

1.1 **Department of Labor and Industry**

1.3 **Adopted Permanent Rules Relating to Attendance at High Pressure Boiler Plants and Remote Monitoring of High Pressure Boilers in Unoccupied Buildings**

1.4 **5225.1180 ATTENDANCE AT HIGH PRESSURE PLANT.**

1.5 Subpart 1. **Attendance; plant of 0 to 50 horsepower.** At a minimum, a high pressure
1.6 boiler plant of 0 to 50 horsepower, when in operation, must be visually observed at least
1.7 once every 24 hours by an operating engineer. The operating engineer must document the
1.8 findings and conditions in the boiler room logbook maintained pursuant to part 5225.1110.

1.9 Subp. 2. **Attendance; plant of 51 to 500 horsepower.**

1.10 A. A high pressure boiler plant of 51 to 500 horsepower may be left in operation
1.12 unattended by an operating engineer for no more than two consecutive hours, except as
1.13 permitted by item B or subpart 5. The operating engineer must visually observe the operating
1.14 condition of the boiler and appurtenances at least every two hours and document the findings
1.15 and conditions in the boiler room logbook maintained pursuant to part 5225.1110.

1.16 B. A high pressure boiler plant of 51 to 500 horsepower is exempt from the high
1.18 pressure attendance requirements of item A if the plant is operated at low pressure. All
boilers must either be shut down or shifted to low pressure. If a boiler is shifted to low
1.19 pressure, it must have the following controls, safety devices, and conditions:

1.20 (1) the boiler must be equipped with high pressure controls and low pressure
1.22 controls. These controls must be arranged so that they cannot be operated at the same time.
1.23 The header connecting the low pressure controls to the boiler must have an isolation valve
and a drain valve;

1.24 (2) the boiler must be equipped with fail-safe type safety controls for
1.26 regulating pressure, water level, and fuel supply. Controls and safety devices must meet the
2.1 minimum requirements for automatically fired boilers in Code Sections I, IV, and Controls

2.2 and Safety Devices for Automatically Fired Boilers (CSD-1) of the American Society of
2.3 Mechanical Engineers (ASME) Boiler and Pressure Vessel Code;

2.4 (3) the boiler must be equipped with a low pressure header designed to prevent
2.5 the system pressure from exceeding 15 psi. The low pressure header must have ASME code
2.6 stamped safety valves set at 15 psi or less. The low pressure header safety valves must be
constructed to ASME Code Section I or IV requirements;

2.7 (4) the low pressure header must be equipped with an isolation valve that
2.8 isolates the header from the boiler or piping. The valve must be interlocked with the controls
2.9 to prevent the valve from being opened when the system pressure is greater than 15 psi.
2.10 The valve must be interlocked with the high pressure controls to prevent the high pressure
2.11 controls from operating when the valve is open;

2.12 (5) the building in which the boiler is located must not be occupied by the
2.13 public or employees except for custodial, maintenance, or security personnel;

2.14 (6) ~~a properly licensed~~ an operating engineer must manually switch over the
2.15 valves and controls between high and low pressure, enter the date and time of the switch in
2.16 the boiler room logbook, and sign the logbook entry; and

2.17 (7) when the boiler is operating on low pressure, ~~a properly licensed~~ an
2.18 operating engineer must visually observe the boiler operating conditions at least once every
2.19 24 hours and record the conditions in the boiler room logbook, pursuant to part 5225.1110.

2.20 Subp. 3. **Attendance; plant over 500 horsepower.**

2.21 A. A high pressure boiler plant of more than 500 horsepower, when in operation,
2.22 requires constant attendance, except as otherwise provided in item B or subpart 5.

2.23 B. The ~~shift~~ operating engineer in a high pressure boiler plant of over 500
2.24 horsepower may leave the boiler room for up to 30 minutes ~~per hour~~ if all boilers are
2.25 equipped with dual pressure controls and dual low water fuel cutouts, one of which must

3.2 be the manual reset type. The ~~shift~~ operating engineer must stay within 500 feet of the boiler
3.3 room at all times during the shift.

3.3 Subp. 4. [See repealer.]

3.4 Subp. 5. **Attendance; unoccupied plant.** This subpart applies to plants with individual
boilers that are 51 to 500 horsepower located in an unoccupied plant.

3.6 A high pressure boiler 51 to 500 horsepower may participate in the remote monitoring
3.7 program if it complies with the requirements in items A to N.

3.8 A. Boiler owners must submit an application in a manner prescribed by the
3.9 commissioner to the department for review and approval to participate in the remote
3.10 monitoring program for unoccupied plants.

3.11 B. The building must be completely unoccupied and the boiler owner must
3.12 demonstrate with substantiated data that the unattended boiler is located within a safe
3.13 unoccupied radius.

3.14 C. ~~A properly licensed~~ An operating engineer must perform the remote monitoring.
3.16 The boiler owner must develop a written policy for safe response time for each individual
3.17 boiler. The ~~properly licensed~~ operating engineer must be able to respond to any of the safety
concerns listed in item L within the safe response time specified in the policy.

3.18 D. The ~~properly licensed~~ operating engineer must visually observe the operating
3.20 condition of the boiler and appurtenances in person and document the findings and conditions
3.21 in the boiler room logbook, maintained pursuant to part 5225.1110, at least once every 24
hours.

3.22 E. When remotely monitoring high pressure boilers 51 to 500 horsepower, the
3.23 ~~properly licensed~~ operating engineer must continuously monitor the following boiler
3.24 conditions:

- 3.25 (1) water level for steam boilers;
- 4.1 (2) boiler pressure;
- 4.2 (3) temperature for high temperature hot liquid;
- 4.3 (4) stack temperature;
- 4.4 (5) feedwater flow;
- 4.5 (6) make-up water flow for high temperature hot liquid;
- 4.6 (7) steam flow;
- 4.7 (8) fuel flow, at burner;
- 4.8 (9) gas/oil pressure;
- 4.9 (10) concentration of carbon monoxide in boiler room; and
- 4.10 (11) a video camera providing a continuous live video feed of the burner,
- 4.11 sight glass, and pressure gauge. The live video feed must be continuously available to the
- 4.12 ~~properly licensed~~ operating engineer for remote viewing.

4.13 F. The boiler must have two feed pumps that supply water to the boiler.

4.14 G. A boiler firing with gas must have a flammable gas detection system in the

4.16 boiler room with a visible and audible alarm. The alarm must trigger before the gas reaches

4.17 an explosive level. The alarms must be visible and audible inside the boiler room and on

4.18 the remote monitoring device. Located immediately outside the boiler room door, there

must be:

- 4.19 (1) visible and audible alarms;
- 4.20 (2) an independent remote water level indicator; and
- 4.21 (3) remote boiler shutdown switches.

4.22 H. Boilers using gas or liquid fuels must have a written fuel-rich condition
4.23 shutdown procedure, which must be made available to the operators.

5.1 I. Each boiler must have written standard and emergency operating procedures,
5.2 which include testing of all safety devices at the manufacturers' recommended scheduled
5.3 intervals.

5.4 J. A diary must be maintained in the boiler room in a manner that prevents
5.5 revisions, additions, or deletions. The diary must document, at a minimum, equipment
5.6 start-up and shutdown times; equipment repairs; equipment inspections; equipment
5.7 maintenance; equipment testing performed; and the name of the ~~properly licensed~~ operating
5.8 engineer documenting these actions, inspections, and tests performed. The diary must be
5.9 provided to a national board-commissioned inspector upon request.

5.10 K. The remote monitoring device and system must have a communication failure
5.12 alarm. The ~~properly licensed~~ operating engineer must return to the boiler room immediately
upon notification of a communication failure.

5.13 L. As recommended by the boiler manufacturer, the ~~licensed~~ operating engineer
5.14 must establish a primary set point that triggers an alarm and a secondary set point that
5.16 automatically shuts down the boiler. The primary set point must trigger an alarm if the boiler
5.17 conditions fall outside of the boiler's normal operating conditions but are within an operating
5.18 range in which the boiler is safe to operate temporarily. The secondary set point must trigger
5.19 the boiler to automatically shut down when the boiler conditions are outside of safe operating
conditions. The following items must have primary and secondary set points:

- 5.20 (1) high and low water level for steam boilers;
- 5.21 (2) high and low boiler pressure;
- 5.22 (3) temperature for high temperature hot water heating;
- 5.23 (4) concentration of carbon monoxide in boiler room;

- 5.24 (5) fuel flow;
- 5.25 (6) steam flow;
- 6.1 (7) gas/oil pressure; and
- 6.2 (8) flammable gas detection.

6.3 A flame sensor must trigger an alarm when a flame is not detected and automatically
6.4 shut down the boiler.

6.6 M. A national board-commissioned inspector must conduct both an initial internal
6.7 and external inspection of the boilers to determine compliance with this subpart to qualify
6.8 for remote monitoring. The internal inspection must be conducted while the boiler is not in
6.9 operation. The external inspection must be conducted while the boiler is in operation.
6.10 Annually thereafter, the national board-commissioned inspector must conduct internal and
6.11 external inspections to ensure continued compliance with this subpart. The inspector must
6.12 document the name of the water treatment company and the name of the certified water
6.13 treatment specialist. The water treatment specialist must be certified to treat, test, and monitor
6.14 the boiler water. Inspection reports must be submitted to the chief boiler inspector.

6.15 N. The water treatment specialist must establish a water treatment program that
6.16 contains boiler water quality parameters. The specialist must monitor the program at least
6.18 every 60 days by testing the boiler water and reviewing the operating engineer's test results.
6.19 The ~~properly licensed~~ operating engineer must test and document the results of the boiler
6.20 water at least every 24 hours. The test results must be provided to the specialist, the national
board-commissioned inspector, or chief boiler inspector upon request.

6.22 The boiler owner and ~~properly licensed~~ operating engineer are responsible for ensuring
6.23 that the boiler meets all of the requirements of the remote monitoring program identified
6.24 in subpart 5. If the boiler owner or operating engineer determines that the boiler fails to
6.25 meet the requirements of the remote monitoring program at any time, the owner or engineer

6.26 must immediately comply with the constant attendance requirements in subpart 3 until all
7.1 deficiencies are corrected and restored to compliance with the remote monitoring program.
7.2 All deficiencies and subsequent corrections must be documented by the operating engineer
in the diary.

7.3 If the chief boiler inspector or national board-commissioned inspector determines that
7.4 the boiler fails to comply with the requirements of this subpart, the boiler is disapproved
7.6 for the remote monitoring program and must begin immediate compliance with the constant
7.7 attendance requirements identified in subpart 3. Reinstatement in the remote monitoring
7.8 program is granted to the boiler owner by correcting the deficiency and obtaining verification
7.9 of the correction from the national board-commissioned inspector. Evidence of the correction
7.10 and verification must be submitted to the chief boiler inspector prior to reinstatement.

7.11 **REPEALER.** Minnesota Rules, part 5225.1180, subpart 4, is repealed.