Title 15 - Mississippi Department of Health

Part III – Office of Health Protection

76 – Boiler and Pressure Vessel Safety

CHAPTER 01 BOILER AND PRESSURE VESSEL SAFETY ACT AND RULES AND REGULATIONS

Senate Bill No. 1788

(Approved by the Governor)

An act to establish a program of boiler and pressure vessel safety within the State Department of Health and to set forth the powers and duties thereof; to formulate rules and regulations for the safe construction, installation, inspection, care and good practice in the operation, maintenance and repair of boiler and pressure vessels; to provide for the enforcement of the rules and regulations through the State Department of Health; to provide for the inspection of boiler and pressure vessels, fees to be charged therefor and the reports to be made therefore; to provide for inspection certificates; to provide for appeals; to provide a penalty for the provisions of this act; to repeal Section 71-1-51, Mississippi Code of 1972, and for related purposes.

100 Section 1

100.01 **§ 45-23-1 Title**

This chapter shall be cited as the "Mississippi Boiler and Pressure Vessel Safety Law of 1974."

Sources: Laws, 1974, chapter 500 § 1, effective from and after passage (approved April 2, 1974).

Editor's note

Section 21 of Chapter 500, Laws of 1974, which chapter created the boiler and vessel safety law, provides as follows:

Section 21. Section 71-1-51, Mississippi Code of 1972, which provides for inspection of steam boilers is hereby repealed. All other acts and parts of acts inconsistent with any provision of this act are hereby repealed to the extent of such inconsistency. The effective date of such repeal shall be the date on which the rules and regulations pursuant to this act first becomes effective.

Research and Practice References

42 AM Jur 2d, Inspection Laws §§ 7 et seq;

AM Jur 2d, New Topic Service, Occupational Safety and Health Acts § 27 et seq.

39 CJS, Health § 2; 62 CJS, Municipal Corporations § 687.

13 Am Jur Trials 343, Boiler Explosion Cases, §§ 9-14.

ALR Annotations-

Boiler and machinery insurance; risks and losses covered. 8 ALR2d 403.

100.02 **§ 45-23-3 Application**

This chapter, except as otherwise herein provided, shall apply to all boilers and pressure vessels operating or intended for operation in the State of Mississippi or its territories.

Sources: Laws, 1974, Chapter 500 § 2, effective from and after passage (approved April 2, 1974).

100.03 **§ 45-23-5 Definitions**

The words, terms and phrases when used in this chapter shall have the meanings ascribed to them herein unless the context requires otherwise:

1. Boiler shall mean a closed vessel in which water is heated, steam or high temperature liquid is generated, steam is superheated, or in which any combination of these functions is accomplished, under pressure or vacuum, for use externally to itself by the direct application of energy from the combustion of fuels, or from other high temperature fluids, or from electricity or nuclear energy. The term "boiler" shall include fired units for heating or vaporizing liquids other than water where these units are separate from processing systems and are complete within themselves.

2. Power Boiler shall mean a boiler in which steam or other vapor is generated at a pressure of more than fifteen (15) pounds per square inch gauge (hereinafter referred to as psig).

3. High pressure high temperature water boiler" shall mean a water boiler operating at pressures exceeding one hundred sixty (160) psig, or temperatures exceeding two hundred fifty (250) degrees Fahrenheit.

4. Heating boiler shall mean a steam or vapor boiler operating at pressures not exceeding fifteen (15) psig, or a hot water boiler operating at pressures not exceeding one hundred sixty (160) psig, or temperatures not exceeding two hundred fifty (250) degrees Fahrenheit.

5. Pressure vessel shall mean 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 vessels defined in paragraph (1) of this section.

6. Certificate inspection shall mean an inspection, the report of which is used by the chief inspector to decide whether or not a certificate as provided by sections 45-23-41 through 45-23-49 may be issued. This certificate inspection shall be an internal inspection when construction permits; otherwise it shall be as complete an inspection as possible.

Sources: Laws, 1974, Chapter 500 § 2, effective from and after passage (approved April 2, 1974).

100.04 **§ 45-23-7 Advisory committee**

1. There is hereby created within the State of Mississippi a technical advisory committee of boiler and pressure vessel safety (hereinafter advisory committee). It shall be the purpose of this committee: (a) to recommend the adoption of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers as the basis for judging the safe condition of boilers and pressure vessels, (b) to recommend the qualifications of inspectors who will certify as to the safe condition of boilers and pressure vessels, and (c) to recommend the inspection of boilers and pressure vessels as necessary to insure that all such boilers and pressure vessels manufactured and/or used in this state are safe for use.

2. The technical advisory committee of boiler and pressure vessel safety shall consist of seven (7) members who shall be appointed by the governor with the advice and consent of the senate: one (1) for a term of one (1) year, two (2) for a term of two (2) years, two (2) for a term of three (3) years, and two (2) for a term of four (4) years. At the expiration of their respective terms of office, they, or their successors who shall be identifiable with the same interests respectively as hereinafter provided, shall be appointed for terms of four (4) years each. Upon the death or incapacity of any member, the governor shall fill the vacancy for the remainder of the vacated term with a representative of the same interests with which his predecessor was identified.

   Of the seven (7) appointed members, the majority of whom shall be registered professional engineers in the State of Mississippi: one (1) shall be a representative of owners and users of power boilers having experience with such boilers, one (1) shall be a representative of owners and user of heating boilers having experience with such boilers, one (1) shall be a representative of engineering and architectural firms having experience with the design and installation inspection of boilers and/or pressure vessels, one (1) shall be a representative of owners and users of

pressure vessels having experience with such vessels, one (1) shall be a representative of boiler or pressure vessel manufacturers who have manufacturing facilities in this state, one (1) shall be a representative of a company licensed to insure and insuring in this state boilers and pressure vessels, and one (1) shall be a mechanical engineer on the faculty of a recognized engineering college within the state.

3. The advisory committee shall elect one (1) of its members to serve as chairman, and at the call of the chairman, the committee shall meet at least four (4) times each year at Jackson or such other place within the State of Mississippi designated by the committee. No recommended action of the committee shall be effective unless adopted by the vote of at least four (4) members thereof.

4. The members of the advisory committee shall serve without salary, but shall be entitled to receive a per diem of forty dollars ($40.00) and their actual hotel and travel expenses incurred while in the performance of their duties as members of the committee, to be paid on an itemized statement approved by the chairman on warrants issued by the state auditor.

Sources: Laws, 1974, Chapter 500 § 3, effective from and after passage approved April 2, 1974).

100.05 **§ 45-23-9 Rules and regulations**

1. The advisory committee shall recommend the adoption of definitions, rules and regulations for the safe construction, installation, inspection, care and good practice in the operation, maintenance and repair of boilers and pressure vessels by the State Board of Health (hereinafter board).

   a. The definitions, rules and regulations so formulated for new construction shall be based upon and at all times follow the generally accepted nationwide engineering standards, formulae and practices established and pertaining to boiler and pressure vessel construction and safety, and the advisory committee shall at its first meeting recommend the adoption of an existing published codification thereof known as the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers (hereinafter ASME), with the amendments, code cases and interpretations thereto made and approved by ASME, and may likewise recommend the amendments and interpretations subsequently made and published by the same authority; and when so adopted, the same shall be deemed incorporated into and to constitute a part of the whole of the definitions, rules and regulations of the committee. Amendments, code cases and interpretations to the code so adopted shall be effective immediately upon being promulgated, to the end that the

definitions, rules and regulations shall at all times follow the generally accepted nationwide engineering standards.

b. The advisory committee shall recommend the adoption of rules and regulations for the inspection, care and good practice in operation, maintenance and repair of boilers and pressure vessels which were in use in this state prior to the date upon which the first rules and regulations under this chapter pertaining to existing installations become effective, or during the twelve (12) month period immediately thereafter. The rules and regulations so formulated and recommended shall be based upon and at all times follow the generally accepted nationwide engineering standards.

2. The rules and regulations and any subsequent amendments thereto adopted by the board shall, immediately following a hearing upon not less than thirty (30) days notice as hereinafter provided, be approved and published and when so promulgated shall have the force and effect of law, except that the rules applying to the construction of new boilers and pressure vessels shall not become mandatory until twelve (12) months after their promulgation by the board. Subsequent amendments to the rules and regulations adopted by the board shall be permissive immediately and shall become mandatory twelve (12) months after their promulgation.

3. Notice of the hearing shall give the time and place of the hearing and shall state the matters to be considered. Such notice shall be given to all persons directly affected by such hearing. In the event all persons directly affected are unknown, notice shall be perfected by publication in a newspaper of general circulation in the northern, central and southern supreme court districts of this state at least thirty (30) days prior to such hearing.

Sources: Laws, 1974, Chapter 500§ 4, effective from and after passage (approved April 2, 1974).

100.06 **§ 45-23-11 Prohibition against noncon-forming installation or operation special permit**

No boiler or pressure vessel which does not conform to the rules and regulations of the board governing new construction and installation shall be installed and operated in this state after twelve (12) months from the date upon which the first rules and regulations under this chapter pertaining to new construction and installation shall have become effective, unless the boiler or pressure vessel is of special design or construction and is not inconsistent with the spirit and safety objectives of such rules and regulations, in which case a special installation and operating permit may, at its discretion, be granted by the board.

Sources: Laws, 1974, Chapter 500 § 5, effective from and after passage (approved April 2, 1974)

100.07 **§ 45-23-13 Maximum allowable pressure**

1. The maximum allowable pressure of a boiler carrying the ASME code symbol or of a pressure vessel carrying the ASME or API-ASME code symbol shall be determined by the applicable sections of the code under which it was constructed and stamped.

2. The maximum allowable pressure of a boiler or pressure vessel which does not carry the ASME or the API-ASME code symbol shall be computed in accordance with generally accepted nationwide engineering standards as required by the board.

3. This chapter shall not be construed as in any way preventing the use, sale or reinstallation of a boiler or pressure vessel referred to in subsections (1) and (2), provided it has been made to conform to the rules and regulations of the board governing existing installations and provided, further, it has been found upon inspection to be in a safe condition and that an inspection certificate can be issued.

   Sources: Laws, 1974, Chapter 500 § 6, effective from and after passage (approved April 2, 1974).

100.08 **§ 45-23-15 Exemptions**

1. This chapter shall not apply to the following boilers and pressure vessels:

   a. Boilers and pressure vessels located on United States Government property and/or under Federal government control and pipelines, including compressors and related facilities, which are subject to inspection by any agency of the Federal government or other agency of the State of Mississippi.

   b. Pressure vessels used for transportation and storage of compressed gases when constructed in compliance with specifications of the U.S. Department of Transportation and when charged with gas, marked, maintained, and when periodically requalified for use, as required by appropriate regulations of the U. S. Department of Transportation.

   c. Air tanks located on vehicles operating under the rules of other state authorities and used for carrying passengers or freight.

   d. Air tanks installed on the right-of-way of railroads and used directly in the operation of trains.

e. Pressure vessels that do not exceed (i) five (5) cubic feet in volume and two hundred fifty (250) psig pressure, or (ii) one and one-half (1 1/2) cubic feet in volume and six hundred (600) psig pressure, or (iii) and inside diameter of six (6) inches or less with no limitation on pressure.

f. Pressure vessels operating at a working pressure not exceeding fifteen (15) psig.

g. Vessels with a nominal water-containing capacity of one hundred twenty (120) gallons or less for containing water under pressure, including those containing also air, the compression of which serves only as a cushion.

h. Boiler and pressure vessels constructed and operated under licenses and permits granted by the Nuclear Regulatory Commission.

i. Boilers and pressure vessels used in connection with the production, treating, processing, storage, or transportation of oil or natural gas, when located in areas which are remote from places of human habitation or public congregation.

2. The following boilers and pressure vessels shall be exempt from the requirements of sections 45-23-31 through 45-23-55:

a. Heating boilers which are located in private residences or in apartment houses of less than six (6) family units.

b. Pressure vessels containing only water under pressure for domestic supply purposes, including those containing also air, the compression of which serves only as a cushion or airlift pumping system when located in private residences or in apartment houses of less than six (6) family units, or those serving rural water systems.

c. Pressure vessels which are covered under the Liquefied Compressed Gas Equipment Inspection Law of Mississippi, being sections 75-57-1 through 75-57-63, Mississippi Code of 1972.

d. Air receiving tanks and attached tanks used in connection with automobile filling stations that do not exceed fifteen (15) cubic feet in volume and two hundred fifty (250) psig pressure and that are used primarily to increase air pressure in automobile tires.

100.09 **§ 45-23-17 Chief inspector - MSDH - qualifications**

The board shall employ a chief inspector who shall be a citizen of this state, or if no suitable person is available a citizen of another state, who shall have had at the time of such appointment not less than ten (10) years experience in the

construction, installation, inspection, operation, maintenance or repair of high pressure boilers and pressure vessels as a mechanical engineer, steam operating engineer, boilermaker or boiler inspector, and who shall have passed the same kind of examination as that prescribed under section 45-23-23, and who should be, whenever possible, a registered professional engineer in this state. Such appointment shall be made within sixty (60) days after passage of this chapter and at any time thereafter that the office of the chief inspector may become vacant. Such chief inspector may be removed for cause after due investigation by the board.

100.10 **§ 45-23-19 Chief inspector - MSDH - duties and powers**

The chief inspector, if authorized by the board, is hereby charged, directed and empowered:

1. to take action necessary for the enforcement of the laws of the State of Mississippi governing the use of boilers and pressure vessels to which this chapter applies and of the rules and regulations of the board;

2. to keep a complete record of the type, dimensions, maximum allowable pressure, age, location, and all inspection reports of all boilers and pressure vessels to which this chapter applies;

3. to publish and make available to anyone requesting them copies of the rules and regulations promulgated by the board;

4. to issue, or to suspend or revoke for cause, inspection certificates as provided for in sections 45-23-41 through 45-23-49;

5. to cause the prosecution of all violators of the provisions of this chapter;

6. to draw from the special fund created by sections 45-23-53 through 45-23-55 any funds appropriated or authorized to be expended by the legislature for the purpose of implementing and administering this chapter. These expenditures may include but are not necessarily limited to the necessary traveling expenses of the chief inspector and his deputies and the expense incident to the maintenance of the chief inspector's office;

7. to maintain a list of qualified inspectors or other persons eligible to make inspections within this state and its territories.

Sources: Laws, 1974, Chapter 500 § 9, effective from and after passage (approved April 2, 1974).

100.11 **§ 45-23-21 Deputy inspectors -- inspection service -- special inspectors**

The board:

1. may employ deputy inspectors who shall be responsible to the chief inspector and who shall have had at the time of appointment not less than five (5) years experience in the construction, installation, inspection, operation, maintenance or repair of high pressure boilers and pressure vessels as a mechanical engineer, steam operating engineer, boilermaker or boiler inspector, and who shall have passed the examination provided for in section 45-23-23;

2. shall, upon the request of any company licensed to insure and insuring in this state boilers and pressure vessels or, upon the request of any company operating boilers and/or pressure vessels in this state for which the owner or user maintains a regularly established inspection service which is under the supervision of one or more engineers whose qualifications are satisfactory to the board and causes said pressure vessels to be regularly inspected and rated by such inspection service in accordance with applicable provisions of the rules and regulations adopted by the board pursuant to section 45-23-9, issue to any inspectors of said company licenses as special inspectors, provided that each such inspector before receiving his license shall satisfactorily pass the examination provided for by section 45-23-23; or in lieu of such examination the board may accept persons who hold a license or a certificate of competency as an inspector of boilers and pressure vessels for a state that has a standard of examination substantially equal to that of the State of Mississippi.

    a. A license as a special inspector shall be issued to a qualified employee of a company operating boilers and/or pressure vessels in this state only if, in addition to meeting the requirements stated herein, the person is employed full time by the company and is responsible for making inspections of pressure vessels used or to be used by such company and which are not for resale.

    b. Such special inspectors shall receive no salary from, nor shall any of their expenses be paid by, the state; and the continuance of a special inspector's license shall be conditioned upon his continuing in the employ of the insurance company duly authorized as aforesaid or upon continuing in the employ of the company so operating pressure vessels in this state and upon his maintenance of the standards imposed by this chapter.

    c. Such special inspectors shall inspect all boilers and pressure vessels insured or all boilers and/or pressure vessels operated by their respective companies, and when so inspected the owners and users of

such boilers and pressure vessels shall be exempt from payment to the state of inspection fees provided for in section 43-23-53.

Sources: Laws, 1974, Chapter 500 § 10, effective from and after passage (approved April 2, 1974).

100.12 **§ 45-23-23 Examination for inspectors**

1. The examination for chief, deputy or special inspector shall be in writing and shall be by the merit system of the board under the rules of procedure during the examination. Application for examination shall be in writing on forms provided by the board and shall be accompanied by a fee of twenty-five dollars ($25.00). Such examination shall be confined to questions, the answers to which will aid in determining the fitness and competency of the applicant for the intended service.

2. In case an applicant for an inspector's license fails to pass the examination, he may appeal to the merit system of the board for another examination which shall be given by the board within ninety (90) days.

3. The record of an applicant's examination shall be accessible to said applicant and his employer.

Sources: Laws, 1974, Chapter 500 § 11, effective from and after passage (approved April 2, 1974).

100.13 **§ 45-23-25 Suspension or revocation of inspector's license**

1. An inspector's license may be suspended by the chief inspector, after due investigation and approval by the board, for the incompetence or untrustworthiness of the holder thereof or for willful falsification of any matter or statement contained in his application or in a report of any inspection made by him. Written notice of any such suspension shall be given by the chief inspector within not more than ten (10) days thereof to the inspector and his employer.

   A person whose license has been suspended shall be entitled to an appeal to the board, as provided in section 45-23-57, and to be present in person or to be represented by counsel at the hearing of the appeal.

2. If the board has reason to believe that a licensed inspector is no longer qualified to hold his license, the board shall, upon not less than ten (10) days written notice to the inspector and his employer, hold a hearing at which such inspector and his employer shall have an opportunity to be heard. If, as a result of such hearing, the board shall find that such inspector is no longer qualified to hold his license, the board shall instruct the chief inspector that such license shall be revoked and the chief inspector shall thereupon revoke such license forthwith.

3. A person whose license has been suspended shall be entitled to apply, after ninety (90) days from the date of such suspension, for reinstatement of such license.

Sources: Laws, 1974, Chapter 500 § 12, effective from and after passage (approved April 2, 1974).

100.14 **§ 45-23-27 Replacement of lost or destroyed license**

If a license is lost or destroyed, a new license shall be issued in its place without another examination.

Sources: Laws, 1974, Chapter 500 § 13, effective from and after passage (approved April 2, 1974).

100.15 **§ 45-23-29 Inspectors' bonds**

The chief inspector shall furnish a bond in the sum of five thousand dollars ($5,000.00), and each of the deputy inspectors employed and paid by the state shall furnish a bond in the sum of two thousand dollars ($2,000.00), conditioned upon the faithful performance of their duties and upon a true account of monies handled by them respectively and the payment thereof to the proper recipient. The cost of said bonds shall be paid from funds appropriated by the legislature for administration of this chapter.

Sources, Laws, 1974, Chapter 500 § 14, effective from and after passage (approved April 2, 1974).

100.16 **§ 45-23-31 Access to premises**

Any duly authorized representative of the board shall have free access, during reasonable hours, to any premises in the state where a boiler or pressure vessel is being constructed for use in, or is being installed in, this state for the purpose of ascertaining whether such boiler or pressure vessel is being constructed and installed in accordance with the provision of this chapter

Sources: Laws, 1974, Chapter 500 § 15(1), effective from and after passage (approved April 2, 1974).

100.17 **§ 45-23-33 Inspection requirements**

On and after the effective date of the rules and regulations first promulgated by the board, each boiler and pressure vessel used or proposed to be used within this state, except boiler or pressure vessels exempt under section 45-23-15, shall be thoroughly inspected as to their construction, installation and conditions as follows:

1. Power boilers and high pressure, high temperature water boilers shall receive a certificate inspection annually or as the board may require and shall also be externally inspected annually while under pressure if possible.

2. Heating boilers shall receive a certificate inspection biennially.

3. Pressure vessels subject to internal corrosion shall receive a certificate inspection biennially.

4. Pressure vessels not subject to internal corrosion shall receive a certificate inspection at intervals set by the board, but internal inspection shall not be required of pressure vessels, the contents of which are known to be noncorrosive to the material of which the shell, heads or fittings are constructed, either from the chemical composition of the contents or from evidence that the contents are adequately treated with a corrosion inhibitor, or from evidence that the contents are adequately treated with a corrosion inhibitor, or from evidence that the vessel parts are isolated from the contents with a corrosion resistant lining, provided that such vessels are constructed in accordance with the rules and regulations of the board, and provided further that evidence proving noncorrosiveness is approved by the board.

5. Nuclear vessels within the scope of this chapter shall be inspected and reported in such form and with such appropriate information as the board shall designate.

6. A grace period of two (2) months beyond the periods specified in paragraphs (a), (b), (c) and (d) may elapse between certificate inspections.

7. The board may, in its discretion, permit longer periods between certificate inspections.

8. Under the provisions of this chapter, the board shall provide for the safety of life, limb and property, and therefore has jurisdiction over the interpretation and application of the inspection requirements as provided for in the rules and regulations which they have promulgated. Inspection during construction and installation shall certify as to the minimum requirements for safety. Inspection requirements of operating equipment shall be in accordance with generally accepted practice and compatible with the actual service conditions, such as:

    a. previous experience, based on records of inspection, performance and maintenance;

    b. location, with respect to personnel hazard;

    c. quality of inspection and operating personnel;

d. provision for related safe operation controls;

e. interrelation with other operations outside the scope of this chapter.

Based upon documentation of such actual service conditions by the owner or user of the operating equipment, the board may, in its discretion, permit variations in inspection requirements.

Sources: Laws, 1974, Chapter 500 § 15(2), effective from and after passage (approved April 2, 1974).

100.18 **§ 45-23-35 Who may make required inspections**

The inspections herein required shall be made by the chief inspector, by a deputy inspector, or by a special inspector provided for in this chapter.

Sources: Laws, 1974, Chapter 500 § 15(3), effective from and after passage (approved April 2, 1974).

100.19 **§ 45-23-37 Hydrostatic tests**

If the inspector can show due cause that a hydrostatic test is necessary it shall be made by the owner or user of the boiler or pressure vessel, at the owner's or user's expense.

Sources: Laws, 1974, Chapter 500§ 15(4), effective from and after passage (approved April 2, 1974).

100.20 **§ 45-23-39 Inspection during construction**

All boilers, other than cast iron sectional boilers, and pressure vessels to be installed in this state after the twelve (12) month period from the date upon which the rules and regulations of the board shall become effective, shall be inspected during construction as required by the applicable rules and regulations of the board by an inspector authorized to inspect boilers and pressure vessels in this state, of if constructed outside of the state, by an inspector holding a license issued by an organization approved by the board.

Sources: Laws, 1974, Chapter 500 § 15(5), effective from and after passage (approved April 2, 1974).

100.21 **§ 45-23-41 Procedure in general by companies employing special inspectors**

Each company employing special inspectors, except a company operating boilers and/or pressure vessels covered by owner or user inspection service meeting the requirements of section 45-23-21(b) shall, within thirty (30) days following each certificate inspection made by such inspectors, file a report of such inspection with the chief inspector upon appropriate forms as promulgated

by the board. If such report shows that a boiler or pressure vessel is found to comply with the rules and regulations of the board, the owner or user thereof shall pay directly to the board the sum of twenty dollars ($20.00) an annual certificate and thirty dollars ($30.00) for a biennial certificate, and the chief inspector or his duly authorized representative shall issue to such owner or user an inspection certificate bearing the date of inspection and specifying the maximum pressure under which the boiler or pressure vessels may be operated.

1. Such inspection certificate shall be valid for not more than fourteen (14) months from its date in the case of power boilers and high pressure, high temperature water boilers, and for not more than twenty-six (26) months in the case of heating boilers and pressure vessels.

2. In the case of those boilers and pressure vessels covered by section 45-23-33 (a), (b), (c) and (d) for which the board has established or extended the operating period between required inspections, pursuant to the provisions of section 45-23-33 (g) or (h), the certificate shall be valid for a period not more than two (2) months beyond the period set by the board.

3. Certificates shall be posted under glass in the room containing the boiler or pressure vessel inspected. If the boiler or pressure vessel is not located within the building, the certificate shall be posted in a location convenient to the boiler or pressure vessel inspected, or in any place where it will be accessible to interested parties.

4. Air tanks used to inflate automobile tires shall be exempt from the inspection requirements of this section.

100.22 **§ 45-23-43 Procedure by companies covered by owner or user inspection service meeting statutory requirements**

Each company operating boilers and/or pressure vessels covered by owner or user inspection service meeting the requirements of section 45-23-21(b) shall maintain in its files an inspection record which shall list, by number and such abbreviated description as may be necessary for identification, each pressure vessel covered by this chapter, the date of the last inspection of each such unit, and for each pressure vessel the approximate date for the next inspection thereof arrived at by applying the appropriate rules therefore to all data available at the time such inspection record is compiles. Such inspection record shall be readily available for examination by the chief inspector or his authorized representative during business hours.

Sources: Laws, 1974, Chapter 500 § 16(2), effective from and after passage (approved April 2, 1974).

100.23 **§ 45-23-45 Statement by company covered by owner or user inspection service -- filing fee**

Each such company shall, in addition, file annually with the board a statement, signed by the engineer having supervision over the inspections made during the period covered thereby, stating the number of vessels covered by this chapter inspected during the year and certifying that each such inspection was conducted pursuant to the inspection requirements provided for by this chapter. Such annual statement shall be accompanied by a filing fee in accordance with the following schedule:

1. For statements covering not more than twenty-five (25) vessels -- three dollars ($3.00) per vessel.

2. For statements covering more than twenty-five (25) but less than one hundred one (101) vessels -- seventy-five ($75.00).

3. For statements covering more than one hundred (100) but less than five hundred one (501) vessels - one hundred fifty dollars ($150.00).

4. For statements covering more than five hundred (500) vessels -- three hundred dollars ($300.00).

Sources: Laws, 1974, Chapter 500 § 16(3), effective from and after passage (approved April 2, 1974).

100.24 **§ 45-23-47 Invalidation of inspection certificate upon termination of insurance**

No inspection certificate issued for an insured boiler or pressure vessel based upon a report of a special inspector shall be valid after the boiler or pressure vessel for which it was issued shall cease to be insured by a company duly authorized by this state to provide such insurance.

Sources: Laws, 1974, Chapter 500 § 16(4), effective from and after passage (approved April 2, 1974).

100.25 **§ 45-23-49 Suspension of inspection certificate**

The board or its authorized representative may at any time suspend an inspection certificate when, upon a showing of due cause, the boiler or pressure vessel for which it was issued cannot be operated without menace to the public safety, or when the boiler or pressure vessel is found not to comply with the rules and regulations herein provided. Each suspension of an inspection certificate shall continue in effect until such boiler or pressure vessel shall have been made to conform to the rules and regulations of the board, and until said inspection certificate shall have been reinstated.

Sources: Laws, 1974, Chapter 500 § 16(5), effective from and after passage (approved April 2, 1974).

100.26 **§ 45-23-51 Violations penalties**

After twelve (12) months following the date of issuance of the rules and regulations by the board, it shall be unlawful for any person, firm, partnership or corporation to operate in this state or its territories a boiler or pressure vessel, except a boiler and/or pressure vessel covered by owner or user inspection service as provided for in sections 45-23-43 and 45-23-45, without a valid inspection certificate. The operation of a boiler or pressure vessel without such inspection certificate, or at a pressure exceeding that specified in such inspection certificate, shall constitute a misdemeanor on the part of the owner, user or operator thereof and shall be punishable by a fine not exceeding five hundred dollars ($500.00) or imprisonment not to exceed six (6) months, or both. Each day of such unlawful operation shall be deemed a separate offense.

Sources: Laws, 1974, Chapter 500 § 17, effective from and after passage (approved April 2, 1974). Research and Practice References

42 AM Jur 2d, Inspection Laws §§ 14, 15 39 CJS, Health§§ 31 et seq.

100.27 **§ 45-23-53 Fees where inspection made by chief inspector or his deputy**

The owner or user of a boiler or pressure vessel required by this chapter to be inspected by the chief inspector, or his deputy inspector, shall pay directly to the board, upon completion of inspection, fees as specified by the board in the rules and regulations

1. Fee schedules set by the Mississippi State Department of Health shall be reasonable and practical but shall be set at a level which, in conjunction with the fees collected under sections 45-23-41 through 45-23-45, will make this activity reasonably self-supporting.

2. A group of pressure vessels, such as the rolls of a paper machine or dryer operating as a single machine or unit, shall be considered as one (1) pressure vessel.

3. Not more than one (1) fee shall be charged or collected for any and all inspections of any pressure vessel in any required inspection period.

4. When it is necessary to make a special trip to witness the application of a hydrostatic test, an additional fee based on the scale of fees applicable to a certificate inspection of the boiler or pressure vessel shall be charged.

Sources: Laws, 1974, Chapter 500 § 18(1), effective from and after passage (approved April 2, 1974).

100.28 **§ 45-23-55 Boiler and pressure vessel safety fund**

There is hereby created a special fund in the state treasury to be known as the boiler and pressure vessel safety fund into which shall be deposited all funds appropriated by the legislature for the implementation of this chapter, and funds from fees, fines and any other source that shall be used for the implementation and administration of this chapter by the Mississippi State Department of Health.

Sources: Laws, 1974, Chapter 500 § 18(2), effective from and after passage (approved April 2, 1974).

100.29 **§ 45-23-57 Appeal to board**

Any person aggrieved by an order or an act of the board or the chief inspector under this chapter may, within fifteen (15) days notice thereof, appeal from such order or act to the board which shall, within thirty (30) days thereafter, issue an 45-23-57 Appeal to board appropriate order either approving or disapproving said order or act. A copy of such order by the board shall be given to all interested parties.

Sources: Laws, 1974, Chapter 500 § 19(1), effective from and after passage (approved April 2, 1974).

100.30 **§ 45-23-59 Review of board action**

Within thirty (30) days after any order or act of the board, any person aggrieved thereby may file a petition in the circuit court of the county of the aggrieved for a review thereof. The court shall summarily hear the petition and may make any appropriate order.

Sources: Laws, 1974, Chapter 500 § 19(2), effective from and after passage (approved April 2, 1974).

No city, town or other governmental subdivision shall have the power to make any laws, ordinances or resolutions providing for the construction, installation, inspection, operation, maintenance or repair of boilers and pressure vessels within the limits of such city, town or governmental subdivision, and any such laws, ordinances or resolutions heretofore made or passed shall be and are hereby declared void and of no effect.

Sources: Laws, 1974, Chapter 500 § 20, effective from and after passage (approved April 2, 1974).

Justification for Rules and Regulations

In accordance with the provisions of the Mississippi Boiler and Pressure Vessel Safety Law of 1974, the Governor with the approval of the Senate appoints a

Technical Advisory Committee of Boiler and Pressure Vessel Safety. This Committee, under Section 45-23-9 of the Law, "shall recommend the adoption of definitions, rules and regulations for the safe construction, installation, inspection, care and good practice in the operation, maintenance and repair of boilers and pressure vessels by the State Department of Health." See Section 45-23-0 of the Mississippi Boiler and Pressure Vessel Safety Act of 1974.

Foreword

The requirements of the State of Mississippi, Bureau of Environmental Health boiler and pressure vessel regulations governing the construction of boilers and pressure vessels are the same as those incorporated in the American Society of Mechanical Engineers Boiler and Pressure Vessel Code. A copy of this code with such amendments and interpretations that have been approved by the Mississippi State Board of Health is on file in the office of the Chief Inspector, Boiler and Pressure Vessel Safety Branch.

The regulations contained herein shall be understood to set forth rules for safeguarding life, limb and property by specifying minimum standards for the construction, installation, operation, inspection and repair of boilers and pressure vessels. There shall be a joint responsibility among the owner, user, and the operating employees for a compliance with these rules and regulations.

The Mississippi State Department of Health rules and regulations do not presume to limit in any way the builder's right to choose any method of design or form of construction that conforms to the codes or standards prescribed or provided for in these rules and regulations. The codes or standards cover certain fundamental features of construction and leave a number of details to the judgment of designers and inspectors.

Regarding special designs which are not covered by the codes or standards, their construction may be determined by the manufacturer in cooperation with the purchaser, subject to the approval of the Chief Inspector and the Technical Advisory Committee of Boiler and Pressure Vessel Safety.

This chapter shall not be construed as in any way preventing the use, sale or reinstallation of a boiler or pressure vessel referred to in subsections (1) and (2) (45-23-13) provided it has been made to conform to the rules and regulations of the board governing existing installations and provided, further, it has been found upon inspection to be in a safe condition and that an inspection certificate can be issued.

Any person who feels that these rules and regulations or interpretations of them impose an undue burden upon him shall have the right to appeal to the Mississippi State Department of Health.

Caution

(For Information Only)

Kindly observe the following provisions and avoid unnecessary inconvenience.

Do not buy any secondhand boiler or pressure vessel for use in this state without first having it inspected by a duly authorized inspector and approval obtained from the Chief Inspector that the boiler will be permitted to be installed and operated in the State of Mississippi.

Do not operate any boiler or pressure vessel unless it has been inspected by a Mississippi licensed inspector and a Certificate of Inspection has been issued from the Boiler and Pressure Vessel Safety Branch, Mississippi State Department of Health.

The Certificates of Inspection required by the rules and regulations for boilers and pressure vessels shall be posted under glass in the room containing the equipment to which they apply or in the case of outdoor or portable boilers or pressure vessels shall be kept in a metal container fastened to the equipment or kept on file indoors in a place convenient to the equipment.

Do not perform any welding on the pressure parts of any boiler or pressure vessel until you have received instructions and permission from the Chief Inspector or authorized inspector.

In case of accident to a boiler or pressure vessel, secure permission from either the insurance company if the boiler or pressure vessel is insured, or from the Chief Inspector or Deputy Inspector if uninsured, before any changes are made or before any parts are removed, unless removing a part of the structure is necessary toward the saving of life.

Refer all communication concerning boilers and pressure vessels to Boiler and Pressure Vessel Safety Branch, Mississippi State Department of Health, P. O. Box 1700, Jackson, Mississippi 39215-1700, telephone number (601) 960-7917. Always give the Mississippi State Serial Number, when known, in any correspondence.

Limiting Dimensions of 1 1/2 Cu. Ft.,

5 Cu. Ft. and 120 Gal. Cylindrica Vessels

If the point of intersection of vertical and horizontal lines drawn through the dimensions of a cylindrical vessel falls above the curve, the vessel has a volume greater than the volume for which the curve is marked. If the point of intersection falls below the curve, the vessel has a volume less than that for which the curve is marked.

101 Section II

101.01 Definition of Terms

1. The Act means the "Mississippi Boiler and Pressure Vessel Safety Law of 1974."

2. ASME Code means the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers with such revisions, amendments, and interpretations thereof as are made, approved and adopted by the American Society of Mechanical Engineers. Copies of the Code may be obtained from said Society at 345 East 47th Street, New York, New York 10017.

3. Alteration means a change in a boiler or pressure vessel that substantially alters the original design requiring consideration of the effect of the change on the original design. It is not intended that the addition of the nozzles smaller than an unreinforced opening size be considered an alteration.

4. Approved means approved by the Board.

5. Authorized Inspection Agency means one of the following:

   a. A department or division established by a state, commonwealth or municipality of the United States, or a province of Canada which has adopted one or more sections of the Boiler and Pressure Vessel Code of the ASME and whose inspectors are approved by the State of Mississippi.

   b. An inspection agency of an insurance company which is authorized (licensed) to write boiler and pressure vessel insurance in those jurisdictions which have examined the agency's inspectors to represent such jurisdictions as is evident by the issuance of a valid certificate of competency to the inspector.

   c. An Owner-User Inspection Agency that meets the requirements of Section 45-23-43 of the Act.

6. Advisory Committee means Technical Advisory Committee of Boiler and Pressure Vessel Safety.

7. Board means the Mississippi State Department of Health.

8. Bureau means the Bureau of Environmental Health.

9. Boiler means a closed vessel in which water is heated, steam is generated, steam is superheated, or any combination thereof, under pressure or

vacuum for use externally to itself by the direct application of heat. The term "boiler" shall include fired units for heating or vaporizing liquids other than water where these units are separate from processing systems and are complete within themselves.

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

b. High Pressure, High Temperature Water Boiler means a water boiler operating at pressures exceeding 160 psig and/or temperatures exceeding 250ø F. at or near the boiler outlet.

c. Miniature Boiler means any boiler which does not exceed any of the following limits.

   16 inches inside diameter of shell

   20 square feet heating surface

   5 cubic feet gross volume, exclusive of casing and insulation100 psig maximum allowable working pressure

d. Heating Boiler means a steam boiler operated at pressures not exceeding 15 psig, or a hot water heating boiler operated at pressures not exceeding 160 psig and/or temperatures not exceeding 250ø F. at or near the boiler outlet.

e. Hot Water Supply Boiler means a boiler (including fired storage water heater): furnishing hot water to be used externally to itself at pressures not exceeding 160 psig and/or temperatures not exceeding 250ø F. at or near the boiler outlet. With the exception of those hot water supply boilers, including fired storage water heaters, located in buildings owned by or under the control of the state, a county, municipality, separate school district or other public entity, the following would be exempt from this definition: such boilers, including fired storage water heaters, which are directly fired with oil, gas or electricity, when none of the following limitations is exceeded.

   i. Heat input of 200,000 BTU per hour

   ii. Water temperature of 210ø F.

   iii. Nominal water containing capacity of 120 gallons.

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

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

10. Certificate of Competency means a certificate issued to a person who has passed the prescribed examination as provided in Section 45-23-21 of the Act.

11. Certificate Inspection means an inspection, the report of which is used by the Chief Inspector as justification for issuing, withholding or revoking the inspection certificate, as provided for in Section 45-23-33 of the Act. This certificate inspection shall be an internal inspection when required; otherwise, it shall be as complete an inspection as possible.

    a. Internal Inspection means 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, handhold plates or other inspection opening closures are removed.

    b. External Inspection means an inspection made when a boiler or pressure vessel is in operating condition or operating, if possible.

12. Commission, National Board means the commission issued by the National Board to a holder of a Certificate of Competency who desires to make shop inspections or field inspections in accordance with the National Board By-laws and whose employer submits the inspector's application to the National Board for such commission.

13. Division means the Bureau of Environmental Health.

14. Department means the Boiler and Pressure Vessel Safety Branch of the Mississippi State Department of Health.

15. Condemned Boiler or Pressure Vessel means a boiler or pressure vessel that has been inspected and declared unsafe, or disqualified by legal requirements by the Chief or Deputy Inspector who has applied a stamping or marking designating its condemnation.

16. Existing Installation means and includes any boiler or pressure vessel constructed, installed, placed in operation or contracted for before the date of approval of Rules and Regulations.

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

18. Inspector means the Chief Inspector, or any Deputy Inspector or Special Inspector.

a. Chief Inspector means the Chief Boiler and Pressure Vessel Inspector appointed under Section 45-23-19 of the Act.

b. Deputy Inspector means any inspector appointed by the Board under provisions of Section 45-23-21 of the Act.

c. Special Inspector means an inspector holding a Mississippi Certificate of Competency and who is regularly employed by an insurance company authorized to insure against loss from explosion of boilers or pressure vessels in Mississippi; or an inspector continuously employed by any company owning and operating pressure vessels in Mississippi for the purpose of making inspections of pressure vessels used or to be used by such company, but not for resale.

19. License means the boiler and pressure vessel inspector's license issued to inspectors who have successfully completed requirements of Section 45-23-23 of the Act.

20. Mississippi Special Boiler or Pressure Vessel means a boiler or pressure vessel fabricated or operated under Section 45-23-11 of the Act.

21. Mississippi Standard Boiler or Pressure Vessel means a boiler or pressure vessel bearing the ASME Code symbol that has been shop inspected by a National Board commissioned boiler inspector.

22. National Board means the National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper, Columbus, Ohio 43229.

23. National Board Inspection Code means the Manual for Boiler and Pressure Vessel Inspectors supplied by the National Board. Copies of this Code may be obtained from the National Board.

24. New Boiler or Pressure Vessel Installation means and includes all boilers or pressure vessels constructed, installed, placed in operation or contracted for after approval of the Rules and Regulations.

25. Nonstandard Boiler or Pressure Vessel means a boiler or pressure vessel that does not bear the Mississippi stamp, the ASME stamp, the National Board stamp, or the stamp of any state or political subdivision which has adopted a standard of construction equivalent to that required by Mississippi.

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

27. Pressure Vessel means 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 defined in Section 45-23-5 of the Act.

28. PSIG means pounds per square inch gauge.

29. Reinstalled Boiler or Pressure Vessel means 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.

30. Repair means work necessary to return a boiler or pressure vessel to a safe and satisfactory operating condition.

31. Major Repair means a repair upon which the strength of a boiler or pressure vessel will depend.

32. Secondhand Boiler or Pressure Vessel means a boiler or pressure vessel which as changed both location and ownership subsequent to its primary use.

33. Standard Boiler or Pressure Vessel means a boiler or pressure vessel which bears the stamp of Mississippi or of another state which has adopted a standard of construction equivalent to that required by Mississippi, the ASME stamp, or both the ASME and the National Board stamps.

34. Storage Tanks -- Hot Water Supply means those heated by steam or any other indirect means when any one of the following limitations is exceeded:

    a. Heat input of 200,000 BTU per hour

    b. Water temperature of 210ø F.

    c. Nominal water containing capacity of 120 gallons.

35. Underwriters' Laboratories means a nonprofit, independent organization testing for public safety. It maintains and operates laboratories for the examination and testing of devices, systems, and materials to determine their relation to life, fire, casualty hazards and crime prevention.

102 Section III

Administration

102.01 Minimum Construction Standards for Boilers and Pressure Vessels

Boilers and unfired pressure vessels to be installed for operation in Mississippi shall be designed, constructed, inspected, stamped and installed in accordance

with the applicable ASME Boiler and Pressure Vessel Code, and these rules and regulations.

1. In addition, boilers and pressure vessels may bear the National Board stamping, or be stamped Mississippi Standard. A copy of the manufacturer's data report, signed by the manufacturer's representative and the authorized inspector, shall be filed by the owner or user with the Chief Inspector prior to operation in Mississippi.

2. Pressure Piping -- (including welded piping) -- Piping external to power boilers from the boiler to the first stop valve of a single boiler, and to the second stop valve in a battery of two or more boilers is subject to the requirements of ASME Power Boiler Code, Section I, and the design, fabrication, installations and testing of the valves and piping shall be in conformity with the applicable paragraphs of ASME Code. Applicable ASME Data Report Forms for such piping shall be furnished by the owner to the Chief Inspector.

3. Mississippi Special -- If a boiler or pressure vessel is of special design or one that cannot bear the ASME and National Board stamping, details of the proposed construction, including shop drawings, shall be submitted to the Chief Inspector and approval as "Mississippi Special" for construction installations must be obtained from the Board before construction is started.

4. Before secondhand equipment is installed, application for permission to install shall be filed by the owner or user with the Chief Inspector and approval obtained.

5. The assembly, maintenance, operation and testing of controls and safety devices shall be in accordance with ASME Code CSD-1, current edition, and its addenda. Existing boiler installations shall comply with CSD-1 upon a major alteration or retrofitting of a boiler.

102.02 **Frequency of Inspections of Boilers and Pressure Vessels**

On and after the effective date of the rules and regulations first promulgated by the Board, each boiler and pressure vessel used or proposed to be used within this state, except boilers or pressure vessels exempt under Section 45-23-33 of the Act, shall be thoroughly inspected as to their construction, installation and condition as follows.

1. Power boilers and high pressure, high temperature water boilers shall receive a certificate inspection annually or as the Board may require and shall also be externally inspected annually while under pressure if possible.

2. Heating boilers shall receive a certificate inspection biennially.

3. Pressure vessels subject to internal corrosion shall receive a certificate inspection biennially.

4. Pressure vessels not subject to internal corrosion shall receive a certificate inspection biennially, but internal inspection shall not be required of pressure vessels, the contents of which are known to be noncorrosive to the material of which the shell, heads or fittings are constructed, either from the chemical composition of the contents or from evidence that the contents are adequately treated with a corrosion inhibitor, or from evidence that vessel parts are isolated from the contents with a corrosion resistant lining, provided that such vessels are constructed in accordance with the rules and regulations of the Board, and provided further that evidence proving noncorrosiveness is approved by the Board.

5. Nuclear vessels within the scope of this chapter shall be inspected biennially and reported in such form and with such appropriate information as the Board shall designate.

6. A grace period of two (2) months beyond the periods specified in paragraphs (a), (b), (c), (d) and (e) may elapse between certificate inspections.

7. The Board may, in its discretion, permit longer periods between certificate inspections.

   Based upon documentation of such actual service conditions by the owner of the operating equipment, the Board may, in its discretion, permit variations in the inspection requirements.

   The inspections herein required shall be made by the Chief Inspector, by a Deputy Inspector, or by a Special Inspector provided for int he Act.

   If the Inspector can show due cause that a hydrostatic test is necessary, it shall be made by the owner or user of the boiler or pressure vessel, at the owner's or user's expense.

   All boilers, other than cast iron sectional boilers, and pressure vessels to be installed in this state after the twelve (12) month period from the date upon which the rules and regulations of the Board shall become effective, shall be inspected during construction as required by the applicable rules and regulations of the Board by an inspector authorized to inspect boilers and pressure vessels in this state, or, if constructed outside of the state, by an inspector holding a license issued by an organization approved by the Board.

102.03 **Notification of Inspection**

Certificate inspections shall be in accordance with the frequency established by the Act and at a time mutually agreeable to the inspector and owner or user.

External inspections may be performed by inspector during reasonable hours and without prior notification.

When as a result of external inspection or determination by other objective means it is the inspector's opinion that continued operation of the boiler or pressure vessel constitutes a menace to public safety, the inspector may request an internal inspection and/or an appropriate pressure test to evaluate conditions. In such instances, the owner or user shall prepare the boiler or pressure vessel for an internal inspection and/or appropriate pressure test as the inspector designates.

102.04 **Examination for an Inspector's Certificate of Competency**

Examination for an inspector's certificate of competency in accordance with the requirements shall be held at the office of the Board or at any other location to be selected by the Board, four times each year, namely the first Wednesday of the months of March, June, September and December.

An applicant for an examination shall have education and experience equal to at least one of the following:

1. A degree in mechanical engineering plus one year of experience in design, construction, operation or inspection of high pressure boilers and pressure vessels.

2. A degree in a branch of engineering, other than mechanical engineering, plus two years of experience in design, construction, operation or inspection of high pressure boilers and pressure vessels.

3. The equivalent of a high school education plus three years of experience:

   a. in high pressure boiler and pressure vessel construction or repair; or

   b. as an operating engineer in charge of high pressure boiler operation; or

   c. as an inspector of high pressure boilers and pressure vessels.

   Applications for examination shall be in writing on a form to be furnished by the Board stating the education of the applicant, a list of

his employers, his period of employment and position held with each employer.

Applications containing willful falsifications or untruthful statements shall be rejected.

If the applicant's education and experience are acceptable to the Board, he shall be given a written examination dealing with the construction, installation, operation, maintenance and repair of boilers and pressure vessels and their appurtenances, and the applicant shall be accepted or rejected on the merits of this examination. If the applicant is successful in meeting the requirements of the Board, a certificate of competency will be issued by the Board when the inspector is employed on a full-time basis by an authorized inspection agency as defined in the Act.

Upon the expiration of ninety days, an applicant who fails to pass the examination will be permitted to take another written examination and his acceptance or rejection will be determined by the Board on the basis of this examination.

102.05 **Examination Fees**

A fee of twenty-five dollars will be charged for each applicant taking the examination for a certificate of competency. In the event an applicant fails to pass the examination, this fee shall be good for a period of one year during which a re-examination may be taken. Checks or money orders for examination fees shall be made payable to the Mississippi State Department of Health, Boiler and Pressure Vessel Safety Fund.

102.06 **Certificate of Competency and Identification Card**

Upon request, a certificate of competency and an identification card shall be issued by the Board to:

1. An inspector who is employed full-time by a governmental authority having an authorized inspection agency as defined in the Act.

2. An inspector who is employed full-time by an insurance company which is authorized to insure against loss from explosions of boilers and pressure vessels in Mississippi.

3. An inspector who is continuously employed by a company which operates boilers and/or pressure vessels in Mississippi and has a valid owner-user inspection agency agreement as provided in the Act.

102.07 **Provided**

1. The applicant has satisfactorily passed the examination as set forth and paid the application fee of twenty-five dollars; or

2. The applicant holds a valid commission or certificate of competency from a state that has a standard of examination substantially equal to that of Mississippi, or a valid commission and identification card issued by the National Board. The request for the certificate of competency and identification card shall be completed on forms to be provided by the Chief Inspector and shall be accompanied by, when applicable, a facsimile of the applicant's commission, certificate of competency and identification cards, named above, and a processing fee of twenty-five dollars ($25.00) shall be paid to the "Mississippi State Department of Health, Boiler and Pressure Vessel Safety Fund."

   The Mississippi certificate of competency and valid identification card shall be returned to the Chief Inspector when the inspector to whom they were issued is no longer employed by the organization employing him at the time that the certificate was issued.

   Each person holding a Mississippi certificate of competency and who conducts inspections as provided by the Safety Act shall apply to the Chief Inspector on forms provided and obtain an identification card annually, not later than January 30 of the year in which the card is required. A processing of twenty-five dollars ($25.00) for each card, payable to the "Mississippi State Department of Health, Boiler and Pressure Vessel Safety Fund" shall accompany the application. An inspector's certificate of competency may be suspended by the Chief Inspector after due investigation and recommendation by the Board for incompetence or untrustworthiness of the holder thereof, or for willful falsification of any matter or statement contained in his application, or in a report of any inspection made by him. Written notice of any such suspension shall be given by the Chief Inspector, within not more than ten (10) days, to the inspector and his employer. Persons whose certificate of competency has been suspended shall be entitled to an appeal to the Board as provided for in the Act and to be present in person or to be represented by counsel at the hearing of the appeal.

102.08 Inspector's to Have No Other Interests

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

102.09 Inspection Reports to be Submitted by Special Inspector

1. Special Inspectors shall, within one year of the effective date of these rules and regulations for power boilers and high pressure, high temperature water boilers and two years for other installations, submit to the Chief

Inspector an inspection report on a Standard Form for states operating under the ASME Code, Boiler and Pressure Vessel Data Report -- First Internal Inspection, for each boiler and pressure vessel subject to inspection in this state. Complete data shall be submitted on this Standard Form for each nonstandard boiler or pressure vessel.

2. Except as provided in (e) below, subsequent inspections of both standard and nonstandard boilers and pressure vessels shall be reported on a Standard Form for states operating under the ASME Code, Boiler or Pressure Vessel - Report of Inspection.

3. Inspection reports, as required in (a) and (b) above, shall be submitted within thirty days from date of inspection.

4. When hazardous conditions affecting the safety of a boiler or pressure vessel are found to exist at the time of any inspection, the inspector shall report such conditions immediately by quickest means of communication to the Chief Inspector.

   Where there are violations of the Code and/or Rules and Regulations, they shall appear on individual inspection forms. Multiple listing of pressure vessels is permissible when there are no recommendations involved and the operating certificates are to be renewed on the same date.

5. Owner-User Inspection Agencies may report subsequent inspections of both standard and nonstandard pressure vessels on forms approved by the Board. Such report shall be filed as provided in the Act.

102.10 Insurance Companies to Notify Chief Inspector of New, Canceled or Suspended Insurance on Boilers or Pressure Vessels

All insurance companies shall notify the Chief Inspector, within thirty days, of all boiler or pressure vessels on which insurance is written, canceled, or not renewed or immediately on suspension because of unsafe conditions.

102.11 Special Inspectors to Notify Chief Inspector of Unsafe Boilers and Pressure Vessels

If A Special Inspector, upon first inspection of a new risk, finds that a boiler or pressure vessel, or any appurtenance thereof, is in such condition that his company would refuse insurance, the company shall immediately notify the Chief Inspector and submit a report on the defects.

If, upon inspection, a Special Inspector finds a boiler or pressure vessel to be unsafe for further operation, he shall promptly notify the owner or user, stating what repairs or other corrective measures are required to bring the object into compliance with these rules and regulations. Unless the owner or user agrees to make such repairs or adopt such other corrective measures promptly, the Special

Inspector shall immediately notify the Chief Inspector. Until such corrections have been made, no further operation of the boiler or pressure vessel involved shall be permitted. If an inspection certificate for the object is required and is in force, it shall be suspended by the Chief Inspector. When reinspection establishes that the necessary repairs have been made or corrective actions have been taken and that the boiler or pressure vessel is safe to operate, the Chief Inspector shall be notified. At that time a certificate of inspection, where applicable, will be issued.

102.12 **Owner-User Inspection Agency**

Any person, firm, partnership or corporation operating pressure vessels in this State may seek approval and registration as an Owner-User Inspection Agency by filing an application with the Chief Inspector on forms prescribed and available from the Department, and request approval by the Board. Each such application shall be accompanied by a fee of twenty-five dollars and a bond in the penal sum of five thousand dollars which shall continue to be valid during the time the approval and registration of the company as an Owner-User Inspection Agency is in effect.

Such application and registration shall show the name of such agency and its principal address in this State, and the name and address of the person or persons having supervision over inspections made by such agency. Changes in such supervisory personnel shall be reported to the Chief Inspector within thirty days after any such change.

Each Owner-User Inspection Agency as required by the provisions of the Boiler Safety Act and these Rules and Regulations shall:

1. Conduct inspections of boilers and/or pressure vessels, not exempt by the Act, utilizing only qualified inspection personnel, as provided in the Act.

2. Retain on file at the location where the equipment is inspected a true record or copy of the report of the latest of each inspection signed by the inspector who made the inspection.

3. Execute and deliver to the owner or user (management) a true report of each inspection together with appropriate requirements or recommendations that result from such inspections.

4. Promptly notify the Chief Inspector of any boiler and/or pressure vessel which does not meet the requirements of safe operating conditions.

5. Maintain inspection records which will include a list of each boiler and/or pressure vessel covered by the Act, showing a serial number and such abbreviated description as may be necessary for identification; the date of last inspection of each unit and approximate date for the next inspection, arrived at by applying the appropriate rules to all data available at the time

such inspection record is compiled (Re: frequency and type of inspection in the Act). Such inspection record shall be readily available for examination by the Chief Inspector or his authorized representative during business hours.

6. File a statement annually, on a date mutually agreed upon, with the Chief Inspector. Such statement shall be signed by the individual having supervision over the inspections made during the period covered. The statement shall include the number of vessels, covered by the Act, inspected during the year and certifying that each such inspection was conducted pursuant to the inspection requirements provided for by the Act. Such annual statement shall be accompanied by a filing fee in accordance with the fee schedule. Checks shall be made out to the "Mississippi State Department of Health, Boiler and Pressure Vessel Safety Fund."

102.13 Defective Conditions Disclosed at Time of External Inspection

If, upon an external inspection, there is evidence of a leak or crack, sufficient covering of the boiler or pressure vessel shall be removed to permit the inspector to satisfactorily determine the safety of the boiler or pressure vessel. If the covering cannot be removed at that time, he may order the operation of the boiler or pressure vessel stopped until such time as the covering can be removed and proper examination made.

102.14 Owner or User to Notify Chief Inspector of Accident

When an accident occurs which serves to render a boiler or pressure vessel inoperative, the owner or user shall immediately notify the Chief Inspector, and submit a detailed report of the accident. In case of a serious accident, such as in a personal injury or an explosion, notice shall be given immediately by telephone, telegraph or messenger, and neither the boiler or pressure vessel, nor any parts thereof, shall be removed or disturbed before an inspection has been made by the inspector, except for the purpose of conserving human life and limiting consequential damage.

102.15 Inspection Certificate and Inspection Fees

If a boiler or pressure vessel after inspection is found to be suitable and to conform to these Rules and Regulations, the owner or user shall pay directly to the State Department of Health a fee of ten dollars for an annual certificate and twenty dollars for a biennial certificate for each boiler and pressure vessel required to be inspected under the Act before an inspection certificate shall be issued. Checks and money orders for payment of inspection certificate fees should be made payable to the "Mississippi State Department of Health, Boiler and Pressure Vessel Safety Fund."

When inspected by the State, an additional fee for the inspection service as required by the Act shall be paid before the inspection certificate is issued. The inspection fees to be charged by the Chief Inspector or Deputy Inspector for the inspection of a boiler or pressure vessel shall be in accordance with the Act and Rules and Regulations.

Fee Justification, Section 45-23-53 of the Act

Fees Schedules of fees. The owner or user of a boiler or pressure vessel required by this chapter to be inspected shall pay directly to the State Department of Health, upon completion of inspection, fees in accordance with the following schedule:

1. Power boilers and high pressure, high temperature water boilers:

   Certificate of inspections

   Boilers of 50 square feet of heating surface or less $12.00

   Boilers over 50 square feet of heating surface and less than 4,000 square feet of heating surface $ 25.00

   Boilers of 4,000 square feet of heating surface or more and less than 10,000 square feet of heating surface $ 35.00

   Boilers of 10,000 square feet of heating surface or more $ 40.00

   External inspections

   Boilers of 50 square feet of heating surface or less $ 10.00

   Boilers over 50 square feet of heating surface $ 12.00

   Not more than the equivalent of the certificate and external inspection fees shall be charged or collected for any and all inspections as above of any boiler in any one year.

2. Heating boilers.

   Certificate inspections

   Heating boilers without a manhole $ 12.00

   Heating boilers with a manhole $ 25.00

   Hot water supply boiler $ 10.00

   Storage water heaters fired – ALL public-private over 200,000 BTU input $10.00

Not more than one fee shall be charged or collected for any and all inspections as above of any heating boiler in any required inspection period.

3. Pressure vessels:

Certificate inspections

Fees to be based on the maximum length of the vessel times the maximum width or diameter thereof. Each pressure vessel subject to inspection having a cross sectional area of 50 square feet or less $ 10.00

For each additional 100 square feet of area in excess of 50 square feet $10.00

Not more than fifty dollars shall be paid for each inspection on any one vessel.

A group of pressure vessels, such as the rolls of paper machine or dryer operating as a single machine or unit shall be considered as one pressure vessel.

Not more than one fee shall be charged or collected for any and all inspections as above of any pressure vessel in any required inspection period.

4. Hydrostatic tests:

When it is necessary to make a special trip to witness the application of a hydrostatic test, an additional fee based on the scale of fees applicable to a certificate inspection of the boiler or pressure vessel will be charged.

5. All other inspections, including shop inspections, and inspections of secondhand or used boilers or pressure vessels made by the Chief Inspector shall be charged for at the rate of not less than sixty (60) dollars for one-half day of four (4) hours, and one hundred (100) dollars for one full day of eight hours, plus all expenses, including travel and lodging.

Miscellaneous fees:

Inspectors' license fees

Examination for a Mississippi Inspector $25.00

Annual license --

Renewal $25.00

Replacement of lost or

destroyed license $10.00

Rules and Regulations, Blr. & PV Dept 1.00

Owner-User Filing Fees

For statements covering not more than twenty-five (25) vessels -- Three dollars ($3.00 per vessel)

For statements covering more than twenty-five (25) but less than one hundred one vessels -- Seventy-five Dollars ($75.00)

For statements covering more than one hundred (100) but less than five hundred one (501) vessels -- One Hundred Fifty Dollars ($150.00)

For statements covering more than five hundred (500) vessels -- Three Hundred Dollars ($300.00).

Permit for State Special

Boiler or pressure vessel $500 Minimum

There is hereby created a special fund in the state treasury to be known as the "Boiler and Pressure Vessel Safety Fund" into which shall be deposited all funds appropriated by the Legislature for the implementation of this chapter, and funds from fees, fines, and any other source that shall be used for implementation and administration of this chapter, by the Mississippi State Department of Health.

Checks and money orders for fees, fines, and any other source shall be made payable to the "Mississippi State Department of Health, Boiler and Pressure Vessel Safety Fund."

If the owner or user of a boiler or pressure vessel required to be inspected refuses to allow an inspection to be made or refuses to pay the fee stipulated above, the inspection certificate shall be suspended by the Chief Inspector until the owner or user complies with the requirements.

The owner or user who causes a boiler or pressure vessel to be operated without a valid certificate shall be subject to the penalty as provided for in the Act.

Inspection certificates are not required for boiler and/or pressure vessels inspected by an authorized Owner-User Inspection Agency. However, such agency shall keep on file in its office in the establishment where the equipment is located a true record or copy of the report of the latest of each such inspection signed by the inspector who made such inspection.

Should any authorized Owner-User Inspection Agency fail or neglect to carry out the provision of the Act, their mandate as an Owner-User agency shall be terminated by the Board, until such time as they comply with the terms of their mandate that are spelled out in the Act.

102.16 **Validity of Inspection Certificate**

An inspection certificate, issued in accordance with the Act, shall be valid until expiration unless some defect or condition affecting the safety of the boiler or pressure vessel is disclosed, provided, however, that a certificate issued for a boiler or pressure vessel inspected by a Special Inspector shall be valid only if the boiler or pressure vessel for which it was issued continues to be insured by a duly authorized insurance company.

102.17 **Restamping Boilers and Pressure Vessels**

When the stamping on a boiler or pressure vessel becomes indistinct, the inspector shall instruct the owner or user to have it restamped. Request for permission to restamp the boiler or pressure vessel shall be made to the Chief Inspector, and the proof of the original stamping shall accompany the request. The chief Inspector may grant such authorization. Restamping authorized by the Chief Inspector shall be done only in the presence of an inspector, and shall be identical with the original stamping, except that it will not be required to restamp the ASME Code Symbol. Notice of completion of such restamping shall be filed with the Chief Inspector by the inspector who witnessed the stamping on the boiler or pressure vessel, together with a facsimile of the stamping applied.

102.18 **Penalty for Operation of Unsafe Boilers or Pressure Vessels**

If, upon inspection, a boiler or pressure vessel is found to be in such condition that it is unsafe to operate, the inspector shall notify the Chief Inspector as required by the Act and the inspection certificate shall be suspended by the Chief Inspector. Any person, firm, partnership or corporation causing such objects to continue to be operated shall be subject to the penalty provided in the Act.

102.19 **Condemned Boiler and Pressure Vessels**

Any boiler or pressure vessel having been inspected and declared unsafe by the Chief Inspector or Deputy Inspector shall be stamped by the inspector with an arrowhead stamp having an overall length of 1/2 inch and width of 3/8 inch on either side of the letters "XXX" and the letters of the State, as shown by the following facsimile, which will designate a condemned boiler or pressure vessel:

► XXX MS XXX ◄

Any person, firm, partnership, or corporation using or offering for sale a condemned boiler or pressure vessel for operation within this State shall be subject to the penalties provided by the Act.

102.20 **Reinstallation of Standard Boilers or Pressure Vessels**

If a standard boiler or pressure vessel located in Mississippi is to be moved to another state for temporary use or repair, application shall be made by the owner or user to the Chief Inspector for permission to reinstall the boiler or pressure vessel in Mississippi.

102.21 **Reinstallation of Nonstandard Boilers or Pressure Vessels**

A nonstandard boiler or pressure vessel which is moved outside the boundaries of Mississippi cannot be reinstalled in Mississippi without securing permission from the Board. Shipment of nonstandard boiler and pressure vessels into this state for use is prohibited without permission from the Board.

102.22 **Installation of Used or Secondhand Boilers or Pressure Vessels**

Before a used or secondhand boiler or pressure vessel can be shipped for installation into Mississippi, an inspection must be made by an inspector qualified by an examination equal to that required by Mississippi, or by an inspector holding a National Board Commission, and data submitted by him shall be filled by the owner or user of the boiler or pressure vessel with the Chief Inspector for his approval. Such boilers and pressure vessels when installed in Mississippi shall be equipped with fittings and appliances that comply with the Rules and Regulations for new installations.

102.23 **Reinstalled Boiler or Pressure Vessel**

When a stationary boiler or pressure vessel is moved and reinstalled, the attached fittings and appliances shall comply with these Rules and Regulations for new installations.

102.24 **Factor of Safety for Existing Installations**

Any inspector may increase the factor of safety on any existing installation if the condition of the boiler or pressure vessel warrants it.

If the owner or user does not concur with the inspector's decision, the owner or user may appeal to the Board, which may request a joint inspection by the Chief Inspector and the Deputy Inspector or Special Inspector. Each inspector shall render his report to the Board and the Board shall render the final decision, based upon the data contained in the inspector's reports.

102.25 **Repairs by Welding**

When major repairs or alterations are to be made by welding, they shall follow generally accepted nationwide engineering standards.

102.26 **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, Chapter VI.

102.27 **Removal of Safety Appliances**

No person shall attempt to remove or do any work on any safety appliance prescribed by these Rules and Regulations while a boiler or pressure vessel is in operation, except as provided in applicable sections of the ASME Code. Should any of these appliances be removed for repair during an outage of a boiler or pressure vessel, they must be reinstalled and in proper working order before the object is again placed in service.

No person shall load the safety valve or valves in any manner to maintain a working pressure in excess of that stated on the inspection certificate.

102.28 **Requirements for New Installations**

No boiler or pressure vessel shall hereafter be installed in this State unless it has been constructed, inspected and stamped in conformity with the ASME Code, except:

1. Those exempt by the Act.
2. Those stamped Mississippi Special or Mississippi Standard.
3. Those existing boilers and pressure vessels which are to be reinstalled.

All new boiler and pressure vessel installations, including reinstalled and second-hand boilers and pressure vessels, shall be installed in accordance with the requirement of the ASME Code and these Rules and Regulations.

A boiler or pressure vessel constructed equivalent to ASME standards, or having the standard stamping of another state that has adopted a standard of construction equivalent to the standard of this state, may be accepted by the Chief Inspector provided, however, that the person desiring to install the boiler or pressure vessel shall make application for the installation prior to construction and shall file with the application the manufacturer's data report covering the construction of the boiler or pressure vessel in question.

The stamping shall not be concealed by lagging or paint 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 at any time this may be desired.

102.29 **Application of State Numbers**

1. Upon completion of the installation of a new 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 the inspector with a Mississippi serial number, consisting of letters and figures to be not less than 5/16 inch in height and ranged as follows:

2. All boiler and pressure vessels in Mississippi shall be stamped or shall have securely attached a metal tag of not less than one inch in height, which shall have the serial number of the state stamped thereon.

3. All cast-iron, low pressure heating boilers shall have securely attached to the front of the boiler a metal tag of not less than one inch in height, which shall have the serial number of the state stamped thereon.

4. All pressure vessels constructed of cast iron, or of material of such thickness that it should not be stamped, shall have securely attached a metal tag not less than one inch in height, which shall have the serial number of the state stamped thereon.

   Power Boilers

   MS 0000

   Low Pressure Heating Boilers

   MS 00000 H

   Pressure Vessels

   MS 000000 V

103 **Section IV**

Existing Installations

103.01 **Subsection I -- Power and High Pressure**

High Temperature Water Boilers

1. Age Limit of Existing Boilers

a. The age limit of any boiler of nonstandard construction, installed prior to August 6, 1975, shall be 30 years except that, after a thorough internal and external inspection, and a hydrostatic pressure test of 1 1/2 times these allowable working pressure and held for a period of at least 30 minutes, during which time no distress or leakage develops, any boiler having other than a riveted, longitudinal, lap joint may be continued in operation without reduction in working pressure. The age limit of any boiler having riveted, longitudinal, lap joints and operating at a pressure in excess of 50 psi shall be 20 years. This type of boiler, when removed from an existing setting, shall not be installed for a pressure in excess of 15 psig. A reasonable time for replacement, not to exceed one year, may be given at the discretion of the Chief Inspector.

b. The shell or drum of a boiler in which a typical "lap seam crack" is discovered along a longitudinal riveted joint for either butt or lap joints shall be permanently discontinued for use under steam pressure. By "lap seam crack" is meant the typical crack frequently found in lap joints extending parallel to the longitudinal joint and located either between or adjacent to rivet holes.

c. The age limit of boilers of standard construction, installed prior to August 6, 1975, shall be determined from the results of a thorough internal and external inspection by an authorized inspector and the application of an appropriate pressure test. Hydrostatic test pressure shall be at 1 1/2 times the allowable working pressure and maintained for 30 minutes. The boiler may be continued in service at the same working pressure provided there is no evidence of leakage or distress under these test conditions.

d. The phenomenon of brittle fracture may result from stresses imposed during hydrostatic testing below the Nil-Ductility Transition Temperature of the materials. Where such data is unavailable on site, it is suggested that the manufacturer be contacted for the recommended minimum temperature to be used during hydrostatic testing.

2. **Maximum Allowable Working Pressure for Standard Boilers**

The maximum allowable working pressure for standard boilers shall be determined in accordance with the applicable provisions of the edition of the ASME Code under which they were constructed and stamped.

3. **Maximum Allowable Working Pressure for Nonstandard Boilers**

a. The maximum allowable working pressure on the shell of a nonstandard boiler shall be determined by the strength of the weakest

section of the structure, computed from the thickness of the plate, the tensile strength of the plate, the efficiency of the longitudinal joint or tube ligaments, the inside diameter of the weakest course and the factor of safety allowed by these rules and regulations.

TStE = maximum allowable working
RSF pressure, psig
where:
TS = ultimate tensile strength of
shell plates, psi
t = minimum thickness of shell
plate, in weakest course, inches
E = efficiency of longitudinal joint
For tube ligaments and riveted construction, E shall be determined by the rules given in Section I, Part PR, of the ASME Code for Power Boilers.
For seamless construction, E shall be considered 100 percent.
R = inside radius of the weakest
course of the shell, in inches,
FS = factor of safety permitted

b. Tensile strength

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

c. Crushing strength of mild steel

The resistance to crushing of mild steel shall be taken at 95,000 psi cross-sectional area.

d. Strength of rivets in shear

When computing the ultimate strength of rivets in shear, the following values, in pounds per square inch, of the cross-sectional area of the rivet shank shall be used

	PSI
Iron rivets in single shear	38,000
Iron rivets in double shear	76,000
Steel rivets in single shear	44,000
Steel rivets in double shear	88,000

When the diameter of the rivet holes in the longitudinal joints of a boiler is not known, the diameter and cross-sectional area of rivets, after driving, may be selected from Table 1, or as ascertained by cutting out one rivet in the body of the joint.

Table 1: Sizes of rivets based on plate thickness

Thickness of plate, inches	1/4	9/32	5/16	11/32	3/8	13/32
Diameter of rivet after driving, inches	11/16	11/16	3/4	3/4	13/16	13/16

Thickness of plate, inches	7/16	15/32	1/2	9/16	5/8
Diameter or rivet after driving, inches	15/16	15/16	15/16	1-1/16	1-1/16

e. Factors of safety

The following factors of safety shall be increased by the inspector if the condition and safety of the boiler demand it:
The lowest factor of safety permissible on existing installations shall be 4.5, except for horizontal-return-tubular boilers having continuous longitudinal lap seams more than 12 feet in length, when the factor of safety shall be eight. When this latter type of boiler is removed from its existing setting, it shall not be reinstalled for pressure in excess of 15 psig.
Reinstalled or secondhand boilers shall have a minimum factor of safety of six when the longitudinal seams are of lap-riveted construction, and a minimum factor of safety of five when the longitudinal seams are of butt- and double-strap construction.

4. **Cast-Iron Headers and Mud Drums**

The maximum allowable working pressure on a water-tube boiler, the tubes of which are secured to cast-iron or malleable-iron headers, or which have cast-iron mud drums, shall not exceed 160 psig.

5. **Pressure on Cast-Iron Boilers**

The maximum allowable working pressure for any cast-iron boiler, except hot water boilers, shall be 15 psig.

6. **Safety Valves**

a. The use of weighted-lever safety valves, or safety valves having either the seat or disk of cast iron, shall be prohibited after these regulations become effective. Valves of this type or construction shall be replaced by direct, spring-loaded, pop-type valves that conform to the requirements of the ASME Code, Section I.

b. Each boiler shall have at least one safety valve, and if it has more than 500 square feet of water-heating surface, or an electric power input of more than 1100 kw, it shall have two or more safety valves

c. The valve or valves shall be connected to the boiler, independent of any other steam connection, and attached as close as possible to the boiler, without unnecessary intervening pipe or fittings. Where alteration is required to conform to this requirement, owners or users shall be allowed reasonable time in which to complete the work.

d. No valves of any description shall be placed between the safety valve and the boiler nor on the escape pipe, if used, between the safety valve and the atmosphere, except as provided by applicable sections of the ASME Code. When an escape pipe is used, it shall be at least full size of the safety-valve discharge and fitted with an open drain to prevent water lodging in the upper part of the safety valve or escape pipe. When an elbow is placed on a safety valve escape pipe, it shall be located close to the safety-valve outlet, or the escape pipe shall be anchored and supported securely. All safety-valve discharges shall be so located or piped as to be carried clear from walkways or platforms.

e. The safety-valve capacity of each boiler shall be such that the safety valve or valves will discharge all the steam that can be generated by the boiler without allowing the pressure to rise more than six percent above the highest pressure to which any valve is set, and in no case to more than six percent above the maximum allowable working pressure.

f. One or more safety valves on every boiler shall be set at or below the maximum allowable working pressure. The remaining valves may be set within a range of three percent above the maximum allowable working pressure, but the range of setting of all safety valves on a boiler shall not exceed 10 percent of the highest pressure to which any valve is set.

g. When two or more boilers, operating at different pressures and safety-valve settings, are interconnected, the lower pressure boilers or interconnected piping shall be equipped with safety valves of sufficient capacity to prevent over-pressure, considering the maximum generating capacity of all boilers.

h. In those cases where the boiler is supplied with feedwater directly from water mains without the use of feeding apparatus (not to include return traps), no safety valve shall be set at a pressure higher than 94 percent of the lowest pressure obtained in the supply main feeding the boiler.

i. The relieving capacity of the safety valves on any boiler shall be checked by one of the three following methods and, if found to be insufficient, additional valves shall be provided:

i. By making the accumulation test, which consists of shutting off all other steam discharge outlets from the boiler and forcing the fires to the maximum. The safety valve capacity shall be sufficient to prevent a rise of pressure in excess of six percent of the maximum allowable working pressure. This method should not be used on a boiler with a superheater or reheater.

ii. By measuring the maximum amount of fuel that can be burned and computing the corresponding evaporative capacity (steam-generating capacity) upon the basis of the heating value of this fuel. These computations shall be made as outlined in the Appendix of the ASME Code, Section I.

iii. By measuring the maximum amount of feedwater than can be evaporated. When either of the methods outlined in (2) or (3) is employed, the sum of the safety valve capacities shall be equal to or greater than the maximum evaporative capacity (maximum steam-generating capacity) of the boiler.

j. The relieving capacity of safety valves for forced-flow steam generators shall be in accordance with the requirements of Section I of the ASME Code.

7. **Boiler Feeding**

Each boiler shall have a feed supply which will permit it to be fed at any time while under pressure.
A boiler having more than 500 square feet of water-heating surface shall have at least two means of feeding, one of which shall be an approved feed pump, injector or inspirator. A source of feed directly from water mains at a pressure six percent greater than the set pressure of the safety valve with the highest setting may be considered one of the means. As provided for in the ASME Power Boiler Code, Section I, boilers fired by gaseous, liquid, or solid fuel in suspension may be equipped with a single means of feeding water provided means are furnished for the immediate shutoff of heat input if the water feed is interrupted.
The feedwater shall be introduced into the boiler in such manner that it will not be discharged close to riveted joints of shell or furnace sheets, or directly against surfaces exposed to products of combustion, or to direct radiation from the fire.
The feed piping to the boiler shall be provided with a check valve near the boiler and a valve or cock between the check valve and the boiler. When

two or more boilers are fed from a common source, there shall also be a valve on the branch to each boiler between the check valve and source of supply. Whenever a globe valve is used on feed piping, the inlet shall be under the disk of the valve.

In all cases where returns are fed back to the boiler by gravity, there shall be a check valve and stop valve in each return line, the stop valve to be placed between the boiler and the check valve, and both shall be located as close to the boiler as is practicable. It is recommended that no stop valves be placed in the supply and return pipe connections of a single boiler installation.

Where deaerating heaters are not employed, it is recommended that the temperature of the feedwater be not less than 120ø F to avoid the possibility of setting up localized stress. Where deaerating heaters are employed, it is recommended the minimum feedwater temperature be not less than 215ø F so that dissolved gases may be thoroughly released.

8. **Water Level Indicators**

No outlet connections (except for damper regulator, feedwater regulator, low-water fuel cutout, drain, steam gauges, or such apparatus that does not permit the escape of an appreciable amount of steam or water therefrom) shall be placed on the piping that connects the water column to the boiler. The water column shall be provided with a valved drain of at least 3/4 inch pipe size, the drain to be piped to a safe location.

Each boiler shall have three or more gauge cocks located within the visible length of the water glass, except when the boiler has two water glasses located on the same horizontal lines. Boilers not over 36 inches in diameter, in which the heating surface does not exceed 100 square feet, need have but two gauge cocks.

For all installations where the water gauge glass or glasses are more than 30 feet above the boiler operating floor, it is recommended that remote water-level indicating or recording gauges be installed at eye height above the operating floor.

9. **Steam Gauges**

Each steam boiler shall have a steam gauge, with dial range not less than 1 1/2 times the maximum allowable working pressure, connected to the steam space or to the steam connection to the water column. The steam gauge shall be connected to a siphon or equivalent device of sufficient capacity to keep the gauge tube filled with water and so arranged that the gauge cannot be shut off from the boiler except by a cock placed near the gauge and provided with a tee or lever handle arranged to be parallel to the pipe in which it is located when the cock is open.

When a steam gauge connection longer than eight feet becomes necessary, a shutoff valve may be used near the boiler provided the valve is of the

outside-screw-and-yoke type and is locked open. The line shall be of ample size with provision for free blowing.
Each boiler shall be provided with a connection and suitable valving which connects to the steam space of each boiler for the exclusive purposes of attaching a test gauge when the boiler is in service so that the accuracy of the boiler steam gauge may be ascertained.

10. **Stop Valves**

Except for a single-boiler, prime-mover installation, each steam outlet from a boiler (except safety-valve and water column connections) shall be fitted with a stop valve located as close as practicable to the boiler.

In a single-boiler, prime-mover installation, the steam stop valve may be omitted provided the prime-mover throttle valve is equipped with an indicator to show whether the valve is open or closed and is designed to withstand the required hydrostatic pressure test of the boiler.

When a stop valve is so located that water can accumulate, ample drains shall be provided. The drainage shall be piped to a safe location and shall not be discharged on the top of the boiler or its setting.

When boilers provided with manholes are connected to a common steam main, the steam connection from each boiler shall be fitted with two stop valves having an ample free-blow drain between them. The discharge of the drain shall be visible to the operator while manipulating the valves and shall be piped clear of the boiler setting. The stop valves shall consist preferably of one automatic non-return valve (set next to the boiler) and a second valve of the outside-screw-and-yoke type.

11. **Blowoff Connection**

The construction of the setting around each blowoff pipe shall permit free expansion and contraction. Careful attention shall be given to the problem of sealing these setting openings without restricting the movement of the blowoff piping.

All blowoff piping, when exposed to furnace heat, shall be protected by firebrick or other heat-resisting material, so constructed that the piping may be inspected readily.

Each boiler shall have a blowoff pipe, fitted with a valve or cock, in direct connection with the lowest water space. Cocks shall be of the gland or guard type and suitable for the pressure allowed. The use of globe valves shall not be permitted. When the maximum allowable working pressure exceeds 100 psig, each blowoff pipe shall be provided with two valves or a valve and cock.

Blowoff piping shall comply with the requirements of the ASME Code, Section I, from the boiler to the valve or valves, and shall be run full size without use of reducers or bushings. The piping shall not be galvanized.

All fittings between the boiler and blowoff valve shall be of steel. In case of renewal of blowoff pipe or fittings, they shall be installed in accordance with the rules and regulations for new installations of the ASME Code.

12. **Repairs and Renewals of Boiler Fittings and Appliances**

Whenever repairs are made to fittings or appliances or it becomes necessary to replace them, such repairs or replacements shall comply with the requirements of the ASME Code.

13. **Recommendations for Operation**

It is recommended that Section VII of the ASME Code covering Recommended Rules for the Care of Power Boilers be used as a guide for proper and safe operating practices.

14. **Conditions Not Covered by These Requirements**

All cases not specifically covered by these requirements shall be treated as new installations or may be referred to the Chief Inspector for instructions concerning the requirements.

103.02 **Subsection II - Heating Boilers**

1. **Standard Boilers**

The maximum allowable working pressure of standard boilers shall in no case exceed the pressure indicated by the manufacturer's identification stamped or cast on the boiler or on a plate secured to it.

2. **Nonstandard Riveted Boilers**

The maximum allowable working pressure on the shell of a nonstandard riveted heating boiler shall be determined in accordance with Item 3 covering Existing Installations, Power Boilers, except that in no case shall the maximum allowable working pressure of a steam heating boiler exceed 15 psig, or a hot-water boiler exceed 160 psig or 250ø F temperature.

3. **Nonstandard Welded Boilers**

The maximum allowable working pressure of a nonstandard steel or wrought iron heating boiler of welded construction shall not exceed 15 psig for steam. For other than steam service, the maximum allowable

working pressure shall be calculated in accordance with Section IV of the ASME Code.

4. **Nonstandard Cast-Iron Boilers**

The maximum allowable working pressure of a nonstandard boiler composed principally of cast-iron shall not exceed 15 psig for steam service or 30 psig for hot-water service.
The maximum allowable working pressure of a nonstandard boiler having cast-iron shell or heads and steel or wrought iron tubes shall not exceed 15 psig for steam service or 30 psig for hot-water service.

5. **Safety Valves**

a. Each steam boiler shall have one or more officially rated safety valves of the spring pop type adjusted to discharge at a pressure not to exceed 15 psig. Seals may be attached in a manner to prevent the valve from being taken apart without breaking the seal. The safety valves shall be arranged so that they cannot be reset to relieve at a higher pressure than the maximum allowable working pressure of the boiler. A body drain connection below seat level shall be provided by the manufacturer, and this drain shall not be plugged during or after field installation. For valves exceeding two inch pipe size, the drain hole or holes shall be tapped not less than 3/8 inch pipe size. For valves less than two inches, the drain hole shall not be less than 1/4 inch in diameter.

b. No safety valve for a steam boiler shall be smaller than 1/2 inch unless the boiler and radiating surfaces consist of a self-contained unit. No safety valve shall be larger than 4 1/2 inches. The inlet opening shall have an inside diameter equal to, or greater than, the seat diameter.

c. The minimum relieving capacity of the valve or valves shall be governed by the capacity marking on the boiler.

d. The minimum valve capacity in pounds per hour shall be the greater of that determined by dividing the maximum BTU output at the boiler nozzle obtained by the firing of any fuel for which the unit is installed by 1,000, or shall be determined on the basis of the pounds of steam generated per hour per square foot of boiler heating surface as given in Table 2. In many cases, a greater relieving capacity of valves will have to be provided than the minimum specified by these rules. In every case, the requirements of (e) below shall be met.

Table 2
Minimum pounds of steam per hour

per square foot of heating surface

	Firetube Boilers	Watertube Boilers
Boiler heating surface:		
Hand fired	5	6
Stoker fired	7	8
Oil, gas, or pulverized fuel fired	8	10
Waterwall heating surface:		
Hand fired	8	8
Stoker fired	10	12
Oil, gas, or pulverized fuel fired	14	16

Notes:

i. When a boiler is fired only by a gas giving a heat value not in excess of 200 BTU per cubic foot, the minimum safety valve or safety relief valve relieving capacity may be based on the value given for handfired boilers above.

ii. The minimum safety valve or safety relief valve relieving capacity for electric boilers shall be 3 1/2 pounds per hour per kilowatt input.

iii. For heating surface determination, see ASME Code, Section IV, para HG-403.

e. The safety valve capacity for each steam boiler shall be such that with the fuel burning equipment installed, and operated at maximum capacity, the pressure cannot rise more than 5 psi above the maximum allowable working pressure.

f. When operating conditions are changed, or additional boiler surface is installed, the valve capacity shall be increased, if necessary, to meet the new conditions and be in accordance with (d) and (e). The additional valves required, on account of changed conditions, may be installed on the outlet piping provided there is no intervening valve.

g. If there is any doubt as to the capacity of the safety valve, an accumulation test shall be run (see ASME Code, Section VI, Care of Heating Boilers).

h. No valve of any description shall be placed between the safety valve and the boiler, nor on the discharge pipe between the safety valve and the atmosphere. The discharge pipe shall be at least full size and be fitted with an open drain to prevent water lodging in the upper part of the safety valve or in the discharge pipe. When an elbow is placed on the safety valve discharge pipe, it shall be located close to the safety valve outlet or the discharge pipe shall be securely anchored and supported. All safety valve discharges shall be so located or piped as not to endanger persons working in the area.

6. **Safety Relief Valve Requirements for Hot Water Boilers**

a. Each hot water heating boiler shall have at least one officially rated (ASME approved and National Board rated) safety relief valve set to relieve at or below the maximum allowable working pressure of the boiler. Each hot water supply boiler shall have at least one officially rated safety relief valve of the automatic reseating type set to relieve at or below maximum allowable working pressure of the boiler. Safety relief valves officially rated as to capacity shall have pop action when tested by steam. When more than one safety relief valve is used on either hot water heating or hot water supply boilers, the additional valve or valves shall be officially rated and may be set within a range not to exceed 6 psi above the maximum allowable working pressure of the boiler up to and including 60 psig and 10 percent for those having maximum allowable working pressure exceeding 60 psig. Safety relief valves shall be spring loaded. Safety relief valves shall be so arranged that they cannot be reset at a higher pressure than the maximum permitted by this paragraph.

b. No materials liable to fail due to deterioration or vulcanization when subject to saturated steam temperature corresponding to capacity test pressure shall be used for any part.

c. No safety relief valve shall be smaller than 3/4 inch nor larger than 4 1/2 inches standard pipe size, except that boilers having a heat input not greater than 15,000 BTU per hour may be equipped with a rated safety relief valve of 1/2 inch standard pipe size. The inlet opening shall have an inside diameter approximately equal to or greater than, the seat diameter. In no case shall the minimum opening through any part of the valve be less than 1/4 inch diameter or its equivalent area.

d. The required steam relieving capacity, in pounds per hour, of the pressure relieving device or devices on a boiler shall be the greater of that determined by dividing the maximum output in BTU at the boiler outlet obtained by the firing of any fuel for which the unit is installed by 1,000, or on the basis of pounds of steam generated per hour per square foot of boiler heating surface as given in Table 2. In many

cases, a greater relieving capacity of valves will have to be provided than the minimum specified by these rules. In every case, the requirements of (f) shall be met.

e. When operating conditions are changed, or additional boiler heating surface is installed, the valve capacity shall be increased, if necessary, to meet the new conditions and shall be in accordance with (f). The additional valves required, on account of changed conditions, may be installed on the outlet piping provided there is no intervening valve.

f. Safety relief valve capacity for each boiler shall be such that, with the fuel burning equipment installed and operated at maximum capacity, the pressure cannot rise more than 6 psi above the maximum allowable working pressure for pressure up to and including 60 psig and 10 percent of maximum allowable working pressures over 60 psig.

g. If there is any doubt as to the capacity of the safety relief valve, an accumulation test shall be run (see ASME Code, Section VI, Care of Heating Boilers).

h. No valve of any description shall be placed between the safety relief valve and the boiler, nor on the discharge pipe between the safety relief valve and the atmosphere. The discharge pipe shall be at least full size and fitted with an open drain to prevent water lodging in the upper part of the safety relief valve or in the discharge pipe. When an elbow is placed on the safety relief valve discharge pipe, it shall be located close to the safety relief valve outlet or the discharge pipe shall be securely anchored and supported. All safety relief valve discharges shall be so located or piped as not to endanger persons working in the area.

7. **Valve Replacement**

Safety valves and safety relief valves requiring repairs shall be replaced with a new valve or repaired by the manufacturer or his authorized representative.

8. **Pressure Relieving Devices**

Boilers and fired storage water heaters exempt in Article I, Items 7 (d) and 7 (e), shall be equipped with pressure relieving devices in accordance with the requirements of Section IV of the ASME Boiler and Pressure Vessel Code.

9. **Instruments, Fittings and Control Requirements**

Instruments, fittings and controls for each boiler installation shall comply with the requirements of the ASME Heating Boiler Code, Section IV, Part HG, Article 6.

10. **Low Water Fuel Cutoff**

a. Each automatically fired hot water heating boiler with heat input greater than 400,000 BTU/HR shall have an automatic low water fuel cutoff which has been designed for hot water service, so located as to automatically cut off the fuel supply when the surface of the water falls to the level established in Paragraph (b). also see Figure HG-702.2, ASME Heating Boiler Code, Section IV).

b. As there is no normal waterline to be maintained in a hot water heating boiler, any location of the low water fuel cutoff above the lowest safe permissible water level established by the boiler manufacturer is satisfactory.

c. A coil type boiler or a water tube boiler with heat input greater than 400,000 BTU/HR requiring forced circulation, to prevent overheating of the coils or tubes, should have a flow sensing device installed in the outlet piping, in lieu of the low water fuel cutoff required in Paragraph (a), to automatically cut off the fuel supply when the circulating flow is interrupted.

11. **Steam Gauges**

Each steam boiler shall have a steam gauge connected to its steam space, its water column, or its steam connection, by means of a siphon or equivalent device exterior to the boiler. The siphon shall be of sufficient capacity to keep the gauge tube filled with water and so arranged that the gauge cannot be shot off from the boiler except by a cock with a tee or lever handle placed in the pipe near the gauge. The handle of the cock shall be parallel to the pipe in which it is located when the cock is open. The range of the scale on the dial of a steam boiler steam gauge shall be not less than 30 psi. The gauge shall be provided with effective stops for the indicating pointer at the zero point and at the maximum pressure point. The travel of the pointer from zero to full scale shall be at least three inches.

12. **Pressure or Altitude Gauges**

Each hot-water boiler shall have a pressure or altitude gauge connected to it or to its flow connection in such a manner that it cannot be shut off from the boiler except by a cock with tee or lever handle placed on the pipe hear

the gauge. The handle of the cock shall be parallel to the pipe in which it is located when the cock is open.
The range of the scale on the dial of the pressure or altitude gauge shall be not less than 1 1/2 times nor more than three times the maximum allowable working pressure. The gauge shall be provided with effective stops for the indicating pointer at the zero point and at the maximum pressure point.
Piping or tubing for pressure or altitude gauge connections shall be of nonferrous metal when smaller than one inch pipe size.

13. **Thermometers**

Each hot-water boiler shall have a thermometer so located and connected that it shall be easily readable when observing the water pressure or altitude gauge. The thermometer shall be so located that it will at all times indicate the temperature in degrees Fahrenheit of the water in the boiler at or near the outlet.

14. **Water Gauge Glasses**

Each steam boiler shall have one or more water gauge glasses attached to the water column or boiler by means of valved fittings. The lower fitting shall be provided with a drain valve of the straightaway type with opening not less than 1/4 inch diameter to facilitate cleaning. Gauge glass replacement shall be possible while the boiler is under pressure. Transparent material, other than glass, may be used for the water gauge provided that the material has proved suitable for the pressure, temperature and corrosive conditions encountered in service.

15. **Stop Valves and Check Valves**

If a boiler can be closed off from the heating system by closing a steam stop valve, there shall be a check valve in the condensate return line between the boiler and the system.
If any part of a heating system can be closed off from the remainder of the system by closing a steam stop valve, there shall be a check valve in the condensate return pipe from that part of the system.

16. **Feedwater Connections**

Feedwater, make-up water, or water treatment shall be introduced into a boiler through the return piping system or through an independent feedwater connection which does not discharge against parts of the boiler exposed to direct radiant heat from the fire. Feedwater, make-up, or water treatment shall not be introduced through openings or connections provided for inspection or clean, safety valve, safety relief valve, surface

blowoff, water column, water gauge glass, pressure gauge or temperature gauge.
Feedwater piping shall be provided with a check valve near boiler and a stop valve or cock between the check valve and the boiler or return pipe system.

17. **Return Pump**

Each boiler equipped with a condensate return pump, where practicable, shall be provided with a water level control arranged to automatically maintain the water level in the boiler within the range of the gauge glass.

18. **Repairs and Renewals of Boiler Fittings and Appliances**

Whenever repairs are made to fittings or appliances, or it becomes necessary to replace them, such repairs or replacements shall comply with Section IV of the ASME Code for new construction.

103.03 **Subsection III - Pressure Vessels**

1. **Maximum Allowable Working Pressure for Standard Pressure Vessels**

The maximum allowable working pressure for standard pressure vessels shall be determined in accordance with the applicable provisions of the edition of the ASME or API-ASME Code under which they were constructed and stamped. The maximum allowable working pressure shall not be increased to a greater pressure than shown on the manufacturer's name plate stamping and data report.

2. **Maximum Allowable Working Pressure for Nonstandard Pressure Vessels**

a. For internal pressure

The maximum allowable working pressure on the shell of a nonstandard pressure vessel shall be determined by the strength of the weakest course computed from the thickness of the plate, the tensile strength of the plate, the efficiency of the longitudinal joint, the inside diameter of the weakest course and the factor of safety set by these rules.

$$RFS = \frac{TStE}{}$$

RFS = maximum allowable working pressure, psig

where:

TS = ultimate tensile strength of shell plate, psi. When the tensile strength of the steel plate is not known, it shall be taken as 55,000 psi for temperatures not exceeding 700% F.

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

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

For riveted joints - calculated riveted efficiency; For fusion-welded joints:

For riveted joints -- calculated riveted efficiency: For fusion-welded joints:

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

R5 inside radius of weakest course of shell, inches, provided the thickness does not exceed 10 percent of the radius. If the thickness is over 10 percent of the radius, the outer radius shall be used. FS5 factor of safety allowed by these rules.

b. For external pressure

The maximum allowable working pressure for cylindrical nonstandard pressure vessels subjected to external or collapsing pressure shall be determined by the rules in Paragraphs UG-28 and UG-29 of Section VIII, Division 1, of the ASME Code.

c. Factors of safety

The minimum factor of safety shall in no case be less than four for existing installations. The factor of safety may be increased when deemed necessary by the inspector to insure the operation of the vessel within safe limits. The condition of the vessel and the particular service of which it is subject. The condition of the vessel and the particular service of which it is subject will be the determining factors.

d. End closures

The maximum allowable working pressure permitted for formed heads under pressure shall be determined by using the appropriate formulas from Paragraphs UG-32, UG-33, or UG-35 of Section VIII, Division 1, ASME Code, and the tensile strength and factors of safety given in Paragraph 2(a), (c).

3. **Inspection of Inaccessible Parts**

Where in the opinion of the inspector, as the result of conditions disclosed at the time of inspection, it is advisable to remove the interior or exterior lining, covering, or brickwork to expose certain parts of the vessel not normally visible, the owner or user shall remove such materials to permit proper inspection and to establish construction details. Metal thickness shall be determined utilizing appropriate equipment including drilling if necessary.

4. **Pressure Relief Devices**

Pressure relief devices for each pressure vessel installation shall comply with the requirements of ASME Pressure Vessel Code, Section VIII.

5. **Safety Appliances**

Each pressure vessel shall be protected by such safety and relief valves and indicating and controlling devices as will insure its safe operation. These valves and devices shall be so constructed, located and installed that they cannot readily be rendered inoperative. The relieving capacity of the safety valves shall be such as to prevent a rise of pressure in the vessel of more than 10 percent above the maximum allowable working pressure, taking into account the effect of static head pressure. Safety valve discharges shall be carried to a safe place.

6. **Repairs and Renewals of Fittings and Appliances**

Whenever repairs are made to fittings or appliances, or it becomes necessary to replace them, such repairs or replacements shall comply with the ASME Code.

7. **Conditions Not Covered by These Requirements**

All cases not specifically covered by these requirements shall be treated as new installations or may be referred to the Chief Inspector for instructions concerning the requirements.

103.04 **Section V**

General Requirements

1. **Inspection of Boilers and Pressure Vessels**

All boilers and pressure vessels, not exempt by the Act, shall be inspected internally and externally, as provided by these rules and regulations, by an authorized inspector. The owner or user shall prepare each boiler or pressure vessel for such inspection and for appropriate pressure tests, whenever necessary. Following is a recommended general guide in preparing equipment for an internal inspection:

a. Boilers

i. Cool the boiler, furnace and setting sufficiently to prevent damage to any part.

ii. Drain and wash thoroughly internal parts to be inspected.

iii. Remove manhole and handhole plates, and wash out drain and inspection plugs.

iv. Remove a sufficient number of grates or internally fired boilers, as requested by the inspector.

v. Remove brickwork, refractory and insulation, as required by the inspector, to determine condition of boiler, headers, tubes, furnace, structural supports, and other parts.

vi. Prevent leakage of water, steam or vapors into boiler interiors that would endanger personnel.

vii. Before opening the manhole or handhole covers and entering any parts of the steam-generating unit connected to a common header with other boiler, the non-return and steam stop valves must be closed, tagged,and preferably padlocked, and drain valves or cocks between the two valves opened. The feed and check valves must be closed, tagged, and preferably padlocked, and drain valves or cocks located between the two valves opened. After draining the boiler, the blowoff valves shall be closed and padlocked. Blowoff lines, where practicable, shall be disconnected between pressure parts and valves. All drains and vent lines shall be opened.

viii. Prepare the pressure gauge for testing.

b. Pressure vessels

i. Remove manhole and handhole plates, cleaning and inspection plugs.

ii. Clean internal surfaces and adequately ventilate all interior surfaces.

iii. Isolate the unit to the extent that internal temperature, pressure and environment are not injurious to personnel and are under strict control during complete inspection.

iv. Remove linings or coverings, as required by the inspector, to determine true physical condition of the vessel and its components.

v. Make protective and regulating controls readily accessible for inspection.

vi. Prepare the pressure gauges for testing.

2. **Boilers and Pressure Vessels Improperly Prepared for Inspection.**

If a boiler or pressure vessel has not been properly prepared for an internal inspection, or if the owner or user fails to comply with the requirements for a hydrostatic test as set forth in these rules and regulations, the inspector may decline to make the inspection or test and the inspection certificate shall be withheld until the owner or user complies with the requirements.

3. **Removal of Covering to Permit Inspection**

If the boiler or pressure vessel is jacketed so that the seams of shells, drums, or domes cannot be seen, sufficient jacketing, setting wall,or other form of casing or housing shall be removed to permit reasonable inspection of the seams and so that the size of the rivets, pitch of the rivets, and other data necessary to determine the safety of the boiler or pressure vessel may be obtained, provided such information cannot be determined by other means.

4. **Lap-Seam Crack**

The shell of a pressure vessel, in which a lap-seam crack is discovered along a longitudinal riveted joint, shall be immediately discontinued from use. If the equipment is not more than 15 years of age, a complete new course of the original thickness may be installed at the discretion of the inspector and after approval by the Chief Inspector. Patching is prohibited. (By "lap-seam crack" is meant the typical crack frequently found in lap seams, extending parallel to the longitudinal joint and located either between or adjacent to rivet holes.)

5. **Hydrostatic Pressure Tests**

A hydrostatic pressure test, when applied to boiler or pressure vessels, shall not exceed 1 1/2 times the maximum allowable working pressure. the pressure shall be under proper control so that in no case shall the required test pressure be exceeded by more than two percent.

See Article III, Section I, Item 1(d), for temperature limitations on particular power boiler installations.

Note: When a hydrostatic test is to be applied to existing installations, the pressure shall be as follows:

a. For all cases involving the question of tightness, the pressure shall be equal to the working pressure.

b. For all cases involving the question of safety, the pressure shall be equal to 1 1/2 times the maximum allowable working pressure. During such test the safety valve or valves shall be removed or each valve disk shall be held to its seat by means of a testing clamp and not by screwing down the compression screw upon the spring.

6. **Automatic Low-Water Fuel Cutoff and/or Water-Feeding Device**

Each automatically fired and unattended steam or vapor system boiler shall be equipped with an automatic low-water fuel cutoff so locates as to automatically cut off the fuel supply when the surface of the water falls to the lowest safe water line. If a water-feeding device is installed, it shall be so constructed that the water inlet valves cannot feed water into the boiler through the float chamber and so located as to supply requisite feedwater. The lowest safe water line should be not lower than the lowest visible part of the water glass. Such fuel or feedwater control device may be attached direct to a boiler or to the tapped openings provided for attaching a water glass direct to a boiler provided that for low-pressure boilers such connections from the boiler are nonferrous tees of Y's not less than 1/2-inch pipe size between the boiler and the water glass, so that the water glass is attached direct and as close as possible to the boiler; the straightaway tapping of the Y or tee to take the water glass fittings, the side outlet of the Y or tee to take the fuel cutoff or water-feeding device.

The ends of all nipples shall be reamed to full-size diameter. Designs embodying a float and float bowl shall have a vertical straightaway valve drain pipe at the lowest point in the water-equalizing pipe connections by which the bowl and the equilizing pipe can be flushed and the device tested. A coil type boiler or a water tube boiler with heat input greater than 400,000 BUT/HR requiring forced circulation, to prevent overheating of the coils or tubes, shall have a flow sensing device installed in the outlet piping, in lieu of the low water fuel cutoff required

in this item, to automatically cut off fuel supply when the circulating flow is interrupted.

7. **Pressure-Reducing Valves**

Where pressure-reducing valves are used, one or more relief or safety valves shall be provided on the low-pressure side of the reducing valve when the piping or equipment on the low-pressure side does not meet the requirements for the full initial pressure. Proper protection shall be provided to prevent injury or damage caused by the escaping fluid from the discharge of relief or safety valves if vented to the atmosphere. The combined discharge capacity of the relief or safety valves shall be such that the pressure rating of the lower pressure piping or equipment shall not be exceeded in case the reducing valve sticks open. The use of hand-controlled bypasses around reducing valves is permissible. If a bypass is used around the reducing valve, the safety valve required on the low pressure side shall be sufficient capacity to relieve all the fluid that can pass through the bypass without overpressuring the low pressure side.
It is mandatory that a pressure gauge be installed on the low-pressure side of a reducing valve.

8. **Blowoff Equipment**

The blowdown from a boiler or boilers 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 required hereinafter.
The temperature of the water leaving the blowoff valve equipment shall not exceed 150ø F.
The pressure of the blowdown leaving any type of blowoff equipment shall not exceed 5 psig.
The blowoff piping and fittings between the boiler and the blowoff tank shall comply with Section I of the ASME Code.
All materials used in the fabrication of boiler blowoff equipment shall comply with Section II of the ASME Code.
All blowoff equipment shall be fitted with openings to facilitate cleaning and inspection.
Blowoff equipment shall conform to the provisions set forth in the National Board of Boiler and Pressure Vessel Inspectors' publication, "Boiler Blowoff Equipment."

9. **Location of Discharge Piping Outlets**

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

10. **Major Repairs**

Where repairs are necessary, which in any way affect the working pressure or safety of a boiler or pressure vessel, an inspector shall be called for consultation and advice as to the best method of making such repairs. After such repairs are made, they shall be reviewed by and found acceptable to an inspector. Repairs to all boilers and pressure vessels shall conform to the applicable provisions of the National Board Inspection Code.

11. **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 the boiler, pressure vessel, or their connected piping or fittings.

12. **Boiler Door Latches**

A watertube toiler shall have the firing doors of the inward-opening type, unless such doors are provided with substantial and effective latching or fastening devices or otherwise so constructed as to prevent them, when closed, from being blown open by pressure on the furnace side.
These latches or fastenings shall be of the positive self-locking type. Friction contacts, latches, or bolts actuated by springs shall not be used. The foregoing requirements for latches or fastenings shall not apply to coal openings of downdraft or similar furnaces.
All other doors, except explosion doors, not used in the firing of the boiler, may be provided with bolts or fastenings in lieu of self-locking latching devices. Explosion doors, if used and if located in the setting walls within seven feet of the firing floor or operating platform, shall be provided with substantial deflectors to divert the blast.

13. **Clearance**

When boilers are replaced or new boilers are installed in either existing or new buildings, a minimum height of at least three feet shall be provided between the top of the boiler proper and the ceiling and at least three feet between all sides of the boiler and adjacent walls or other structures. Boilers and pressure vessels having manholes shall have five feet clearance from the manhole opening and any wall, ceiling or piping that will prevent a person from entering the boiler or vessel. All boilers and pressure vessels shall be so located that adequate space will be provided for the proper operation of the boilers and pressure vessels and their appurtenances, for the inspection of all surfaces, tubes, waterwalls,

economizers, piping, valves and other equipment, and for their necessary maintenance and repair and replacement of tubes.

14. **Ladders and Runways**

When necessary for safety, there shall be a steel runway or platform of standard construction installed across the tops of adjacent boilers or pressure vessels or at some other convenient level for the purpose of affording safe access. All runways shall have at least two means of exit, each to be remotely located from the other.

15. **Air and Ventilation Requirements**

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

a. The total requirements of the burners for all fired pressure vessels in the boiler room must be used to determine the louver sizes whether fired by coal, oil or gas; however, the minimum net free louvered area must not be less than one square foot. The following table or formula shall be used to determine the net louvered area in square feet.

Input BTU/Hour	Required Air Cu. Ft./Min.	Min. Net Louvered Area Sq. Ft.
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/HR ö 100) X 1.5 Min. Net Area
60 ö 300 =Req. Sq. Ft.

b. When mechanical ventilation is used in lieu of (a) the supply of combustion and ventilation air to the boiler room and the firing device shall be interlocked with the fan so the firing device will not operate with the fan off. The velocity of the air through the ventilating fan shall not exceed 500 feet per minute, and the total air delivered shall be equal to or greater than shown in (a).

16. Fired Jacketed Steam Kettles

Fired jacketed steam kettles are acceptable for installation if constructed and stamped in accordance with Section I, IV, or VIII, Division 1, of the ASME Boiler Code and registered with the National Board.
Gas-fired jacketed steam kettles may be constructed under the rules of the ASME Pressure Vessel Code, Section VIII, provided the following additional requirements are met:

a. Welded joints in contact with products of combustion shall be of Type No. 1 of Table UW-12.

b. When parts subjected to pressure are made of carbon steel material, the minimum thickness shall be 1/2 inch. The minimum thickness of stainless steel or nonferrous pressure parts shall be as specified in the applicable part of Subsection C.

c. When in contact with products of combustion, carbon steel material shall be pressure vessel quality and austenitic stainless steel parts shall be of either extra-low carbon or stabilized grades.

d. Structural grade carbon steel shall not be used for any pressure part.

e. The operating pressure of the jacket shall not exceed 50 psig.

f. Vessels constructed under this rule shall be inspected by an authorized inspector and shall not be marked with the UM Symbol regardless of volume.

g. No steam or water shall be withdrawn from the jacket for use externally to the vessel.

h. The capacity of the safety valve in pounds of steam per hour shall be at least equal to the BTU rating of burner divided by 1,000.

i. The jacket shall be furnished with the following minimum appurtenances and controls:

   i. A pressure gauge.

   ii. A water gauge glass.

   iii. A separate connection, fitted with a check valve and stop valve, for adding water to the jacket (the water may be added while the vessel is not under pressure.)

j. An automatic gas valve controlled by pressure or temperature to maintain the steam pressure in the jacket below the safety valve setting.

k. A low water cut-off that will cut off the level to the burner if the water in the jacket below the lowest permissible water level as established by the manufacturer.

l. A safety pilot control that will cut off the fuel to both the main burner and the pilot burner in case of pilot flame failure.

17. **Shop Inspection and Inspection of Secondhand or Used Boilers or Pressure Vessels**

Shop inspections and inspections of secondhand or used boilers or pressure vessels made by the Chief Inspector or a Deputy Inspector shall be charged for in accordance with fee schedule.

Note:

The shop inspections required by an applicable section of the ASME Boiler & Pressure Vessel Code shall be made by an inspector who holds a valid license or commission recognized by the Department.

Pressure vessels which are covered under the Liquefied Compressed Gas Equipment Inspection Law of Mississippi, being Sections 75-57-1 through 75-57-63, Mississippi Code of 1972, are exempt from these Regulations.

18. **Manufacturers**

a. Boilers and pressure vessels and component parts to be installed for use in the State of Mississippi except those exempted by the provisions of Section 45-23-15 of the Act shall be designed, constructed, inspected, stamped and installed in accordance with current applicable section of the ASME Boiler and Pressure Vessel Code and/or the Rules and Regulations of the Department. Boilers and pressure vessels shall be stamped with applicable:

i. ASME Code stamping

Or

ii. Mississippi Special number or Mississippi Standard number

iii. ASME Code Symbol and the word "User," see Par. UG-116 (a)(1)(a).

and

iv. Underwriters' Laboratory label on electrically heated boilers, pressure vessels and water heaters.

Manufacturer's data reports on boilers, pressure vessels, and component parts which are to be installed and operated in the State of Mississippi except those exempted by the provisions of Section 45-23-15 of the Act shall be filed with the Chief Inspector, Boiler and Pressure Vessel Safety Branch.
If a boiler or pressure vessel is of special design and will not bear the ASME Code Symbol and National Board or user stampings, a permit for a State Special must be applied for in writing by the Mississippi user. Blueprints, design data, calculations and material showing details of the proposed construction shall be submitted to the Branch and approval obtained before construction is started.

19. **Conditions Not Covered by These Rules and Regulations**

For any condition not covered by these requirements, the applicable provisions of the ASME Code and/or the National Board Inspection Code shall apply.

20. **Accessibility for Inspection**

All unfired pressure vessels hereafter installed or reinstalled shall be placed above ground where possible and so installed that all parts of the vessels can be readily inspected.
Where necessary to install a vessel under ground, it shall be enclosed in a concrete, brick or steel enclosure with a removable cover, so that regular inspections of the entire shell and heads of the vessel can be made.
Exceptions: Vessels not in excess of 100 psi design working pressure having adequate cathodic protection with epoxy or bitumastic coating and containing non-toxic or non-flammable material may be buried without a pit enclosure provided such vessels shall have means of internal inspection.

21. **Boilers Exposed to the Elements**

Boilers not contained in boiler rooms that are exposed to freezing temperatures shall have their water and steam lines either steam traced or wrapped with electric heating tape where needed.

22. **Fired Storage Water Heaters and Supply Vessels**

Minimum Controls All fired storage water heaters and supply vessels shall be equipped with the following controls and devices:

a. Operating temperature control;

b. High-limit temperature control;

c. Positive flame failure cut-off;

d. Approved pressure-temperature relief valve, set at or below the safe working pressure of the vessel, with such setting satisfactory for the application.

Location -- All fired vessels and heaters shall be so located as to provide access to the controls, safety relief valve and drain.
Discharge Lines -- When a discharge line from a relief valve is installed, it shall not be reduced but shall be full size and be piped to a safe location, graded down.
Relief Valve Testing -- The operator shall manually test the relief valve once each month.
Alternative Use -- Storage water heaters and supply vessels, fired or unfired, shall not be used as a heating boiler.

23. **Safety Valves and Rupture Disk Notes**

Any safety valve, piping, valve, or appurtenance exposed to freezing temperatures shall be properly positioned against collecting moisture and properly drained to prevent freeze-up.
Safety valves on Dowtherm and similar vaporizers shall be removed annually for cleaning and testing, at time of certificate inspection. Safety valves for compressed-air tanks shall not exceed three inches in diameter and shall be proportioned for the maximum number of cubic feet of free air that can be applied per minute.
Rupture disks or heads may be used as the pressure safety device on vessels containing non-toxic gases provided they are designed to fail at not more than the design pressure of the vessel.

24. **Portable Boilers and Pressure Vessels**

Every owner or user of portable boilers or pressure vessels shall furnish in writing to the Branch, on or before the effective date of these regulations and yearly thereafter, a list of their portable boilers and unfired pressure vessels, giving the location of each and indicating whether it is insured and inspected by an Insurance Company licensed in Mississippi to inspect boilers and pressure vessels. No such boiler or pressure vessel shall be used until it has been inspected by an authorized boiler inspector and a certificate of inspection has been issued.

25. **Fuel Conversions and Increases in Size of Fuel Burning Apparatus**

Either of these shall nullify the current operating certificate and a re-inspection by a licensed inspector is mandatory prior to returning the boiler to service.

26. **Inspection Openings -- Not To Be Used for Any Other Purpose**

Any and all inspection openings shall not be obstructed; they shall have adequate clearance for their purpose of being used as an inspection opening. They shall not be used for pipe connection. They shall not be increased in size unless with the concurrence of a licensed inspector, and then only according to and in compliance with the ASME Code's pertinent paragraphs.

27. **Boilers and Pressure Vessels That Are Exempt**

The fact that boilers and pressure vessels are exempt from the Act does not preclude them from having the normal and proper safety controls and devices.

28. **Exit from Boiler Room**

All boiler rooms exceeding 500 square feet floor area and containing one or more boilers having fuel burning capacity of 1,000,000 BTU per hour, or equivalent electrical heat input, shall have at least two means of exit. Each exit shall be remotely located from the other.

29. **Return Loop Connection**

It is recommended that the return water connections to all low pressure, steam heating boilers supplying a gravity return heating system be so arranged as to form what is known as the "return pipe loop connection," so that the water cannot be forced out of the boiler below the safe water level. This connection is shown in Figure HG-703-1 of Section IV, ASME Heating Boiler Code.

30. **Authorization Required for Repairs**

No repair or alteration affecting the safety of the boiler or pressure vessel shall be made until the contemplated repair or alteration has been authorized by a licensed inspector. Nothing in this requirement shall prohibit the exchange or interchange of valves, fittings, and accessories for the same purpose.

No pressure vessel that has been subject to a fire shall be returned to service until it has been inspected by a licensed inspector and found safe. Any vessel that has been altered or repaired or subjected to a fire shall be prepared for hydrostatic test if one is considered necessary by the licensed inspector. Any welding on which the strength of any boiler or pressure vessel is dependent shall be made by a welder suitably certified under the ASME Code, Section IX.

104 Section VI

104.01 Recommended Safe Practices - Non-Mandatory

1. Design Changes and Alterations of Boilers or Pressure Vessels

No repairs or alterations involving flame, arc, or other method of welding shall be made on any pressure vessel or system unless such vessel or system shall first have been certified as gas free or oxygen free by competent personnel.

2. Operators

All power boilers (over 15 psi) with fully automatic control, having a rated output of 1000 or more pounds of steam or vapor per hour and high pressure, high temperature water boilers, shall not be operated without being periodically checked by an operator at intervals of not less than once every two hours, regardless of whether or not the boiler is equipped with automatic feedwater regulator, fuel or damper regulator, high and low water alarm or any other form of automatic control while the boiler is in service.

All power boilers and high pressure/high temperature water boilers without fully automatic control shall have a full-time operator while the boiler is in service. Operator -- a competent attendant who is familiar with the particular boilers to be operated and who has received proper instruction in their safe operation.

3. Fuel Burning Apparatus and Systems (Flame Safeguard)

Fuel burning apparatus and systems should be equipped with regulating and protective controls in accordance with applicable standards of the National Fire Protection Association, American Gas Association, and Underwriters' Laboratories.

4. Electric Boilers

Electric boilers 600 volts or less subject to the requirements of the Safety Act and these rules and regulations shall bear the Underwriter's laboratories label on the completed unit or assembly by the manufacturer. This label shall be in addition to the code symbol stamping requirements of the ASME and the National Board.

All appliances required for electric boilers shall be attached in accordance with the following rules:

A cable at least as large as the income power line to the boiler shall be provided for grounding the boiler shell. This cable shall be permanently fastened to the boiler and grounded in an approved manner.

Conductor or conductors shall be attached by means of suitable connectors, lugs, pressure connectors, clamps or other approved means, Connectors that depend on solder to maintain connection shall not be used.

A suitable screen or guard shall be provided around high tension bushings and a sign posted warning of high voltage. This screen or guard shall be so located that it will be impossible for anyone working around the boiler to come in contact accidentally with the high tension circuit.

When adjusting safety valves, the power circuit to the boiler shall be open. The boiler may be under steam pressure, but the power line shall be open while the operator is making the necessary adjustment.

Safety or relief valves shall have a relieving capacity of three and one-half (3 1/2) pounds per hour for each kilowatt maximum rating.

5. **Fire Safety Precautions**

All fired boiler and fired pressure vessel installations shall be on a non-combustible floor or base, and breeching or flue shall not pass through combustible wall, ceiling, roof or partition unless suitably guarded against excess heat

6. **Precautions To Be Taken Prior to Entering Boilers and Pressure Vessels**

All confined spaces shall be kept well purged and ventilated of all atmospheric contaminants.

All internal space and surfaces shall be at reasonable temperatures.

All electrical equipment and electrical cords shall be adequately grounded and preferably of the low voltage (12 volt) type.

Pressure vessels that have contained flammable, toxic, corrosive, or irritant contents shall be properly cleaned and certified as safe to enter by an Industrial Hygienist or other person qualified to make the necessary required tests.

Pressure vessels that are being lined or coated with a vaporous compound shall be well purges at all times during the process, and

anyone in the vessel shall be attached to an adequate life-line and attended by a competent person stationed at the vessel's entrance.

Common sense shall be exercised at all times.

7. **Hydrostatic Testing Precautions**

When performing or witnessing any hydrostatic test, only properly instructed and qualified personnel should actually perform the test.

Protective barriers or pits should surround or enclose the object being tested.

No personnel should be in the immediate vicinity of the object being tested while pressure is being raised or is above the allowable working pressure.

No vessel shall be left unattended while pressure is being raised and no vessel under pressure (hydrostatic) shall be left overnight in a heated area unless it is equipped with a pressure relief device.

For water temperature and high pressure incrementation procedure, it is recommended that reference be made to the proper engineering manuals.

Only qualified inspectors shall check the object under hydrostatic test, and then only after the pressure has been reduced to the approved allowable working pressure, for any deformation, tightness, distress or integrity.

When strain gauge readings are necessary, it is recommended that remote reading and/or recording tape be used.

Glass lined or concrete lined pressure vessels shall not be hydrostatically tested in excess of their allowable working pressure, as indicated on the stamping or manufacturer's data report.

Petition

Petition: For the modification of any of these rules, the following shall be the method of procedure.

Any employer or employee, or other person interested or affected by such rules may petition for a hearing on the reasonableness of such rules by filing a petition with the Technical Advisory Committee of Boiler and Pressure Vessel Safety, setting forth the rule or rules upon which a change is desired and the reasons for said change.

Upon the receipt of a petition, the Technical Advisory Committee will determine its merits and if a hearing is necessary, notice of time and place will be given to the petitioner and to such other persons as the State Board of Health may find directly interested.