PPS Pigging System Safety Rules

Process pigging systems design and install systems bearing the following pigging system rules in mind. PPS consider these to be the minimum requirements to reduce any associated risk to a reasonable level.

1) **The line through which the pig travels MUST vent propellant on the following**
Emergency stop (Automated systems)
Operator request to stop pigging
Power failure
Instrument air failure

In general all reasonably foreseeable faults / failures should result in system venting BOTH when sending the pig and returning. This includes ensuring the path needed to vent the line does not close as a result of any reasonably foreseeable failure.

2) **There MUST always be a physical barrier to the pig leaving the line if it is not in the intended position when opening the pig house.**
The highest risk to an operator is when opening the pig house. Even though the standard PPS pigging system vents at the Receive / Return station there is also a physical isolation of the pig house either using a ball valve or an actuated pig bar.

3) **Pig removal is kept to a minimum and where possible only as a maintenance function**.
PPS return the pig to a pig house after use to reduce the frequency of opening the line to remove the pig. This in turn reduces the frequency of risk used in any risk assessment.

4) **Propellant venting must take an intended route and not vent to the destination filler/tank**
The venting of propellant can create a risk of noise or splatter or allow an unintended pressurisation of equipment. For this reason the PPS pigging system is designed to only use the Air-Vent-Drain assembly for venting allowing precautions to be applied to that one point.

5) **A single equipment failure cannot pressurise the line with propellant.**
Even the manual PPS system has an air-spring, normally open actuator on the Air-Vent-Drain assembly. This means that two pieces of equipment are incorporated into the addition of propellant into the pigging system. For an unintended pressurisation to take place the drain valve would have to fail to open and the solenoid valve providing the propellant would need to fail to closed.

6) **Any interlock system on a pigged line connection should trigger a system vent BEFORE it is possible for the operator to get access to remove the connection.**
PPS generally advise not using removable connections in a pigging system but where necessary these connections should be fitted with an interlock system following this rule.

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