

Boiler logbooks

What is a boiler logbook?

An Operating Engineers Logbook or Boiler Logbook is a record of the operating conditions of a Boiler and/or Pressure Vessel as defined by Ontario Regulation 220/01 of the Technical Standards and Safety Act, 2000 (www.tssa.org):

→Boilers and Pressure Vessels →Safety Legislation & Regulatory Information →TSSA Act & Safety Regulations
→1. Boilers and Pressure Vessel Regulation (O.Reg. # 220/01).

Note: All other files are to be read in conjunction with this regulation as they apply.

Why do you need a logbook?

In the jurisdiction of Ontario, every owner/operator of a boiler and/or pressure vessel shall keep a logbook that conforms to the requirements of the Operating Engineers Regulation 219/01 of the Technical Standards and Safety Act, 2000 (www.tssa.org):

→Boilers and Pressure Vessels →Safety Legislation & Regulatory Information →TSSA Act & Safety Regulations
→2. Operating Engineers Regulation 219/01.

Where can I access a boiler logbook?

In Ontario, logbooks may be in the form of a book or electronic log. Hardcover boiler logbooks are typically purchased through boiler maintenance contractors or directly from manufactures such as Log Books Unlimited and BookFactory. It is important to note, that no matter the type of logbook that is utilized, the required content must be maintained.

The majority of all boiler accidents occur as a result of control failures, operator error and poor maintenance. The National Board of Boiler and Pressure Vessel Inspectors Incident Report for 2002 indicates that of the 23,338 accidents recorded over the past ten years, 83% were a direct result of human oversight or lack of knowledge (primarily low-water conditions and operator error). Human oversight and lack of knowledge were also responsible for 69% of the injuries and 60% of recorded deaths. For that reason, regularly scheduled preventative and predictive maintenance of all operational equipment and testing of the control and protective devices is essential. This is supported by regular logbook entries to help reduce future boiler and pressure vessel accidents.

Comprehensive logbook procedures should include regular analysis of boiler log data by the Shift Operators, Shift Engineers, Chief Operating Engineer, and the Authorized Inspector. Operational trends often reveal subtle changes to proper equipment operation which can lead to premature failure. Constant review of the Operator Logbook data can assist in avoiding losses and/or personal injury. The tell tale signs leading up to a pending failure are also often revealed in computer control records and operating chart records. For this reason they must be kept in safe, secure storage for a reasonable period of time.

The essence of an operator's logbook is to ensure legible, detailed and accurate entries of all operational conditions and activities that occur routinely or otherwise, throughout a shift. The time of such entry is also vital. By following operating trends from all sources, risk analysis can see small problems fixed before becoming large potential failures. Senior management must also play a very active role in good documentation practice.

Comprehensive logbook procedures should also include those items recommended in the manufacturer's operating manuals. In the province of Ontario there are required entries that are outlined in the Operating Engineers Regulation 219/01.

A basic outline has been provided below as guidance. However, it is always advisable to prepare customized logbook procedures that are suited to your particular installation and its unique requirements.

Boiler logbook outline

1. All logbook entries shall be in ink and any corrections shall not be erased but crossed out, corrected and initialed.
2. No person shall deface, damage, destroy or, without the permission of the owner or user, remove the logbook from the plant.
3. The Chief Operating Engineer or Chief Operator shall read and sign the log at least once each business day.
4. The user shall ensure that the logbook is kept accessible in the plant for at least three years after the last entry is made and shall produce the logbook for examination upon the request of an inspector and, where an electronic log is kept by the user, the user shall retain the electronic log or hard copies for at least three years.

All entries should include:

- The date
- The shift (including the times at which the shift begins and ends)
- The names of all shift engineers, shift operators, assistant shift engineers, assistant shift operators, other staff and operating assistants or trainees on a shift and their periods of duty on the shift
- Any instructions for the shift operation or for staff, along with the name of the person giving the instructions
- Any change from normal operating procedure and the time of such change
- Any unusual or abnormal conditions observed in the plant and the time they were observed
- The starting or stopping times of primary equipment not recorded in other logs
- Documentation of any repairs or maintenance, including that required under the Operating Engineers Regulation 219/01, s. 39 (9), to any part of the plant, the times the repair or maintenance took place, if they were completed and who attended at the repair or maintenance
- Any malfunction of any item or equipment, the time of the occurrence and any remedial action taken to correct the malfunction
- Any work performed by plant operating personnel outside the plant, the time spent and who attended at the work
- The entry of any unauthorized person to the plant, together with the purpose of the entry and the time of entry and leaving
- Air compressor control pressure
- Raw water supply pressure

- Number of boiler(s) in service
- Type of fuel
- Operating time (on and off)
- Operating cycles
- Boiler water level (normal, low, high)
- Condition of gage glass and gage glass shield
- Rate of firing level
- Observation of flame condition
- Boiler water temperature
- Stack temperature net
- Number of boiler feed pump in service
- Condensate return temperature
- Level of water in condensate tank (normal, low, high)
- Make up water rate
- Number of circulating pumps in service
- Supply water temperature
- Return water temperature
- Level of water in expansion tank (normal, high, low)
- Treatment pump in service (low, normal)
- Number of boiler water sample taken
- Chemical levels
- Salt levels
- Findings of any water samples taken

Operational verification

The time and employee performing the below checks/tests must be recorded in the boiler logbook.

DAILY

- Boiler (and/or air receiver) blow down
- Low water fuel cutoff test (boilers)
- Controls are to be inspected and tested
- Gage glass blow down (steam)
- Boiler control linkage check
- Boiler and system leakage check
- Burner flame check
- Safety relief valves (condition and operation) check

WEEKLY

- Compressor(s) lubricating oil level
- Flame signal strength for both pilot and main flame, record readings check
- Flame failure cut off and timing check
- Pilot and main flame fuel shutoff valve closing check
- Igniter and burner operation check
- Sootblower operation check

MONTHLY

- Boiler water treatment test results
- Compressor(s) air filter check
- Low fire start interlock check
- High pressure/temperature interlocks check
- Motor and equipment bearings lubrication
- Test fan and air pressure interlocks check
- Main burner fuel safety shutoff valves for leakage check
- Oil-test pressure and temperature interlocks check
- High and low gas pressure interlocks for gas-test check
- Safety relief valves (condition and operation) check

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