

STATE OF OREGON MINIMUM BOILER OPERATIONAL STANDARDS

The following are the minimum standards for the operation as listed in ASME Section VI, VII, and CSD-1, for boilers in the State of Oregon.

All persons assigned responsibility for boiler operations shall:

- have knowledge of the limitations critical to the safe and reliable operation of the specific boiler(s) and equipment the operator will be responsible for.
- have knowledge of boiler fundamentals such as the physics of combustion, physics of water to steam, corrosion fundamentals effecting metal, and water treatment basics necessary to perform the work assigned.
- be familiar with the equipment to be operated, to include familiarity with the construction, operation, and manufacturer's recommended practices.
- have suitable background of training and experience in boiler, operation to perform the level of work assigned.
- be familiar with the manufacturer's operation and maintenance manual.
- be familiar with the procedures required to maintain safe and continuous operation while changing from automatic to manual operation.

On a daily basis, boiler operation shall include:

- Maintenance of a log that is to be maintained in the boiler room.

As a minimum the following information shall be included in the log:

- ◆ Test performed and the results,
- ◆ Unusual boiler conditions,
- ◆ Changes in equipment status and the reason why,
- ◆ Steam pressure (steam boilers),
- ◆ Water temperature and pressure (water boilers),
- ◆ Stack temperature (if equipped with stack thermometer),
- ◆ Flame condition,
- ◆ Confirmation that no smell of gas or evidence of fuel leaks exists around fuel valves and controls or anywhere in the boiler room,
- ◆ Confirmation that steam or water leaks from the boiler, or associated equipment problems have been referred to the maintenance staff for action,
- ◆ Operator's name, initials, and dates of log entry.

- Confirmation that pressure and temperatures are within the guidelines set by the manufacturer of the boiler. In no case shall the pressures/temperatures be greater than the manufacturer's maximum allowable working pressure/temperatures. The maximum allowable pressure and or temperature are denoted on the nomenclature plate affixed to the boiler (data plate).
- Observation of condition of the flame to determine if it is even, and not off color.
 - Gas burner flame should be translucent blue with varying amounts of yellow on the flame ends depending upon the firing rate. The flame should be even around the burner.
 - Oil burner flame should be bright yellow without dark trails off the end of the flame.
- Testing the low water cut-off and boiler low-water alarm for high-pressure boilers while in operation. The boiler shall not be left unattended while any tests are being performed.

On a weekly interval, the boiler operation shall include:

- Observing the boiler during its shutdown and start-up cycle while listening for the fuel solenoids to activate and listening for any unusual noises (such as the fuel valve solenoid chattering, buzzing loudly, etc.)
- Testing low water cut-off and boiler low-water alarm for low-pressure boilers while in operation. The test must show the boiler will shut off if a low water condition exists.
- Visual checks of ignition and flame detection system, looking for any abnormal conditions, such as frayed wires, loose or broken conduit, loose wiring, etc.
- Checking the firing rate controls and linkage for freedom of movement and linkage connections.
- Cleaning fuel oil filters and strainers. Unless your boiler is equipped with dual filters, this must be done with the boiler shutdown. Always shutdown the fuel oil pump(s) and valve off to the fuel oil filters prior to cleaning or replacement.
- Following approved lock out, tag out procedures.

On a monthly interval, the boiler operation shall include:

- Visually checking the boiler during shutdown and startup. Make sure the burner fan runs through its pre and post-purge ventilation cycles. Watch and listen to the fuel solenoid valves to insure they are closing as prescribed by the manufacturer's recommendations. If you do not have the manufacturer's recommendations refer to CSD-1 for fuel valve closure requirements.
- Checking all floor drains in the boiler room for proper operation. First look down the drain to see if water is visible, which will indicate the automatic drain charging system is working properly (if your building drains are so equipped). Put about one gallon of water down each drain to insure that the drain is free from clog. If water can not be seen in the drain indicate such on the boiler room log and notify the maintenance person to have the situation corrected.
- Verifying the operation of the low water cut-off system for hot water heating boilers.
- Inspecting the combustion air louvers and or ventilation screens both inside the boiler room and outside. They must be free from dust and debris, clean if necessary.
- Visually checking the boiler stack, looking for areas of overheating, blackened area where flue gasses are escaping, areas of rust, free operation of barometric damper (if equipped), and joints coming apart or holes in flue ducting.

On a quarterly basis, boiler operation shall include:

- Testing the flame safeguard control system. This test shall verify proper operation of control devices and cause a safety shut down and lockout. The boiler should not restart without resetting the flame safe guard control. For manned boilers in continuous operation, a variance acceptable to the Chief Boiler Inspector may be used.
- Testing low gas pressure limit control system. Slowly close the gas valve upstream from the low-pressure gas limit control. This should cause the burner to shut off and lock out. For oil fired burners, conduct the same test. However, refer to the manufacture recommendations for conducting tests on the oil pressure supervisory switch without damaging the fuel oil pumps or the system.
- Checking alternate fuel supply system by switching to the backup fuel source.

Reference Materials:

- ASME Section VI, Chapter 7
- ASME Section VI, Chapter 8
- ASME Section VI, Exhibit C I, II, and III
- ASME Section VII, Subsection C2
- ASME CSD-1

Obtainable through:

ASME - 800-843-2763

Building Tech Bookstore – 800-275-2665

Powell's Tech Store – 800-878-7323 (option #1)

Approximate cost:

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| ASME Section VI | \$175.00 |
| ASME Section VII | \$180.00 |
| ASME CSD-1 | \$ 52.00 |