

Role of the Boiler Vessels Inspector and Life Expectancy for Building Services Plant and Equipment Chart

The Ontario Recreation Facilities Association Inc. (ORFA) regularly researches and writes about issues that could affect our clients. These documents provide an opinion on key risk management issues but are not meant to provide any form of legal opinion or official interpretation. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation. All rights reserved. ©2014 Ontario Recreation Facilities Association Inc.

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What is a Boiler Pressure Vessel?

Boilers and pressure vessels include equipment that produces and distributes hot water, steam, compressed air, and other compressed liquids and gases (ammonia/halocarbons) used in our industry.

TSSA's Role in Safe Boiler Operations

Most recreation technicians connect the Technical Standards and Safety Authority (TSSA) to the Operating Engineer Regulation (OER) however, recreation facilities often have a variety of different pieces of equipment that may be governed by the TSSA 2000 Ontario Regulation 220/01 Boiler and Pressure Vessels which is also regulated by TSSA under their BPV Safety Program.

See more at:

<http://www.tssa.org/regulated/boilers/#sthash.Cu7GkrpP.dpuf>

This TSSA BPV Safety Program regulates all pressure-retaining components manufactured or used in Ontario to ensure boilers, pressure vessels and piping systems conform to the Technical Standards and Safety Act, 2000 and applicable regulations, codes and standards. TSSA is also involved in all aspects of the life cycle of pressure vessels: from design, to manufacture, to installation, to operation and maintenance. TSSA performs the required installation inspection for all boilers, pressure vessels and piping systems in Ontario. TSSA also conducts periodic inspections on uninsured boilers and pressure vessels in Ontario. Further, TSSA must be notified any time there is an incident involving boiler pressure equipment whether causing injury or death and/or property damage. These events must be made to TSSA's Director of Boilers and Pressure Vessels and Operating Engineers - See more at:

<http://www.tssa.org/corplibrary/ArticleFileMain.asp?Instance=136&ID=F9C62C0DD742400E98AACF2A9C3A13D5>



Boiler Inspectors Role in Safe Operations

All insured boilers and pressure vessels are inspected by insurance companies licensed to underwrite boiler and machinery insurance. TSSA is responsible for the certification of BPV inspectors employed by insurance companies. Recreation facilities that have equipment governed under TSSA 2000 and have secured insurance will require that the equipment be inspected by their insurance carrier and a qualified Boiler inspector. These agencies underwrite the insurance being provided by the facilities primary insurance carrier. Boiler inspectors will arrive on site to conduct a review of all equipment governed by TSSA 2000 focusing on loss prevention, risk assessments, repairs and investigations. The Inspector should be welcomed to the facility and asked to identify themselves. Staff should then provide an overview of risks and hazards that may be found in the mechanical rooms and ensure that the inspector has necessary Personal Protective Equipment to safely enter and conduct the planned work. The inspector will review operating conditions, log book entries, any repair work to ensure it meets current legislative compliance, confirm that pressure relief valves are up to date and serviceable. Having the Inspector complete an entry in the plants Supplementary Log should be included in the process. See: ORFA Benefits of Maintaining a Supplementary Registered Refrigeration Plant Room Logbook OER: Section 37 [7] doc.

http://www.orfa.com/Resources/Documents/library/docs/guides_bp/Section%2037%20of%20the%20OE

[R%20%20Log%20Registered%20Plants%20Feb%202013.pdf](#)

Loss Prevention Programs

The primary focus of the Boiler Inspector is to assist the owner in developing and maintaining a preventive maintenance program. This program may include outside contractors and internal competent staff. Maintenance activities may include the calibration of controls and sensing devices, the sampling of primary and secondary refrigerants to determine consistency and if there is any contamination that could reduce the systems integrity or life expectancy that may result in equipment failure.

Most Common Operational Issues

Boiler Inspectors indicate that the most common deficiencies discovered are often maintenance items that could be easily identified by facility staff and corrected by the equipment contractor and or facility staff.

- ✓ Safety valves that are out of date (5-year frequency)
- ✓ Safety controls/cut-offs that are not labelled by the contractor as to the last test date
- ✓ Scale accumulation in condenser or cooling towers – most often noted through a simple visual inspection in the recirculation tank
- ✓ Leaking condensers that develop ice build-up that can lead to equipment cracks roof leakage or failure
- ✓ Corrosion caused by the secondary refrigerant on pipes, valves, pumps, motors, headers
- ✓ Compressor condition – cleanliness, guards, lubrication levels
- ✓ Motor condition – clean, serviceable, vibrations and shorts
- ✓ Pressure piping condition – damage, bursts etc.

Another key area of both failure and claims is the systems electrical panel. These panels are high voltage and should be considered off limits to unqualified staff. Ensuring that your equipment contractor is qualified to conduct inspections and repairs to the electrical system should be part of the selection process. Electrical panel fires are most often caused by:

- Short circuits
- Electrical overloading
- Current leakage
- Failed contact
- Arcing
- Water leakage from the roof – often caused by condenser water leakage



B-52 Refrigeration Mechanical Code Section 8.4.1. Maintenance Requirement: *“all power and control electrical terminations shall be checked at least once every 12 months and tightened if necessary”*

The Boiler Inspector will also look for the following to be part of the equipment’s preventative maintenance plan:

- ❖ If the operation is undertaking periodic oil analysis
- ❖ NDE of chiller and condenser
- ❖ Contractor equipment disassembly inspection reports
- ❖ Calibration and certification of all safety controls
- ❖ Vibration analysis
- ❖ Thermographs
- ❖ Surge and phase protection

Caution: plant owners must not completely rely on any outside contractors to ensure compliance. The creation of facility equipment inspection and maintenance plans governed under the OER or TSSA 2000 must be undertaken by the owner or their representative. This is identified as the person “responsible” for the safe operation of the equipment. See: ORFA Refrigeration Plant Rooms: Responsible Person doc.

<http://www.orfa.com/Resources/Documents/library>

[docs/guides_bp/ORFA%20Responsible%20Person%20Jan2014.pdf](#)

Your Boiler Inspector should be considered a resource to this obligation

Reducing Risk Through Operator Competency

Competency of operational staff is also considered an important part to worker and public safety. Having operational staff that understand the legislative operation requirements as well as being committed to maintaining all equipment through ongoing inspection, detailed log entries, repairs and maintenance will help to reconfirm with these underwriters that the operation is committed to risk reduction. Once the review is complete the Inspector may issue a “loss prevention report” and Code compliance recommendations. Once satisfied the Inspector shall issue a “certificate of inspection” as required by TSSA.

ORFA’s Role in Boiler Vessel Safety

To assist ORFA members in staff competency, the Association has recommended that every ice rink refrigeration plant have and maintain a Certified Arena Refrigeration Plant Technician (CARPT). This designation is further recommended as part of a TSSA B-Certificate recertification process.

Becoming an ORFA CARPT

To qualify for the CARPT designation the candidate must:

- hold “Individual Membership” in the ORFA
- have Grade 12 education
- have current WHMIS training
- have current Standard First Aid training
- have two years full-time work experience in the care and control of a refrigeration plant
- have completed the following ORFA-approved courses with a minimum 65% passing grade:
 - Basic Refrigeration (or hold a TSSA B-Certificate in good standing)
 - Advanced Refrigeration Facility Operator
 - Recreation Facility Environmental Systems (HVAC/R)
 - Legal 1 (effective 2016)
 - *All CARPT holders are required to recertify every five years*

For more details on the CARPT see:

<http://www.member.orfa.com/designations/categories>

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