Valve Rule

Summary of Rupture Identification and Valve Closure on Pipeline Systems

Stage 1: Identify Rupture

- **Operator identifies the pipeline rupture through one of these methods:**
  - Loss of pressure observed at the Gas Control Center for the pipeline (in cases of looped pipeline systems with common tie-ins it will take longer to detect pressure loss and which pipeline has ruptured)
  - Call-in from the pipeline system compressor station operator (who observes pressure loss, change of compressor or pump speeds, or sees or hears a rupture or fire)
  - Call-in from emergency response personnel or the public (Gas controller would take the call and use information received from it to review the pipeline system to determine where on the pipeline system the rupture has occurred)
  - Detection from pipeline pressure and/or flow monitoring systems that notifies the Gas Controller
- **Note:** Gas controllers need to check pipeline system product flows and pressure changes (at compressor stations, pump stations, mainline valves, lateral, and measuring stations) to determine there is a system rupture versus changes in delivery volumes. For looped systems (with common operating pressures and common pipe tie-ins this will take longer to determine.

Stage 2: Locate Rupture

- Operator's Gas Controller identifies rupture location and the location of the mainline valves, any crossover valves and other pipeline systems that flow into or out of the pipeline system
- Gas Controller identifies pipeline systems flowing into a pipeline that will be closed and where the valves are located
  - 3rd party pipeline systems are notified of the need to isolate (so that upstream and downstream gas flow can be re-routed and to minimize gas flow stoppage to critical customers such as hospitals, power plants, etc.)
- Pipeline operating personnel are dispatched to the rupture site and to mainline valve locations and any known critical pipeline locations.
- Local pipeline operating personnel communicate/work with local emergency responders to minimize the impact to the public and identify safety needs.

- **Note:** Notification of 3rd parties such as LDCs (may effect hospitals, cities, etc.), direct connected pipelines, power plants and direct feed manufacturing facilities are required to ensure that rapid valve closure/shutdown does not cause an unrelated emergency cascading event due to increase pressures/surges or lack of gas or other product.

Stage 3: Isolating - RCV, ASV, and Manual

- Valves are closed to isolate the ruptured pipeline segment – by RCV, ASV and manual closure
  - Mainline valves, any crossover valves and other pipeline systems that flow into or out of the pipeline system
- Local pipeline operating personnel continue to work with local emergency responders to minimize the impact to the public and identify safety needs.
  - If a valve fails to close, local pipeline operating personnel would close them.

- **Note:** RCV shutdown times will vary based upon size, type (ball or gate valve), valve actuator type, and operating pressure at the time of closure, which will depend upon how close it is located to the rupture site. ASV valve closure should be based upon a minimum pressure at the mainline valve or a rate of pressure drop/change, and the factors listed for RCV shutdown. All pipeline system valve shutdown times require consideration of the closure timing and its impact on maximum operating pressures and surge pressures from the speed of valve closure on the pipeline system and any laterals/pipeline systems connected to it.

Stage 4: Make Area Safe
(will depend upon surrounding areas population, terrain, rivers/streams, roads, etc., whether there is a fire, spread of product, etc.)

- Local emergency responders ensure rupture event and any fires are contained and made safe.
- Local pipeline operating personnel **continue** to work with local emergency responders to minimize the impact to the public and identify safety needs.