

Incident Summary #II-1318573-2022 (#25892) (FINAL)

SUPPORTING INFORMATION	Incident Date	January 20, 2022		
	Location	Peace River Region		
	Regulated industry sector	Boilers, PV & refrigeration - Boiler and pressure vessel system		
	Impact	Qty injuries	0	
		Injury	Injury description	N/A
			Injury rating	None
	Damage	Damage description	An electric sweet gas heater overheated rupturing the heater shell wall resulting in loss of containment of sweet sales gas into the building.	
		Damage rating	Major	
Incident rating	Major			
Incident overview	An electric heater for sweet gas ruptured from overheating and released sweet gas into the building as the high temperature shutdown was not in operation.			
INVESTIGATION CONCLUSIONS	Site, system and components	<p>This electric seal gas heater is used to heat sweet gas which then is piped downstream to provide positive pressure on seals for a turbo expander as a part of a compressor. Therefore, the heater is called a “seal gas heater”.</p> <p>In normal operation, sales-gas (gas where the hydrogen sulfide is removed, also called “sweet-gas”) normally flows continuously through the heater which uses an electric heating element within the heater’s 4-inch shell to heat the sweet sales-gas for further use downstream.</p> <p>This unit is designed to have a high temperature shut down limit switch to prevent overheating of the electric heater in the event of loss of gas flow through the heater.</p>		
	Failure scenario(s)	<p>The Owner’s representative indicated by email that the electric heater was installed and contained sales-gas ready for use but there was no flow of sales-gas through the electric heater at the time of the incident as the downstream process was not ready to receive the heated gas.</p> <p>The seal gas heater high temperature shut down either failed to function or was not connected prior to the electric heater installation.</p>		

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Facts and evidence

The owner's third-party mechanical analysis report indicates that the seal gas heater was in stand-by mode and filled with sweet gas at normal operating pressure and that no sweet gas was flowing through the electric heater when the shell of the heater ruptured.

The third-party report indicates that the field investigation indicated that the high temperature shut down was not connected.

The owner representative communicated via email that the electric heater contained sweet fuel gas and was sitting at normal operating pressure ready to perform its intended function but was not experiencing flow as the turbo expander was not in service.

The owner representative identified via email that the seal gas heater unit was not included on the original electrical drawings issued for construction and was not hooked up by construction crews resulting in no high temperature condition alarm or shut down.

Upon failure of the electric heater the plant emergency gas detection system shut down and isolated the plant.

Causes and contributing factors

It is very likely that the uninstalled temperature controls was the cause of this incident.



Photo 1: Overview of Heater

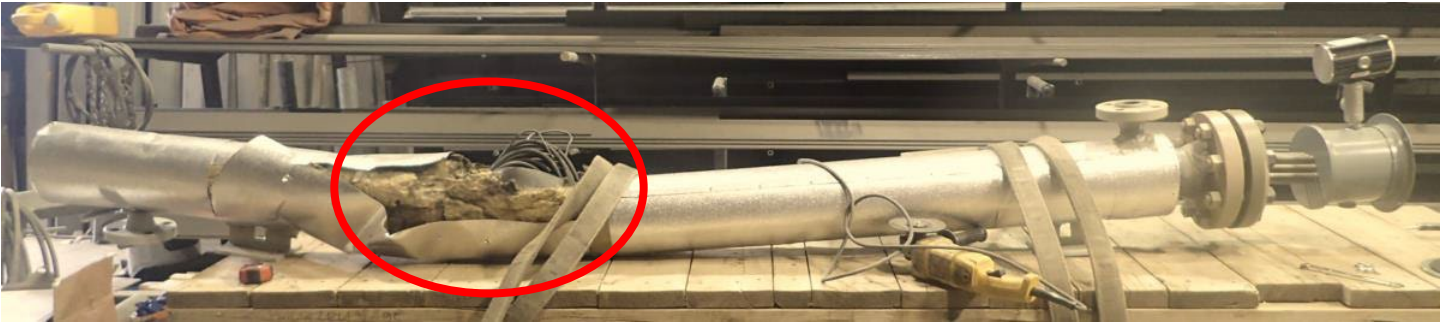


Photo 2: Heater removed from pipe rack



Photo 3: Heating coils displaced through rupture opening