Process Safety Beacon

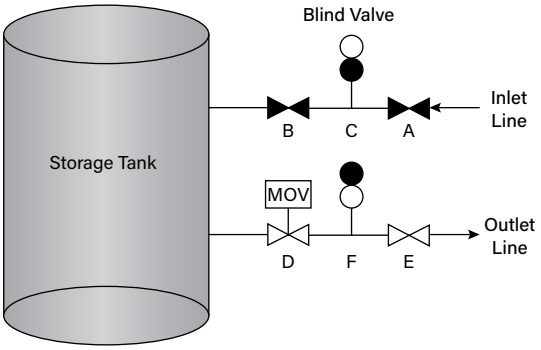
Messages for Manufacturing Personnel
http://www.aiche.org/CCPS/Publications/Beacon/index.aspx

An AIChE Technology Alliance
CCPS Center for Chemical Process Safety

This Issue Sponsored by
ioMosaic
Minimizing risk. Maximizing potential.™
www.iomosaic.com

Valve Position Errors Can Cause Serious Incidents

May 2021



▲ A major explosion and fire occurred during a transfer operation involving blind valves (Valves C and F), manual valves (Valves A, B, and E), and a motor-operated (MOV) valve (Valve D).

During a transfer operation on Oct. 29, 2009, more than 260,000 gal (984 m^3) of gasoline was released from a storage tank, leading to a major explosion and fire. The incident killed 11 people, including two operators, and injured 150 others. The resulting fire burned for 11 days, and the terminal was completely destroyed.

Prior to the incident, an operator closed Valves A and B, then moved blind Valve C from open to closed. The official report indicated that the operator made a mistake in the sequence of valve operations when switching from tank filling to tank discharging. The operator changed the position of blind Valve F from closed to open when it was not properly isolated. Gasoline quickly began leaking out of the opening in the top of blind Valve F. The manual Valve E and the motor-operated (MOV) Valve D were both found in the open position after the incident.

Did You Know?

- Manual valves may not be operated often and they may fail to seal for many reasons, including worn seats, debris blocking the sealing surfaces, and corrosion.
- A manual valve can be configured into many positions. If the correct position of the valve is not obvious, ask your supervisor.
- Manual valves that are considered critical to safety are often car-sealed (*i.e.,* locked) or tagged in a given position. They deserve extra caution before operation.
- Blind valves are safety components that completely restrict flow through a pipe, providing positive shutoff of the line. Changing the position of a blind valve can cause some leakage through the line until the valve is completely resealed. Switching a blind valve requires a permit and should be handled like a line break.
- Certain valve operations require valves to be open and closed in a specific sequence, which should be noted in the operating procedure.

What Can You Do?

- When changing valve positions, have the procedure and the piping and instrumentation diagram (P&ID) on hand to ensure correct operation. If the procedure or diagram does not match the piping in the field, stop and check that the procedure or diagram does not have an error before proceeding.
- If you need to operate a blind valve, ensure that it has been properly isolated and is truly safe to move before changing its position.
- If a valve is car-sealed in a position, it should be noted in the procedure. If it is not specifically called out, verify that you have identified the correct valve before proceeding.
- When operating any valve, it is important to verify that all drains and sample taps are closed before operation. If the operating procedure calls for a specific order of operation for repositioning valves, be sure to follow it.
- If a valve operation is performed by two or more crews of operators, verify that all valve positions are correct before proceeding.

Be diligent when operating manual valves.