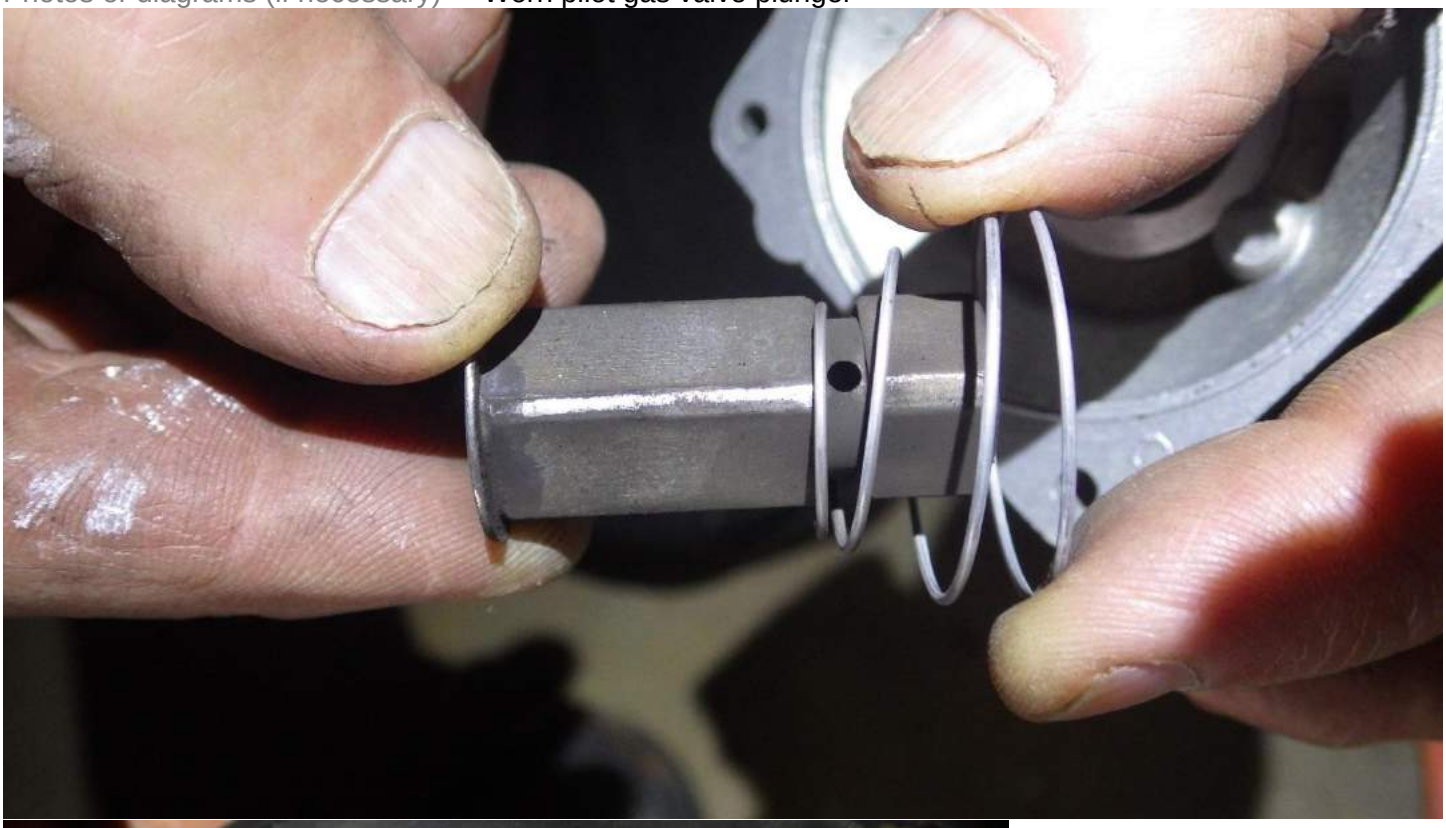
Incident Summary (Reference #BPVII-947434-2017)

SUPPORTING INFORMATION	Incident Date		*October 29, 2017*
	Location		*Vancouver*
	Regulated industry sector		*Natural Gas System*
	Impact – Injury	Qty injuries	*None*
		Injury description	*No injuries*
		Injury rating	*None*
	Impact – Damage	Damage description	*Pilot safety shutoff valve jammed and failed to close when required*
		Damage rating	*Insignificant*
	Incident rating		*Minor*
	Incident overview		*When the building heating boiler was shutdown, the solenoid controlled pilot safety shutoff valve failed to close. This went un-noticed for several hours until 9th floor tenants reported steam in the corridor and called 911, the fire department responded to the call and noticed that the shutdown boiler had a fire in it.*
INVESTIGATION CONCLUSIONS	Site, system and components		*The building hydronic system is supplied by a fire tube boiler that supplies hot water to the building at 60 psi and 170 degrees Fahrenheit* *The pilot gas safety shutoff valve supplies gas to the igniter and is used to ignite the main fuel burner, the pilot safety shutoff valve failed to close when the boiler was shut down and allowed gas to flow uncontrolled to the pilot flame.. This gas pilot flame remained in operation undetected until tenants noticed steam coming from the broken expansion tank piping and filling the 9th floor corridor, the tenants called the Fire Department.*
	Failure scenario(s)		*When the boiler receives a shutdown signal, both the main burner and the pilot gas igniter safety shutoff valves close stopping the flow of gas to the main and pilot burners. The pilot safety shutoff gas valve failed to positively shut off the flow of gas to the ignitor and the pilot flame continued to burn.*
	Facts and evidence		The boiler was shut down by switching off the power panel control switch by maintenance personnel. Boiler fires were not visually checked to be out. The pilot gas valve did not close, gas was allowed to flow to the pilot system The gas valve was disassembled on site by the contractor, the plunger guide contact points show wear and could be felt to bind when the plunger was moved through its total travel in its guide. Furnace and fire tubes were heavily carbon coated. The pilot and air diffuser were also heavily carbon coated and the diffuser metal appearance shows it had overheated by insufficient air flow .
	Causes and contributing factors		*This solenoid pilot valve plunger guide surfaces have worn significantly ,easily seen on inspection. This valve has been in service for many years, if an internal inspection occurred on a regular basis this wear may have revealed this problem developing. Proper boiler shutdown procedures and checklist may have prevented the continued un-noticed pilot operation.*

Photos or diagrams (if necessary) Worn pilot gas valve plunger



Pilot Gas Valve seat - Blemish

Solenoid operated pilot gas valve, still attached to supply line.