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Reporting notifiable incidents for failure of pressure safety valves when identified as safety critical elements at Major Hazard Facilities

The purpose of this bulletin is to present WorkSafe's position on when an operator should report a notifiable incident following failure of a pressure safety valve (PSV) identified as a safety critical element (SCE) at a Major Hazard Facility.

Major Hazard Facility Regulations requirements

The notification requirements for SCE failures are covered by the Major Hazard Facilities Regulations 2016 regulation 33. It states that 'damage to, or failure of, a safety-critical element that requires intervention to ensure it will operate as designed' is a notifiable incident (regulation 33(c)).

WorkSafe's position

A PSV can be identified as a safety-critical element at a Major Hazard Facility. Failure of a PSV includes, but is not limited to, lifting at a pressure higher than its design set pressure in service or on test, within allowable tolerances. WorkSafe considers the allowable tolerance for a PSV to begin lifting to be:

- within +15 kPa of the marked set pressure up to and including 500 kPa, and
- +3% of the marked set pressure above 500 kPa.

Note: This position does not apply to:

- Pressure relief devices, intended primarily for protection against exposure of a pressure vessel to fire or other unexpected sources of external heat, installed on vessels having no permanent supply connection and used for the storage at ambient temperatures of non-refrigerated liquefied compressed gases provided they satisfy the conditions detailed in ASME VIII Div1 UG-125, 3 (a) - (e).

In this case the failure would be considered a notifiable incident if the PSV begins lifting above 110% of its set pressure.

Worksafe considers a failure on test or in service above these thresholds is a failure that will require intervention to ensure that the PSV performs as designed and as such is considered a notifiable incident.

This position is in line with ASME VIII Division 1 Boiler Pressure Vessel Code and AS1271 *Safety Valves, Other Valves, Liquid Level Gauges and Other Fittings for Boilers and Unfired Pressure Vessels*. These tolerances should be reflected in an operator's performance standards.

WorkSafe recognises that a PSV lifting at a pressure just above the tolerance limit does not mean there was a high risk of it not controlling a potential major incident. This is because the equipment that the PSV is protecting will not rupture until the overpressure is much higher. However regulation 33(c) only requires that when an SCE fails, intervention is needed for the PSV to operate as designed.

What is considered intervention?

WorkSafe considers intervention relating to a PSV to include the replacement (total valve replacement or replacement of individual parts), adjustment or dismantling and repair of a PSV due to:

- the PSV lifting higher than its set pressure tolerance
- the PSV sticking shut or failing to open, including when a PSV lifts higher than its set pressure in the initial (as received) pop test due to a build-up of deposits
- the PSV only partially opening
- leakage past the PSV, or
- the PSV sticking open.

Notification requirements under the Major Hazard Facility Regulations

Operators must comply with requirements in regulation 34 and Parts 1 and 2 of Schedule 4 of the Major Hazard Facilities Regulations. The root cause analysis required in Part 2 should be proportionate to the severity/complexity of the valve failure, see below.

Valve lifts between +3 and +10% of set pressure	The initial incident notification form may be considered as both the seven and 30 day reports, negating the need to submit any further reports. Note that this is dependent on the information in the initial incident notification form meeting all the requirements in Parts 1 and 2 of Schedule 4 of the Major Hazard Facility Regulations.
Valve lifts above 10% or otherwise fails	The initial notification form is unlikely to contain sufficient information to satisfy all requirements of Schedule 4. Sufficient time will be required to complete an appropriate root cause analysis proportionate to the failure complexity and submit the seven and 30 day reports.