



## Summary of BPV/OE Incident Reporting Guidelines Stakeholder Feedback

TSSA has completed a consultation on incident and near-miss reporting guidelines for Boilers and Pressure Vessels (BPV) and Operating Engineers (OE). TSSA would like to thank all individuals who took part in the consultation. This is a summary of stakeholder feedback received during the consultation and of how that feedback was incorporated, where applicable.

### Background

TSSA formed a working group in 2019 to address advisory council feedback that the number of reported occurrences (incidents and near-misses) in BPV and OE was not complete. TSSA worked with industry stakeholders to assess options and selected an approach to incident reporting aligned with best practices, such as the Canadian Standards Association (CSA) Z662 for Oil & Gas pipeline systems and CSA Z260 for Pipeline System Safety Metrics. This project also looked at the definition of “near-miss.”

TSSA emailed the incident reporting guidelines to stakeholders for feedback in July. The consultation began on July 5, 2021 and closed on September 9, 2021. TSSA received a total of six responses.

### Feedback Summary

TSSA categorized the feedback received into three themes:

1. Terminology that needs to be clarified or edited, e.g.
  - a. Consider changing the word “tank” to “pressure vessel” to reflect vessels used in industry
  - b. Include “rupture disk devices” in the term “pressure relief valves”
2. Clarity on thresholds for what is reportable, e.g.
  - a. Some incidents may fall under the TSSA Fuels Safety program and/or BPV/OE - Incidents involving tanks can be covered under Fuels Safety
  - b. Clarity on the minimum amount of leakage or property damage that is reportable
  - c. An exemption for reporting non-harmful leaks in firetube boilers
3. Better understanding how reporting will be implemented, e.g.
  - a. Inclusion in guidelines or clarification that TSSA inspectors do not do inspections on all repairs and insurance inspectors do a significant number of repair inspections
  - b. Suggestion that the content of oral reports after the occurrence of incident(s) be detailed, including what was done to control the immediate hazard and what the long-term solutions are to be implemented
  - c. Suggestion to have a mechanism for online reporting

The table below summarizes all the feedback received along with any actions TSSA has taken on the feedback.

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Reporting Guidelines	Stakeholder Feedback	TSSA Response	TSSA Action
General	As most Ontario ice sheet refrigeration plant operators are compliant with current mandatory health and safety training requirements that include awareness of the responsibilities of incident and accident reporting, the Draft Guidelines might include reference to the Ontario Occupational Health and Safety Act.	The focus of the guidelines is to clarify the definition of what is an incident in the context of BPV and OE plants and references standards that assist with this more technical definition.	None
	Recommendation for TSSA to adopt the same requirements of an “owner” of an Ontario public aquatic facility where it states: <i>“Operation 6. (1) Every owner of a public pool or public spa shall designate an operator. O. Reg. 494/17, s. 5. (2) Every operator shall be trained in public pool and public spa operation and maintenance, filtration systems, water chemistry and all relevant safety and emergency procedures. O. Reg. 494/17, s. 5.”</i>	The responsibility for reporting incidents is that of the owner and their designate, such as the operator only.	None
	It would be helpful to define the responsibility of the service contractor in reporting as the current draft implies that these individuals have a responsibility to report to TSSA, however the OE Regulation currently states: <i>“Application 3. (2) This Regulation does not apply to, (a) a person who performs work in connection with a plant other than the actual operation of it (b) a person, other than an operating engineer or operator, engaged in installing, testing, or repairing a plant “</i>	There is no responsibility for service/repair contractors to report incidents. They are required to check with the owner/operator that they have reported the incident prior to starting the repairs, where applicable.	None



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	<p>Service (repair) contractors are in fact an extension by invitation of the “owner’s” registered ice sheet refrigeration maintenance team. They are currently bound under the OHSA to report to the owner/supervisor using the current internal reporting systems that are in place to guide all outside contractors. There needs to be further consideration on the suggested chain of command outlined in section 3 of the OE Incident Reporting Guidelines. Service contractors should be required to first report to the plant “owner” with reporting to TSSA being an “owner” responsibility.</p>	<p>There is no responsibility for service/repair contractors to report incidents. They are required to check with owner/operator that they have reported the incident prior to starting repairs, where applicable.</p>	<p>None</p>
	<p>Section 47 of the OE Regulation that outlines requirements of notifying the chief officer by “telephone” or other “direct means” requires additional review given today’s technology. TSSA should be required to create an on-line reporting portfolio that opens and tracks all required incident or accident reports. A report number should be generated and required to be placed in the plant’s “logbook”. Details of these events must be made available to all future plant operators through the internal training requirements.</p>	<p>TSSA has identified the need for online reporting forms. The suggestion to have functionality for generating incident report numbers on form completion is appreciated and will be considered for implementation with the online reporting forms.</p>	<p>Deferred</p>
<p><b>2.2 Incident Incident</b> – An incident is defined as an actual occurrence of any reportable event such as a Pressure Boundary Failure (PBF)/Miscellaneous Occurrence (MO) related to regulated equipment.</p>	<p>There appears to be a contradiction between the flow chart and the definition of incident. The flow chart actually defines these non-incidents / non-reportable events as incidents (left arm).</p>	<p>There is no contradiction. The non-reportable events consist of a near-miss and the exceptions, which would be incidents but are excepted/exempted to reduce reporting burden.</p>	<p>None</p>



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An incident as defined above is a reportable event to TSSA.			
<b>2.2.1 Exception</b> Leaks/LOPC from pressure equipment/fittings (e.g. gaskets or pressure relief valves) of service fluids that are non-lethal and do not require immediate shutdown for repair or replacement are <b>not</b> incidents and thus non-reportable events (see Appendix 1).	Flowchart: PBF > No to “is there loss of primary containment”. The most common way that a near-miss is identified in this scenario is when the LLD was activated. Remove the “Yes” option leading to “Near Miss” and keep “Did the LL activate”. This is based on the definitions above.	The appropriate answer to that question based on the scenario of an exception is “Yes” – since there is a leak/LOPC of non-lethal fluid. This will flow down towards the “Incident” section of the flowchart.  The scenario in the Exception/s.2.2.1 would be an incident using the flow chart but it is non-reportable because it has been exempted.	None
<b>Definitions 2.1</b> Pressure Boundary Failures (PBF): “Primary containment – a physical structure (e.g. tank, pipe, valve, and fittings)”	Consider “pressure vessel” instead of tank.	TSSA to change terminology.	Removed the word “tank.”
<b>Miscellaneous Occurrences (MO)</b> – reportable events arising from operation/use of regulated equipment without the failure of a pressure boundary <b>but</b> results in injury/fatality or property damage.	Provide examples such as boiler draft fan deblade or electrical motor short circuit.  Provide examples in Appendix.	TSSA will include these examples in the section for defining “MO”	Incorporated with BPV example i.e. boiler hot surface burn. Examples provided by respondent are fuels safety examples.
Appendix 1: Near-miss items	“Near-miss” appears to be acceptable. Suggest a definition without referring to other codes, such as API571.	The reference to code is to indicate that the definition is based on best practice as indicated by API Code.	None
<b>Repair Contractors</b> – should continue with existing process for notifying TSSA inspector prior to repairs on pressure equipment to confirm if they	Wait for the TSSA investigation or repair inspection? If this is for repair inspection, the repair contractors can also call the insurer for the repair inspection if the object is	Agreed. For insured boilers the insurance inspector is called for the repair inspection.	Incorporated.  Paragraph rephrased.



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can proceed and other inspection details.	insured. Perhaps add some explanation under this paragraph.		
<b>Reporting guidelines – Repair Contractors:</b> “The owner and their site pressure equipment repair contractor should collaborate to notify TSSA inspectors of incidents as defined above prior to starting repair for appropriate investigation and documentation.”	The regulation states that the repair inspection can be either done by TSSA inspector or insurer if the object is insured.	Agreed. For insured boilers the insurance inspector is called for repair inspection.	Removed
Appendix 1-Example Scenarios:	Move PSV definition up so that reader will know it right away.	The definition of “PSV” is in the main list.	None
Incident -“Any failure of (PSV) result in staying open (pop up) and not resetting or resulting in immediate shutdown due to leak of service fluid”.	A safety valve could not reset for a hot water tank. It happens very often. Do you want to report it as incident? If yes TSSA will receive many incidents like this every year.	Minor edit required to change the “or to” and to indicate that this is an incident only if the equipment has to be shut down immediately for repairs.	Incorporated
Incident-“Any failure of gasket which result in leak requiring immediate shutdown for gasket replacement.”	Often it will not be reported if the pressure is low.	We can only guide operators to report. If the equipment has to be shut down for repairs, then it is an incident that should be reported.	Incorporated and rephrased
	Will this guide be mandatory or only a reference?	The purpose of the document is to guide industry in the interpretation of a legally binding regulation	
<b>Appendix 1 Event:</b> Boiler or heat exchanger bundle failure during operation resulting in leakage/weeping between tube and bundle. <b>Classification:</b> Incident	Firetube boilers have occurrences where the tubes can have a pinhole which results in leakage from the waterside to the fireside of the boiler. These pinholes are caused by poor water treatment -- oxygen corrosion. The leakage is into the inside of a tube which is fully contained by the boiler	Agreed	Incorporated



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	pressure boundary and does not represent any safety issue at all as the inside of the boiler is vented to the atmosphere through the chimney. This should not be considered a pressure boundary failure.		
	<p>There are low volume designs and heat exchangers that can have a pinhole in a tube that results in leakage to the outside of the boiler that is not contained by the boiler pressure boundary.</p> <p>Is it the intent of these Reporting Guidelines to have these occurrences reported the same way because they surely are not the same?</p>	If the equipment can still be operated safely without requiring immediate shutdown for repairs, then the exception applies, making the occurrence non-reportable.	None
<b>2.2.1 Exception</b> Leaks/LOPC from pressure equipment/fittings (e.g. gaskets or pressure relief valves) of service fluids that are non-lethal and do not require immediate shutdown for repair or replacement are <b>not</b> incidents and thus non-reportable events (see Appendix 1).	Recommends 2.2.1 text be the same for the BPV Guidelines and the OE Guidelines.	TSSA will update the documents to have the same text for the definition of the exception – using it in the BPV guidelines as in the OE Guidelines.	Incorporated
Near-Miss – In all examples in the appendix classified as such	Replace "Near Miss" with "Near Miss - Non-Reportable" in all cells that contain this text.	Agreed	Incorporated
Leaks from pressure equipment that require repairs to the pressure vessel are considered reportable events.	On a daily basis leaks can occur on pressure equipment that requires repairs that we would never consider reporting. Examples might be a valve that is leaking out of the packing, changing a leaking pressure gauge, replacing a leaking pipe	TSSA would like all those instances cited to be reported since they are incidents (except the pressure gauge leak since this is a measuring device not a pressure vessel). The focus is not only the reporting of incidents but also the causes. The more data	None

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	nipple, replacing a leaking steam trap, etc. These are all minor maintenance type items in a heavy industry and certainly would be of no statistical value to the TSSA, would flood your reporting system and certainly would be an unreasonable and costly burden on industry.	TSSA has the better and more accurate the data analysis will be, providing information that can help industry prevent/minimize such incidents.	
<b>2.1 Pressure Boundary Failures (PBF)</b> - Ruptures and explosions. <b>PBF</b> refers to the <b>through-wall</b> thickness/boundary failure of the exterior of the pressure equipment which results in leakage/loss of primary containment (LOPC).	Is there a minimum leak that is reportable, similar to fuels or is the exception considered to address this? If it is the exception than if I can replace the fluid as fast as it leaks out then there is no incident. Not sure this is what TSSA wants.	Any leak amount is to be reported unless it does not require the equipment to be shut down immediately for repairs - as in the exception.  As long as equipment can be operated safely without stopping for repairs the leak is non-reportable.	None
<b>Miscellaneous Occurrences (MO)</b> – reportable events arising from operation/use of regulated equipment without the failure of a pressure boundary <b>but</b> results in injury/fatality or property damage.	Any minimum for property damage?	Currently TSSA has no thresholds for property damage the focus is mainly public harm as represented by injury/fatality. There is ongoing work to review this and if changed will update accordingly. As of now the definition relates to any property damage no minimum.	None
<b>2.2.1 Exception</b> Leaks/LOPC from pressure equipment/fittings (e.g. gaskets or pressure relief valves) of service fluids that are non-lethal and do not require immediate shutdown for repair or replacement are <b>not</b> incidents and thus non-reportable events (see Appendix 1).	Comment/add sentence: The term "Pressure Relief Valves" shall include "Rupture Disk Devices" and "Pin Devices". (for reference see Section VIII-1, UG-136, UG-137, and UG-138. Also UG-140 'Overpressure protection by System Design' is addressed by 2.3.1 below)	Agreed	Incorporated



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<p><b>2.3.1 Safeguards &amp; Controls</b> ...The activation of safeguards and safety controls – especially when they are the last line of defense for that equipment – should indicate a near-miss scenario.</p>	<p>If a near-miss is not reportable then this section is not needed.</p>	<p>The section aims to clarify what types of safeguards may activate to result in a near-miss.</p>	<p>None</p>
	<p>Consider a 2.4 Second or Tertiary near-miss. A second or tertiary near-miss event which is related in any way to the first near-miss or is found to occur from the same pressure retaining equipment/fittings is a reportable event.</p>	<p>A near-miss is considered the same regardless of the number of times it occurs. The repeated near misses should be a sign of higher risk of an incident to the owner/operator.</p>	<p>None</p>
<p><b>3. REPORTING GUIDELINES</b> ... Oral reports as soon as possible after occurrence of the incident and written reports within 48 hours of the incident.</p>	<p>The content of the report should be detailed. Fluid, amount released, what failed, what caused the failure, what was done to control the immediate hazard and what long term controls are to be implemented.</p>	<p>Agreed</p>	<p>Deferred: this will be detailed by TSSA for the implementation phase.</p>
<p><b>Appendix 1 example 4 - Event:</b> Boiler or heat exchanger failure during operation resulting in leakage/weeping at gasket to outside for non-lethal service fluid. <b>Classification:</b> Near-Miss</p>	<p>This is a loss of primary containment and should be reportable.</p>	<p>Correct. TSSA will update the documents.</p>	<p>Incorporated</p>
<p>Suggested addition to Appendix 1</p>	<p>Add a further Example Scenario: A second or tertiary near-miss event which is found to occur from the same pressure retaining equipment/fittings.</p>	<p>A near-miss is considered the same regardless of the number of times it occurs.</p>	<p>None</p>





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Flow chart	What is process flow when the last line of defense does not activate?	If the LLD does not activate then there is an incident. For this section the only answer is "Yes" because the incident was avoided only because the LLD activated.	None
Flow chart	Add rectangle box below Near-Miss with text: "Second or more Near-miss on same equipment?" If "Yes" - Incident, if "No" - Near-Miss.	A near-miss is considered the same regardless of the number of times it occurs.	None

The [BPV incident reporting advisory](#) has been posted on the [Report An Incident](#) page on our website.

Please note that examples and the flow chart were edited out of the final advisory for simplification.

**Prepared by: Mueni Kithuka, Stakeholder Relations Advisor**

**Reviewed by: Viola Dessanti, Strategic Analytics Director; and Ajay Raval, BPV and OE Director**

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