally recognized standard. Water heaters or hot water storage tanks not so identified shall:

Note: Typical acceptable stamps are the American Gas Association (AGA) and the Underwriters Laboratories (UL).

1. Have their design submitted to the department for approval;

2. Withstand a hydrostatic test pressure of 1½ times the maximum allowable working pressure without developing leakage or permanent distortion; and

3. Be equipped with approved primary safety controls, limit switches, and burners or electric elements.

(b) Vessels for containing water under pressure for domestic supply, including those having an air space for expansion;

(c) Pressure vessels used for the processing or storage of water at water temperatures not exceeding 210° F. These vessels may contain a steam or hot water coil or heat exchanger, provided the steam is at or below a pressure of 15 psig and the hot water is at or below a pressure of 160 psig and a temperature of 250° F;

(d) Pressure vessels used for water conditioning and filtration; and

(e) Pressure vessels used in processing and storing of fermented beverages at temperatures not exceeding 140°F.

(2) VESSEL IDENTIFICATION. The vessels listed in sub. (1) (b) to (e) shall be identified with the manufacturer's name, a serial number, the allowable working pressure, and the year fabricated.

(3) PRESSURE RELIEF REQUIREMENTS. (a) Except as provided in par. (b), the vessels listed in sub. (1) shall meet the pressure relief device requirements of the ASME codes listed in Table 41.10.

(b) Water heaters and hot water storage tanks shall be equipped with pressure-temperature relief devices:

1. Listed by the American Gas Association (AGA), Underwriters Laboratories (UL) or ASME when heat inputs are less than or equal to 200,000 Btu per hour and temperatures do not exceed 210° F; and

2. Listed by ASME when heat inputs exceed 200,000 Btu per hour.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.46 Power piping.** (1) GENERAL. Power piping shall be installed in accordance with the ANSI standard for power piping, including addenda, listed in Table 41.10. The use of slip-on flanges exceeding 4-inches nominal pipe size shall not be permitted on power piping.

(2) BOILER EXTERNAL PIPING. Boiler external piping within the scope of section I of the ASME code shall be installed in accordance with the ANSI standard for power piping, including addenda, listed in Table 41.10.

(3) APPLICATION. This section applies to new systems as well as all replacements, modifications, and alterations to existing systems.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88; r. and recr. Register, February, 1990, No. 410, eff. 3-1-90.

**ILHR 41.47 Multi-boiler installations.** When hot water heating boilers are installed in multiples with a common header and a common return, isolation valves may be eliminated between units and the units may be considered as one boiler provided:

(1) OUTPUT LIMIT. No single unit exceeds 500,000 Btu per hour output;

(2) PRESSURE RELIEF. Each unit has a pressure relief device as required by the ASME code, or the common header has a pressure relief device with sufficient relieving capacity for all units in the installation;

(3) CONTROLS. Each unit has operating controls and safety controls acceptable to the department; and

(4) LOW-WATER CUTOFF. The fuel supply to each unit is shut off by a low-water cutoff in the event of low water in the system.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.48 Organic fluid heat transfer systems.** Boilers and coil type heaters which utilize organic thermal fluids as a heat transfer media shall be designed, constructed and installed in accordance with the ASME standards adopted under s. ILHR 41.10.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

## Subchapter V — Nuclear Power Plants

**ILHR 41.53 Application.** The provisions of ss. ILHR 41.53 to 41.57 shall apply to all existing nuclear power plants and to all nuclear power plants constructed after the effective date of this section.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 41.54 Installation registration.** (1) OWNER REPORT FILING BEFORE OPERATION. The owner of any nuclear class pressure vessel within the scope of ASME code section III, except those vessels exempted from periodic inspections in s. ILHR 41.18, shall file a copy of form N-3, ASME data report, with the department before operating the pressure vessel.

Note: Form N-3 is available from the American Society of Mechanical Engineers.

(2) REGISTRATION OF BOILERS, PRESSURE VESSELS AND POWER PIPING. All non-nuclear class boilers, pressure vessels and power piping at nuclear power plants shall be registered with the department as required by s. ILHR 41.41. The installation inspection shall meet the requirements of s. ILHR 41.16.

# Chapter ILHR 42

# REPAIRS, ALTERATIONS AND MISCELLANEOUS REQUIREMENTS



Note: Chapter ILHR 42 as it existed on February 29, 1988, was repealed and a new chapter ILHR 42 was created effective March 1, 1988.

## Subchapter I — Welded Repairs and Alterations

**ILHR 42.01 General requirements.** (1) ACCEPTABLE METHODS. Welded repairs or alterations to any boiler or pressure vessel or their fittings, settings, or appurtenances shall be completed in accordance with the requirements of ss. ILHR 42.01 to 42.20. Other methods may be acceptable provided they are approved by the department. In the absence of specific rules, the rules for new construction shall apply. Except as provided in s. ILHR 42.02 (1), no welded repair or alteration may be made without the prior approval of an authorized inspector who shall, if it is considered necessary, inspect the object before granting an approval.

(2) ACCEPTANCE OF REPAIRS AND ALTERATIONS. Repairs or alterations shall be acceptable to the authorized inspection agency responsible for the inservice inspection of the boiler or pressure vessel. It shall be the responsibility of the organization making the repair or alteration to provide for inspection, documentation and certification of the work and to ensure prior acceptance of the procedures for the work by the inspection agency responsible for inservice inspection of the boiler or pressure vessel.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 42.02 General rules for repairs.** (1) AUTHORIZATION. Repairs to boilers and pressure vessels shall be performed by an organization in possession of a valid National Board repair "R" certificate of authorization, a valid ASME certificate of authorization containing provisions for welded repairs or a valid weld repair program which has been reviewed and verified by the department or an authorized inspection agency. The repair organization shall have a documented quality control program containing a description of the scope of work they intend to perform with supporting welding procedures and qualification reports in accordance with the ASME Code Section IX. Welded repairs of a routine nature as specified in the scope of the repair organization's quality control program may be performed without prior approval of the authorized inspector.

Note 1: See s. ILHR 41.06 for penalties for violations of these rules.

Note 2: The department will assist an organization in preparing a quality control program for welded repairs that will comply with the intent of ss. ILHR 42.01 and 42.02. Organizations who hold ASME certificates or National Board "R" certificates are already in possession of approved quality control programs.

(2) EXAMPLES OF REPAIRS. Repairs shall be work such as, but not limited to, the following examples:

(a) Welded repairs or replacements of pressure parts or attachments that have failed in a weld or in the base material;

(b) The addition of welded attachments to pressure parts such as, but not limited to:

1. Studs for insulation or refractory lining,

2. Hex steel or expanded metal for refractory lining,

3. Ladder clips,

4. Brackets,

5. Tray support rings,

6. Corrosion-resistant strip lining,

7. Corrosion-resistant weld overlay, and

8. Weld build-up of wasted areas.

(c) Replacement of heat exchanger tube sheets in accordance with the original design;

(d) Replacement of boiler or heat exchanger tubes where welding is involved;

(e) In a boiler, a change in the arrangement of tubes in furnace walls, economizer or superheater sections;

(f) Replacement of pressure retaining parts identical to those existing on the boiler or pressure vessel and described on the original manufacturer's data report such as, but not limited to:

1. Replacement of furnace floor tubes or sidewall tubes, or both, in a boiler,

2. Replacement of a shell or head in accordance with the original design,

3. Rewelding a circumferential or longitudinal seam in a shell or head, and

4. Replacement of nozzles;

(g) Installation of new nozzles or openings of such a size that reinforcement is not a consideration, such as the installation of a 3-inch pipe size nozzle to a shell or head of 3/8-inch or less in thickness, or the addition of a 2-inch pipe size nozzle to a shell or head of any thickness;

(h) The addition of a nozzle where reinforcement is a consideration may be considered to be a repair provided the nozzle is identical to one in the original design, is located in a similar part of the vessel, and is not closer than 3 times its diameter from another nozzle. The addition of such a nozzle shall be restricted by any service requirements;

(i) The installation of a flush patch to a boiler or pressure vessel;

(j) The replacement of a shell course in a cylindrical pressure vessel;

(k) Welding of gage holes;

(l) Welding of wasted or distorted flange faces;

(m) Replacement of slip-on flanges with weld neck flanges or vice versa; and

(n) Seal welding of butt straps and rivets.

History: Cr. (2) Register, February, 1988, No. 386, eff. 3-1-88; cr. (1) eff. 12-1-88; am. (1), Register, February, 1990, No. 410, eff. 3-1-90.

**ILHR 42.03 General rules for alterations.** (1) AUTHORIZATION. Alterations to boilers and pressure vessels, with the exception of rerating as specified in s. ILHR 42.30, shall be performed by an organization in possession of a valid ASME certificate of authorization, provided the alterations are within the scope of the authorization.

(2) NAMEPLATE. (a) The organization responsible for the preparation of the report of alteration shall also be responsible for adding a stamping or nameplate to the boiler or pressure vessel.

(b) The stamping or nameplate shall be applied adjacent to the original manufacturer's stamping or nameplate in letters at least 5/32 inch high.

(c) The stamping or nameplate for all alterations to a boiler or pressure vessel shall be as follows:

ALTERED BY _____

_____ PSIG AT _____ °F
(MAWP) (Temp)

_____
(Manufacturer's Alteration Number, if used)

_____
(Date Altered)

(3) REPORTS. A copy of the original manufacturer's data report and any required manufacturer's partial data reports shall be a part of the

completed report of alteration and shall be attached thereto. Where the manufacturer's data report is unavailable, documentation acceptable to the department shall be submitted.

(4) TEST. A pressure test shall be applied after the alteration has been completed, at a pressure of at least the operating pressure, but not to exceed 150% of the maximum allowable working pressure. In lieu of a pressure test, if approved by the authorized inspector, radiographic testing or ultrasonic testing may be utilized.

Note: Where water is used in a hydrostatic test, the temperature of the water should not be less than 70°F and the maximum temperature during inspection should not exceed 120°F. If a test is conducted at 1½ times the maximum allowable working pressure (MAWP) and the owner specifies a temperature higher than 120°F, the pressure should be reduced to the MAWP and the temperature should be reduced to 120°F for the close examination.

(5) EXAMPLES OF ALTERATIONS. Alterations shall be work such as, but not limited to the following examples:

(a) To increase the maximum allowable working pressure or temperature of a boiler or pressure vessel regardless of whether or not a physical change was made to the boiler or pressure vessel;

(b) The addition of new nozzles or openings in a boiler or pressure vessel except those classified as repairs;

(c) A change in the dimensions or contour of a pressure vessel;

(d) In a boiler, an increase in any heating surface which results in increasing the heat output or the final temperature above that specified in the original design;

(e) The addition of a pressurized jacket to a pressure vessel;

(f) Replacement of a pressure retaining part in a boiler or pressure vessel with a material of different nominal strength or nominal composition from that used in the original design; and

(g) A decrease in the minimum temperature such that additional mechanical tests are required as specified in ASME code section VIII.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

**ILHR 42.04 Reports.** (1) GENERAL. Except as provided in sub. (2), anyone making welded repairs or alterations in accordance with these rules shall furnish the department with a report of every welded repair or alteration. The report shall be signed by the authorized inspector who inspected or approved the repair or alteration. The owner of the equipment shall retain a copy of the report for review by an authorized inspector. The report shall contain the information indicated on department form SB-190 or National Board Form R-1. Form SB-190 shall be filed by organizations who do not possess an ASME certificate of authorization or a National Board R certificate.

Note: See Appendix A for sample copies of forms SB-190 and R-l.

(2) EXEMPTIONS. The following items require the prior approval of the authorized inspector but are exempt only from the reporting requirements of sub. (1):

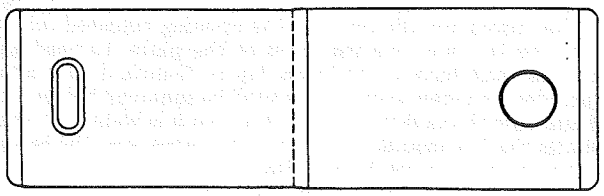
(a) The welded repair or replacement of tubes in boilers or pressure vessels; and

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. Window patches shall be applied as specified in Figure 42.17-2 or by other equivalent methods.

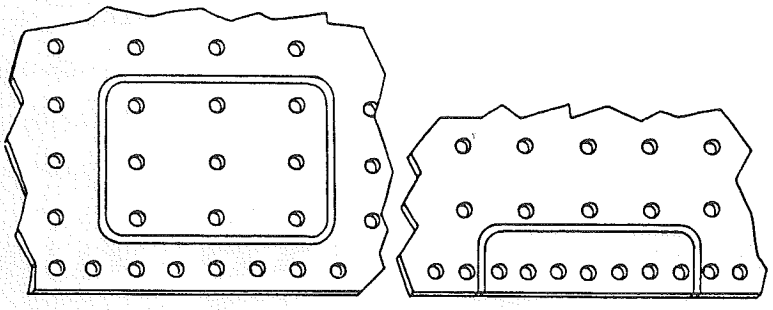
(3) LAPPED AND FILLET WELDED PATCHES. Lapped and fillet welded patches may be applied provided they are not exposed to radiant heat. Lapped and fillet welded patches may be applied on the pressure side of the sheet. The maximum diameter of the opening repaired may not exceed 8 inches or 16 times the thickness of the plate. Lapped and fillet welded patches shall have a minimum lap of ½-inch. If the area to be patched includes a riveted seam, rivets shall be removed before the patch is applied and new rivets driven before the patch is welded at the edges. New staybolts shall be installed in the patched area, and the heads of the staybolts shall be be covered by welding.

History: Cr. Register, February, 1988, No. 386, eff. 3-1-88.

Figure 42.17-1
FLUSH PATCHES



FLUSH PATCHES IN UNSTAYED AREAS



FLUSH PATCHES IN STAYED AREAS

Before installing a flush patch, the defective metal shall be removed until sound metal is reached. The patch shall be rolled or pressed to the proper shape or curvature. The edges shall align without overlap.

In stayed areas, the weld seams shall come between staybolt rows or riveted seams.

Patches shall be made from material that is at least equal in quality and thickness to the original material.

Patches may be of any shape or size. Corners of patches shall have a radius of such size as is necessary to avoid creating a stress point.

Wisconsin Department of Industry, Labor and Human Relations

## POWER PIPING INSTALLATION REGISTRATION

Safety and Buildings Division
Boiler Safety Section
P.O. Box 7969
Madison, WI 53707
(608) 266-1904

Installing contractor must prepare this document for copy distribution as follows:

White - Send to Department of Industry, Labor and Human Relations, Safety and Buildings Division, P.O. Box 7969,Madison, WI 53707, or City of Milwaukee, if applicable.

Yellow - Send to owner.

Pink - Retain for file.

System Description

| User or Owner's Name | Installing Contractor's Name |
|---|---|
| Street Address | Street Address |
| City, State, Zip Code | City, State, Zip Code |
| Installation Designed By | Authorized Inspector |
| | Employed By |
| | Date Inspected / Cert. No. |

Safety Valve Settings - Power Source — Capacity

1. _____
2. _____
3. _____

PSIG

Maximum Allowable Pressure _____

Teat Pressure _____

Date Tested _____

I certify this system was installed and tested in accordance with ILHR 41.46 of the Wisconsin Administrative Code.

| Date Installation Completed | Installer's Signature and Title | FOR DILHR USE ONLY Date Installation Registered |
|---|---|---|
| | | |

SBD-5204 (R. 12/88)

**Appendix A**

State of Wisconsin
Department of Industry,
Labor and Human Relations

**W E L D E D  R E P A I R**
**R E C O R D**

Safety & Buildings Division
P.O. Box 7969
Madison, Wisconsin 53707
Telephone: (608) 266-1904

Repair completed on:

☐ Power Boiler ☐ Heating Boiler

☐ Pressure Vessel ☐ Miniature Boiler

Manufacturer: _____

Wisconsin Reg. No: _____

National Board No: _____

Serial No: . . . . _____

Other No: . . . . _____

| WORK COMPLETED BY: | IN THE PLANT OF: |
|---|---|
| Name: | Owner's Name: |
| Street Address | Location of Repair: |
| City/Town/Village: Zip Code: | |
| Repair Program No: | |

Description of Repair - attach additional page if needed:
(use reverse side of this page for sketch) _____

Hydrostatic Test PSI _____ NDE _____

Repair made in accordance with the requirements of the Wisconsin Department of Industry, Labor and Human Relations, Wisconsin Administrative Code Chapters 41-42.

The welding was completed by _____, who has met the test requirements of Chapters 41-42.

Welding procedure specification: _____

Contractor rep. signature: _____ Dated: _____

I, the undersigned, have inspected the work described in this report and state that this work, to the best of my knowledge and belief, has been done in accordance with the requirements of Wis. Adm. Code Chapters ILHR 41-42. By signing this certificate, neither the inspector nor his employer makes any warranty, expressed or implied, concerning the work described in this report. Furthermore, neither the inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection. The only exception is for such liability that may be provided in an insurance policy which the inspector's insurance company may issue for the object, and then only in accordance with terms of that policy.

| Authorized Inspector Signature: Cert. No: | Employed By: | Dated: |
|---|---|---|
| | | |

SB-190(R.01/87)