Incident Summary #II-745207-2018 (#8593) (FINAL)

SUPPORTING INFORMATION	Incident Date		September 17, 2018
	Location		Coquitlam
	Regulated industry sector		Boilers, PV & refrigeration - Refrigeration system
	Impact – Injury	Qty injuries	0
		Injury description	None reported
		Injury rating	None
	Impact – Damage	Damage description	Broken nipple from the oil separator to the pressure relief valve
		Damage rating	Minor
	Incident rating		Minor
	Incident overview		Residual ammonia released from the oil separator. 300 plus ppm of ammonia was picked up by the refrigerant detector and an emergency shut down was initiated.
INVESTIGATION CONCLUSIONS	Site, system and components		The compressor receives ammonia at low pressure and it discharges at high pressure in a vapor state to the oil separator. The oil separators function is to separate oil from ammonia that feeds back into the compressor oil reservoir. Oil separator is a crucial piece of equipment to the refrigeration system because if oil does enter into the refrigeration system the system will not function effectively. A nipple is connected from the oil separator to the relief valve. The function of the nipple is to connects the oil separator to the relief valve. A safety feature on the end of the nipple is the pressure relief valve, when the system is over pressured it will release ammonia in to the atmosphere. (See Photo 1)
	Failure scenario(s)		The nipple connecting the oil separator and valve had fractured, releasing ammonia.
	Facts and evidence		• There were no vibration stabilizers attached to the nipple at time the nipple broke from the oil separator. • Contractor stated that he felt there wasn't enough vibration stabilizers installed. • The nipple was observed to be sheared off at the threads, a location where a fatigue crack may migrate due to excessive vibrations.
	Causes and contributing factors		It is likely that vibrations could have been the cause of the broken nipple. Excessive vibration at the nipple could be due to the lack of stabilizers

Photo 1: View of pressure reliev valve and nipple assembly.