

220 CMR DEPARTMENT OF PUBLIC UTILITIES

220 CMR 20.00: STEAM DISTRIBUTION COMPANIES

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20.01: Purpose and Scope

- (1) 220 CMR 20.00 prescribes minimum safety requirements for the design, fabrication, installation, inspection, testing, operation, and maintenance of Main and Service Piping by Steam Distribution Companies.
- (2) 220 CMR 20.00 applies to every Steam Distribution Company operating a plant, equipment or facilities for the manufacture, production, transmission, furnishing or distribution of steam to or for the public for compensation within the Commonwealth.
- (3) 220 CMR 20.00 does not apply to:
 - (a) Plant, equipment or facilities used for or in connection with the generation or production of steam or not directly associated with the distribution of steam;
 - (b) the design, fabrication, and installation of piping downstream of the customer's property line; and
 - (c) any entity operating a steam distribution system within the Commonwealth that does not meet the definition of a Steam Distribution Company if the entity files a detailed inspection and maintenance plan with the Department every two years. The first such inspection and maintenance plan shall be due no later than January 1st next following August 17, 2012. Subsequent inspection and maintenance plans shall be due no later than January 1st on a biennial basis.

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- (4) Every Steam Distribution Company shall comply with M.G.L. c. 164B, M.G.L. c. 25, § 18A, and 220 CMR 20.00.

20.02: Definitions

For the purposes of 220 CMR 20.00, the terms set forth in 220 CMR 20.02 shall be defined as follows:

Accessible, with reference to Expansion Joints or welds, means capable of being visually inspected (*i.e.*, not buried, or located in a manhole, tunnel or vault).

Asbestos-containing Material means friable asbestos and any material containing 1% or more asbestos by area as determined by a laboratory using USEPA approved methods. This term includes but is not limited to sprayed-on and troweled-on materials applied to ceilings, walls, and ceilings, walls, and other surfaces, insulation on pipes, boilers, tanks, ducts, and other equipment, structural and non-structural members, tiles, shingles or asbestos-containing paper.

Blow-off Valve means a valve typically connected to the Main on one end and open to the atmosphere on the other end. Blow-off Valves are used to de-pressurize the steam Main during outage operations, as well as to drain Condensate from the Main during shutdown, outage and start-up operations. Blow-off Valves are typically closed in normal operating conditions. These valves are sometimes also termed open-end or free-blow valves.

By-pass Valve means a valve that is fitted with piping to enable steam flow around the Main Valve when the Main Valve is isolated. By-pass Valves are used upon re-energization of a section of the Main, and are sometimes termed warm-up or equalizing valves.

Condensate means water that collects as steam, and when cooled, changes state to a liquid. In normal operation, the Main or Service Piping will produce varying amounts of Condensate while in service, and provision for its removal is required (typically by Steam Traps).

Department means the Department of Public Utilities.

Emergency Event means an unplanned event that requires immediate actions to safeguard public safety and property.

Expansion Joints means manufactured fittings installed in Main or Service Piping to compensate, where necessary, for thermal expansion. Expansion Joints are typically either slip joint or bellows joint (internally or externally pressurized) types.

Leak means a breach in the pressure boundary of the Main or Service Piping that allows the escape of steam from the system.

Main means a steam distribution main including the piping, Main Valves, Blow-off Valves, By-pass Valves, Expansion Joints, Steam Traps, equipment, and fittings for the delivery of steam from the Steam Distribution Company's steam production facility to the Steam Distribution

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Company's service area. Mains are external to the property line of the steam production facility, and are differentiated from Service Piping.

Main Valve means a valve located in the Main that is used for isolating a section of the Main.

Nonemergency Leak means any Leak or Vapor Condition that is not immediately hazardous or a threat to public safety at the time of discovery and reasonably can be expected to remain nonhazardous and not a public safety threat.

Service Piping means the piping, valves, Steam Traps, equipment, and fittings for the delivery of steam originating from the Main to the thermal energy end-user (customer), terminating at the customer's property line.

Steam Distribution Company means a person, firm, partnership, association or private corporation organized or operating under the laws of the Commonwealth with the primary purpose of operating a plant, equipment or facilities for the manufacture, production, transmission, furnishing or distribution of steam to or for the public for compensation within the Commonwealth; provided, however, that Steam Distribution Company shall not include:

- (a) an entity producing or distributing steam exclusively on private property and solely for use by the entity or the entity's tenant, and not for distribution or sale; or
- (b) a company that produces and sells steam as a by-product of the production of electricity for sale in the wholesale electricity markets and does not own or operate pipelines off site of the generating facility for the distribution of steam.

Steam Trap means a device fitted on the Main and Service Piping to allow the discharge of accumulated Condensate from an operating steam line. Steam Traps operate essentially as automated valves that are activated by one or more means to eject Condensate with minimal steam loss.

Vapor Condition means the presence of visible steam and/or water vapor in close proximity to buried Mains.

Water Intrusion means water originating from external sources making physical contact with the Main and Service Piping. This contact can result in flash vapor that may be reported as a Vapor Condition.

20.03: Compliance with Standard Code

Following the August 17, 2012, all new Main and Service Piping shall be designed, constructed, tested, operated and maintained, except as otherwise provided in 220 CMR 20.00, in accordance with "Power Piping, American Society of Mechanical Engineers (ASME), Code for Pressure Piping, B31.1-2010," or the most recent successor edition of AMSE B31.1-2010.

20.04: Notification of Construction

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At least ten days prior to the start of construction, or reconstruction, of any 100 feet or more of the Main, each Steam Distribution Company shall file with the Department a letter of intent providing details of the proposed construction, except when an Emergency Event makes such notice impracticable. When such notice is impracticable due to an Emergency Event, such filing shall be made at the earliest practicable time following remediation of the Emergency Event.

20.05: Operating and Maintenance Plan

- (1) Each Steam Distribution Company shall establish and file with the Department a detailed written operating and maintenance plan that implements the provisions of 220 CMR 20.00. Each Steam Distribution Company shall submit to the Department any revisions to the operating and maintenance plan within 30 days following the revisions' effective date.
- (2) The operating and maintenance plan shall include, at a minimum, the following:
 - (a) operating and maintenance procedures during normal operations and repairs;
 - (b) procedures for reporting, investigating, classifying, handling, and monitoring steam Leaks and Vapor Conditions;
 - (c) procedures to correct, within specified timeframes, deficiencies found during inspections, evaluations, and tests required by 220 CMR 20.00;
 - (d) procedures for continuing routine surveillance and inspections of the Main and Service Piping to identify and to take appropriate action concerning failures, leakage history, excessive Water Intrusion, manhole structural condition and other unusual operating and maintenance conditions;
 - (e) a list of qualified persons who may approve the turn-on of any section of the Main and Service Piping; and
 - (f) procedures to ensure that the turn-on of any section of the Main and Service Piping is accomplished only by persons specifically trained, qualified, and approved for such purpose.
- (3) Each Steam Distribution Company shall establish and maintain detailed, up-to-date and accurate maps of its Mains, and up-to-date and accurate maps or records of its Service Piping to the extent necessary to administer its operating and maintenance plan.
- (4) Each Steam Distribution Company shall comply with its operating and maintenance plan.

20.06: Emergency Plan

- (1) Each Steam Distribution Company shall establish and file with the Department written procedures to minimize the hazards resulting from an Emergency Event. These procedures shall address the following:
 - (a) making safe any actual or potential hazard to life or third-party property;
 - and

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- (b) safely restoring to service any of the Main or Service Piping following emergency shutdown or outage.
- (2) At a minimum, the emergency plan must provide for the following:
 - (a) receiving, identifying, and classifying notices of incidents that require immediate response;
 - (b) establishing and maintaining adequate means of communication with fire, police, and other public safety officials;
 - (c) establishing and maintaining continuous communication and coordination between field crews and dispatching personnel;
 - (d) the availability of personnel, equipment, tools, and materials, as needed at the scene of an Emergency Event;
 - (e) actions directed toward protecting human life and safety as the highest priority, with protection of property second in priority; and
 - (f) emergency Main and Service Piping shutdown procedures.
- (3) Each Steam Distribution Company's emergency plan shall include instructions to control and mitigate the release of Asbestos-containing Material or Asbestos-containing Material debris, resulting from the failure of any the Main or Service Piping.
- (4) Each Steam Distribution Company shall:
 - (a) provide a copy of the latest edition of the emergency plan to supervisors who are responsible for emergency action; and
 - (b) train the appropriate operating personnel to ensure that they are knowledgeable about and can comply with the emergency plan.
- (5) No later than January 31st of each year, each Steam Distribution Company shall file with the Department, and with all municipalities within which its facilities are located, a list indicating the names and 24-hour contact information of its responsible officials who may be contacted in the event of an Emergency Event. Changes to this list within the year shall be reported to the Department and affected municipalities no later than 30 days after such changes.

20.07: Customer Education and Information Program

- (1) Each Steam Distribution Company shall initiate and maintain on a continuing basis, a program for customer education and information designed to assist its customers, and appropriate government organizations, in recognizing steam emergency conditions and situations, and to provide them the means to notify the Steam Distribution Company of such situations.
- (2) No later than January 31st of each year, each Steam Distribution Company shall file a report with the Department describing the Steam Distribution Company's customer education and information program, including a detailed statement of the means of its implementation and samples of all descriptive literature and other educational aids. The report shall identify all changes from the prior year's program.

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20.08: Employee Training

- (1) Each Steam Distribution Company shall ensure that the employees involved in the operation, maintenance, or testing of Mains and Service Piping satisfactorily complete training to ensure effective and safe implementation of the procedures required by 220 CMR 20.00. Supervisors shall be tested annually to determine proficiency and shall satisfactorily complete refresher training as testing results deem necessary.
- (2) Each Steam Distribution Company shall ensure that new employees receive basic classroom training prior to on-the-job training in field operations.
- (3) Each Steam Distribution Company shall maintain records of the training provided under 220 CMR 20.08 including the names of the employees trained, courses provided, and the number of hours of training consistent with 220 CMR 20.17.

20.09: Periodic Inspections

At a minimum, each Steam Distribution Company shall conduct the following inspections:

- (1) Steam Traps and trap piping assemblies shall be inspected seasonally for general condition and proper operation. At least four inspections shall be conducted in each calendar year.
- (2) Blow-off Valves and By-pass Valves shall be checked for operability immediately prior to closing each associated Main Valve during a scheduled shut down of a section of the Main and Service Piping. Removal of Condensate from shut down section of the Main and/or Service Piping must be accomplished prior to re-opening Main Valves.
- (3) Accessible Expansion Joints shall be inspected at least bi-annually, once in the summer and once in the winter. The inspection shall include, as applicable, checks for leakage, proper alignment, and traverse measurement.
- (4) Manholes containing the Main and Service Piping shall be inspected for general conditions. Inspection of manhole general conditions shall include:
 - (a) steam distribution equipment inside the manhole at least once each calendar year at intervals not exceeding 15 months;
 - (b) surface temperature readings of manhole castings, covers and appurtenances that are located at or above grade and subject to contact with pedestrians, vehicles and other members of the public, at least once each calendar year at intervals not exceeding 15 months; and
 - (c) structural integrity at least once every five calendar years.
- (5) Each Steam Distribution Company shall maintain records of periodic inspections consistent with 220 CMR 20.17.

20.10: Welding - Qualification and Nondestructive Testing

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- (1) All welding must be performed by qualified welders employing qualified welding procedures, in accordance with the American Welding Society Standard Welding Procedure Specifications.
- (2) Notwithstanding the pressure and temperature limitations contained in ASME B31.1-2010, welds subjected to temperatures over 350°F (175°C) on pipe over six inches in diameter shall be subject to nondestructive testing by radiographic inspection in accordance with 220 CMR 20.10(3) and (4).
- (3) All underground buried field welds greater than 2½ inches in diameter in new Main and Service Piping installations and all prefabricated shop welds shall be nondestructively tested prior to being placed in service.
- (4) Each Steam Distribution Company shall establish a program of random, unannounced, nondestructive testing for new accessible field welds made on existing Main and Service Piping, to assess the quality of welding and the work of each welder. The required minimum testing rate shall be 10% of all welds made during a calendar month. If 10% or more of the welds tested in a calendar month are found to be unacceptable, the test rate shall increase by 5% for the ensuing calendar month. If fewer than 10% of the welds are found to be unacceptable in a calendar month where the required test rate was greater than 10%, the test rate may be decreased by 5% for the ensuing calendar month.

20.11: Leaks and Vapor Conditions

- (1) Each Steam Distribution Company shall be responsible for the investigation, prioritization, and repair of each Leak or Vapor Condition, as applicable, found on its system.
- (2) Each Steam Distribution Company shall respond promptly to any notification of a Leak, Vapor Condition or any notification of damage to facilities caused by contractors or other third-parties. Nonemergency Leaks and damage shall be repaired within nine months from the date of discovery.
- (3) Each Steam Distribution Company shall respond immediately to emergency Leaks to protect life and third-party property, and must work continuously until repairs are completed, or until the condition is no longer hazardous. Emergency Leaks include, but are not limited to:
 - (a) any Leak on the bellows of an exposed Expansion Joint;
 - (b) any Leak that could cause third-party property damage or personal injury;
 - (c) any Leak or Vapor Condition that, in the judgment of the operating personnel at the scene, is regarded as potentially hazardous; or
 - (d) any Leak resulting from damage by contractors or other outside forces.
- (4) Each Steam Distribution Company shall create a steam Leak/Vapor Condition record, identified by number to record the entire history of a Leak/Vapor Condition on the Main and Service Piping from the time of discovery through repair, as applicable.

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The record shall contain information as to the location and apparent cause of the event, and the nature of the repair. The records shall be maintained consistent with the requirements of 220 CMR 20.17.

20.12: Logging and Analysis of Steam Emergency Event Report

- (1) Each Steam Distribution Company shall record each report of an Emergency Event received on a service record number.
- (2) Each Steam Distribution Company shall keep and maintain a daily log that includes the recording of the receipt and handling of each Emergency Event report containing the following information:
 - (a) cross reference to the related service record number;
 - (b) location of emergency;
 - (c) time report first received;
 - (d) description as to type of emergency;
 - (e) time personnel first dispatched to location;
 - (f) time of arrival of personnel at location;
 - (g) times of dispatch and arrival of any additional personnel called to the location; and
 - (h) time when the Emergency Event is cleared.
- (3) Each Steam Distribution Company shall conduct an investigation, including a “lessons learned” or debriefing session involving affected personnel, following resolution of an Emergency Event to review activities to determine whether the procedures were effectively followed in each emergency, the causes of the failure, and actions needed to minimize the possibility of a recurrence.

20.13: Reports of Incidents and Interruptions

- (1) Each Steam Distribution Company shall, at the earliest practicable moment following discovery, report to the Department all incidents involving the Main and Service Piping that include any of the following events:
 - (a) injury requiring inpatient hospitalization or death to any persons;
 - (b) damage to third-party property;
 - (c) airborne release of Asbestos-containing Material; or
 - (d) anything significant in the judgment of the Steam Distribution Company.
- (2) Each Steam Distribution Company shall, at the earliest practicable moment following discovery, report to the Department any unscheduled interruption of service affecting two or more customers, or any other interruption deemed reasonably significant, provided that nothing in 220 CMR 20.00 shall require a Steam Distribution Company to report service interruptions resulting primarily from a loss of steam production output.
- (3) All such incidents and service interruptions that meet the reporting requirements in 220 CMR 20.13(1) and (2) shall be reported to the Department by telephone through the Department’s emergency notification system.

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(4) A written report of each incident in which steam distribution facilities were involved pursuant to 220 CMR 20.13(1), shall be submitted to the Department within 30 days following discovery. The report shall set forth a chronological sequence of events including a detailed description of the:

- (a) incident or interruption;
- (b) response, action, and investigation by the Steam Distribution Company; and
- (c) results and findings of the investigations to date, including the results of the investigation required by 220 CMR 20.12(3).

(5) No later than March 1st of each year, each Steam Distribution Company shall file its annual report on safety related matters with the Department. The report shall include but not be limited to:

- (a) the dates, locations, duration, and causes of all Leak incidents;
- (b) the Main and Service Piping accidents and service outages;
- (c) the number of injuries that required inpatient hospitalization;
- (d) the number of fatalities;
- (e) the approximate cost of third-party property damage;
- (f) the time elapsed between the incident and the return to service following a repair; and
- (g) mitigation of any release of asbestos-containing material.

20.14: Facility Failure Investigation

(1) Each Steam Distribution Company shall establish procedures to analyze each Leak incident for the purpose of determining its cause and to minimize the possibility of a recurrence. This shall include a procedure to select samples of the failed facility or equipment for laboratory examination when necessary.

(2) The procedures shall also require the Steam Distribution Company (or, at the Department's request, an independent consultant) to test or survey any equipment or systems deemed reasonably necessary by Department staff for the investigation and analysis of any failure or accident to determine its cause and to minimize the possibility of a recurrence.

20.15: Corporate Filings

(1) Each Steam Distribution Company shall file with the Department a certified copy of its certificate of incorporation and bylaws, and any amendments, modifications, or revisions to the same within six months of August 17, 2012.

(2) By March 31st each year, each Steam Distribution Company shall report to the Department its intrastate operating revenues for the previous calendar year derived from the manufacture, production, transmission, furnishing, or distribution of steam to or for the public.

20.16: Department Examinations and Investigations; Fines

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- (1) The Department may conduct announced or unannounced examinations and investigations into a Steam Distribution Company's safety performance, including compliance with 220 CMR 20.00. These may include entry into the offices and other property of the Steam Distribution Company during normal business hours.
- (2) If after examination or investigation, the Department finds a violation of 220 CMR 20.00, the Department may levy fines against a Steam Distribution Company for failure to comply with M.G.L. c. 164B or 220 CMR 20.00.
- (3) In determining the appropriateness of any fine, the Department shall consider the seriousness of the violation and the good faith compliance efforts of the Steam Distribution Company.

20.17: Records

- (1) Each Steam Distribution Company shall maintain records documenting all inspections, maintenance, tests, and training, investigation and analyses of Emergency Events and incidents and interruptions required by 220 CMR 20.00.
- (2) The minimum period of retention of records required by 220 CMR 20.00 shall be three years.
- (3) All records or copies thereof, shall be kept on file at Steam Distribution Company offices within the Commonwealth, and shall be readily accessible upon request to the staff of the Department.

20.18: Miscellaneous

The Department may grant, for good cause shown, and not contrary to statute, an exception from any provision of 220 CMR 20.00.

220 CMR 20.00: M.G.L. c. 164B, § 1.