APPENDIX R

In This Section

Referenced Protocols

None

APPENDIX R – LOADING AND LAUNCHING A PIG

Loading and Launching a Pig

Important Safety Notice

Any launcher or receiver used after July 1, 2021, must be equipped with a device capable of safely relieving pressure in the barrel before removal or opening of the launcher or receiver barrel closure or flange and insertion or removal of in-line inspection tools, scrapers, or spheres. A device must be use to either: indicate that pressure has been relieved in the barrel; or alternatively prevent opening of the barrel closure or flange when pressurized, or insertion or removal of in-line devices (e.g. inspection tools, scrapers, or spheres), if pressure has not been relieved. Refer to 192.750.

Safety Tips: *Pigging a line can be dangerous. Be aware of risk and surroundings.*

A. Safety

- Hold safety meeting prior to pigging operations
- Restrict Area to authorized personnel
- Hearing protection should be worn at all times
- Gloves and eye protection should be worn at all times
- Other PPE (hard hat, FRC's, etc.) should be worn at all times
- APR (Air Purifying) Respirator equipment shall be worn as necessary during loading by loading personnel
- Flame retardant clothing should be worn as necessary during loading by loading personnel
- Eliminate all sources of ignition (i.e. cell phones) during loading
- Notice the area around you while venting (noise control)
- Monitoring devices or equipment for oxygen, hydrocarbons, H_2S, and NORM should be used
- Stay clear of gas release (in case of ignition)
- Ensure closure door with pressure alert valve installed and functioning properly
- Verify a pressure gauge and purge point has been installed to monitor and relieve pressure inside the barrel
- Never stand directly in front of the pig launcher/receiver door
- Class ABC fire extinguishers for flammable solids (i.e. paper, wood, plastic), liquids, and gases as well as those involving electrical equipment shall manned during loading and launching
- Class D fire extinguishers to manage pyrophoric material (reactive metals i.e. iron sulfide) shall be manned during loading and launching. Class D is ineffective for class ABC.

- Wash hands thoroughly avoiding abrasive cleansers

II. **Potential Hazards:** Debris from pigging can contain waxes, solids, liquids and gases. All should initially be treated as potentially harmful material. Debris agitated by pigging or liquids injected for cleaning and corrosion protection can damage farm taps, regulators, measurement facilities, and lead to system outages. Filters/separators shall be installed where applicable or facilities shut-in during pigging operations.

A. Potential Hazards

1. Flammability
2. Magnetism (awareness for pacemakers, hearing aids, and other medical devices)
3. Potential contaminants but not limited to (benzene, toluene, H_2S, NORM, mercury, etc.)
4. Excessive Weight
5. Flying Projectiles
6. Excessive audible environment
7. Reduced oxygen environment
8. Pressure inside barrel prior to beginning work

III. **Loading Procedure:** The below procedure is meant to be a guide for loading a pig under ideal situations and configurations. Many pig receivers are configured differently, and valves may be in different locations or not there at all. Be sure you know which valves are similar to the ones in standard drawing PD13200. Operations is responsible for adjusting procedure due to configurations or project conditions to ensure that loading and launching are performed in a safe and controlled manner. There are inherent risks in opening the pig trap to atmospheric pressure so care must be taken to ensure that the barrel is depressurized prior to opening. Closures must be secured with bolts, pins or a locking device upon closing and atmospheric pressure must be obtained prior to opening.

A. <u>Inspection of Facilities</u>

- Inspect all valve gaskets and bolts for proper torque
- Inspect all foundations and supports for structural integrity
- Inspect all loading trays and loading tables for structural integrity
- Inspect index direction on trap and pipeline valves
- Inspect pig signalers
- Inspect for grounding of push/pull rods, separators and other equipment and structures.
- Inspect lithium battery temperatures and levels prior to loading
- Inspect barrel to verify a device capable of safely relieving pressure is installed

Valve Positions when Launcher is in Standby Mode:

Valve Description	Valve Position
#1 – Main Line Valve (MLV)	Open

#2 – Launcher MLV (LMLV)	Closed
#3 – Kicker Line Valve (KLV)	Closed
#4 – Equalizer Valve (EV)	Closed
#5 – Blow Down Valve (BDV)	Closed
#6 – Vent Valve (VV)	Closed
#7 – Vent Valve (VV)	Closed
#7 – Vent Valve (VV)	Closed
#8 – Vent Valve (VV)	Closed
#9 – Vent Valve (VV)	Closed
#10 – Vent Valve (VV)	Closed
#11– Vent Valve (VV)	Closed

B. De-pressuring launcher:

Launcher Valve Positions when Bleeding Down the Launcher to Load a Pig:

Valve Description	Valve Position
#1 – Main Line Valve (MLV)	Open
#2 – Launcher MLV (LMLV)	Closed
#3 – Kicker Line Valve (KLV)	Closed
#4 – Equalizer Valve (EV)	Open
#5 – Blow Down Valve (BDV)	Open
#6 – Vent Valve (VV)	Open
#7 – Vent Valve (VV)	Open
#8 – Vent Valve (VV)	Open
#9 – Vent Valve (VV)	Open
#10 – Vent Valve (VV)	Open
#11– Vent Valve (VV)	Closed

1. Verify Valve #1 is open and Valves #2 and #3 are closed.
2. Slowly open Valve #4, then Valves #5 and #6 to vent any pressure from launcher.
3. Open Valves #7, #8, and #9 to assure all pressure is off the launcher.

C. Loading Pig and Pressurizing Launcher:

1. Verify the barrel is relieved and not pressurized by checking the gauge and purge point installed.
2. Open pressure alert valve on closure door and relieve any pressure build up within the barrel.
3. Stand clear of the launcher door while opening. Note: all valves should still be in the same position as in section B.
2. Load pig

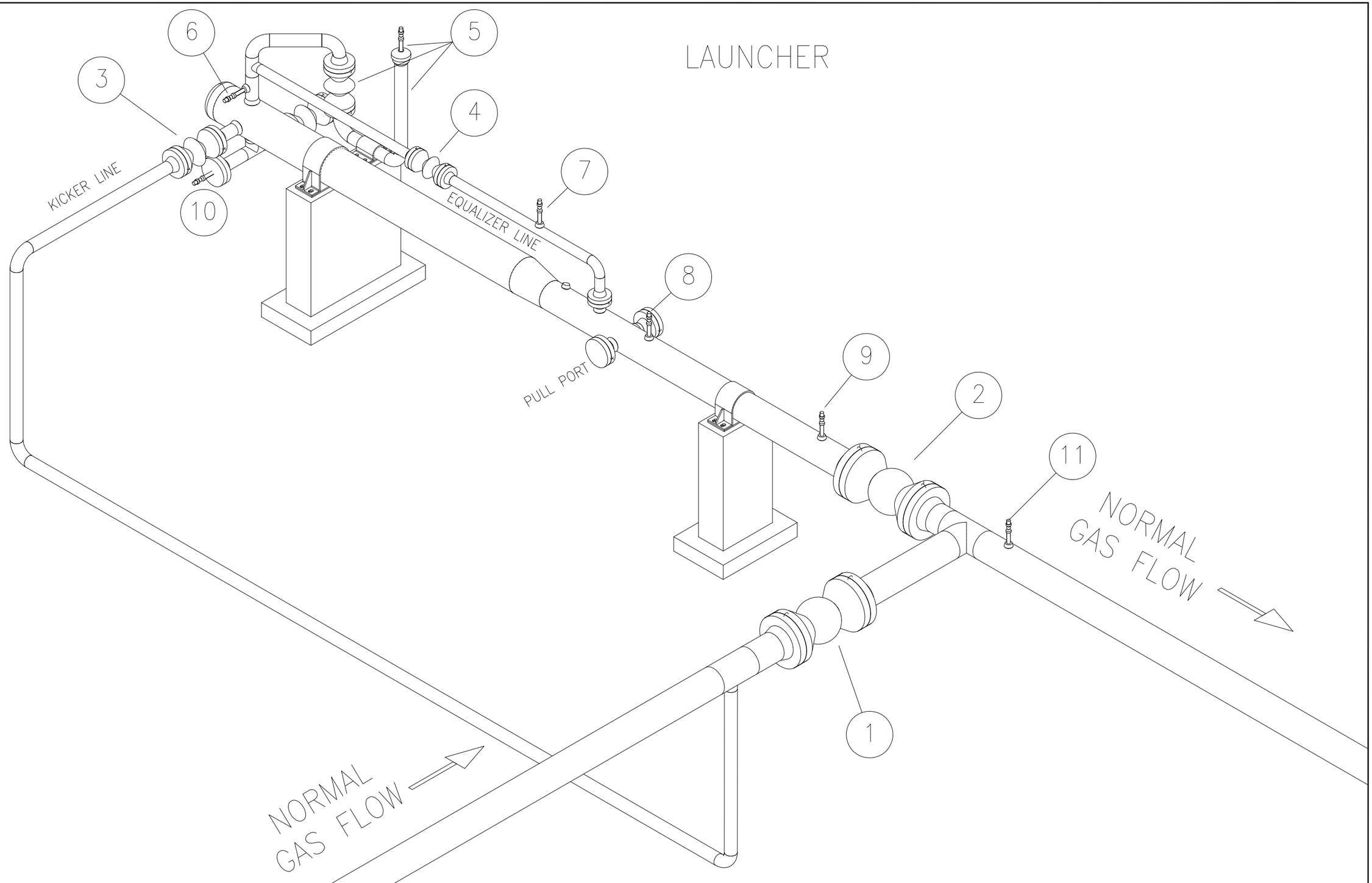
i. When using push bar to load pig, connect a grounding cable between the push bar and the launcher
ii. If pig is being pulled in:
    1. Use rope to pull in pig (non-metallic cable)
    2. If pull ports are perpendicular to launcher, use a fitting to prevent rope from contacting sharp edge of pull port
    3. A fish tape should be extended from the pull port to the entrance of the trap to avoid standing at the entrance of the trap while attaching the pull rope

3. Seat the pig in the launcher reducer.
4. Lubricate and close trap door
5. Purge the launcher:
    iii. Verify EV #4 is open
    iv. Slowly open KLV #3
    v. Vent air from BDV #5 and VV's #6 thru #9
    Purge launcher until CGI reading of 95% is obtained at VV #9.
    vi. Close BDV #5, then close VV's #6 thru #9.
6. Pressurize launcher:
    vii. Verify EF #4 is open
    viii. Continue flowing gas into launcher through KLV #3 to pressurize the launcher SLOWLY
    ix. Install pressure gauges in VV #6, VV #9 and VV #11 to assure pressure is equal upstream and downstream of pig and upstream and downstream of LMLV #2.

E. Launching Pig

1. Verify KLV #3 is in open position.
2. Verify pressure gauge readings at VV #6, VV#9 and VV #11 are equal.
3. Open LMLV #2 (assure fully opened).
4. Close EV #4 (slowly).
5. Close MLV #1 (fully).
6. Pressure will begin falling downstream of pig at VV #9 and VV #11 gauges. When there is sufficient pressure differential between upstream of the pig (VV #6) and downstream of the pig (VV #9) the pig will begin moving.
7. The goal is to launch the pig smoothly to avoid over-speeds, especially on smart pig launches. On low pressure lines there is a tendency for the pig to launch at higher than desired speed due to the compressibility of gas at lower pressures. Be prepared to throttle flow by partially closing KLV #3 to minimize speed excursions.
8. Once pig has cleared LMLV #2 and passed the tee to MLV #1, open MLV #1, close LMLV #2 and KLV #3.
9. Open EV #4.
10. Open BDV #5 to vent pressure from launcher, then close BDV #5.
11. Repeat process starting at Section A. above for next pig launch.

LAUNCHER



NOTES:

1. ORIENTATION OF KICKER GAS VALVE & BLOWDOWN VALVE CAN BE INTERCHANGED.
2. DESIGN LIMITED TO PIPELINES WITH AN MAOP OF 1000 PSIG OR LESS.
3. ALL OLET'S MUST MEET THE YIELD STRENGTH OF THE COMPONENT POSSESSING THE HIGHEST YIELD STRENGTH.
4. APPLICATION BASED ON A CLASS 3 LOCATION, 0.5 DESIGN FACTOR.
5. CONFIRM WITH VENDOR THAT STANDARD REDUCER YIELD STRENGTH IS 48,000.
6. ANY MODIFICATIONS TO THIS STANDARD MUST BE APPROVED BY THE ENGINEERING DEPARTMENT.

LAST UPDATED: 9/05/18
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REPLACES DRAWING	DATE	APPROVED BY:	STDS.	8/06/07

PIG LAUNCHER
10", 600# ANSI
1000 PSIG MAOP

A.I.N.

DWG NO. LAU/REC PROC. SHT. 1

ATMOS energy