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ALERT

To Pressure Equipment Owners and Operators

Rig Boiler Fatality

A worker was checking a rig boiler when a ball valve on the blow-off line came apart releasing high pressure hot water and steam into the area. The worker received severe burns and later died in hospital.

Failure analysis suggests that the ball valve involved in the incident failed as a result of damage caused by water freezing in the valve.

Experimental tests conducted as part of the failure analysis showed that ball valves were irreparably damaged when subjected to freezing temperatures with water retained in ball valves in the closed position. On freezing, water became ice and expanded, exerting tremendous force on the valve body. The valve failed when the threaded nut section on one side of the valve dislocated from the main valve body. Examination revealed that the valve body had increased in diameter and the thread crests on the nut section were deformed or sheared off. Based on the results of the tests, damage would have been expected to have occurred upon freezing.

With the low temperature conditions in our Province in winter, there is potential for severe damage to pressure-retaining components from the freezing of water or other fluids.

Pressure equipment subject to the freezing of accumulated and retained moisture or water or other fluids may incur damage that would result in the equipment's being unfit for pressure service, together with a significant potential safety hazard when under pressure.

Any pressure equipment that has been subject to freezing of the contained fluid should be taken out of service. If freezing has been suspected or observed, the pressure equipment or fittings involved **must not** be placed back in pressure service without proper inspection and integrity evaluation. The use of damaged components in pressure service can be highly hazardous and components damaged by freezing can not likely be repaired.

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