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Pipeline Safety Regulatory Update

Valve Rule

U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

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Valve Installation and Minimum Rupture Detection Standards

Marshall, MI – July 25, 2010

- 19,000 BBL (800,000 gallons) of crude oil
- $1 billion in property and environmental damage
- 18 hours from initial alarm

San Bruno, CA – September 9, 2010

- 8 people killed
- 51 injured
- Destroyed 38 homes
- Damaged 70 homes
- 47 MMCF of Gas
- 95 Minutes

Important Dates

- Effective Date: October 05, 2022
- Technical Corrections: August 1, 2023
- Appeals Court decision: May 16, 2023

§192.3 - Definitions

Entirely replaced - 2 or more miles of pipe, in the aggregate, have been replaced within any 5 contiguous miles within any 24-month period.

Notification of potential rupture - the notification to, or observation by, an operator of indicia identified in § 192.635 of a potential unintentional or uncontrolled release of a large volume of gas from a pipeline

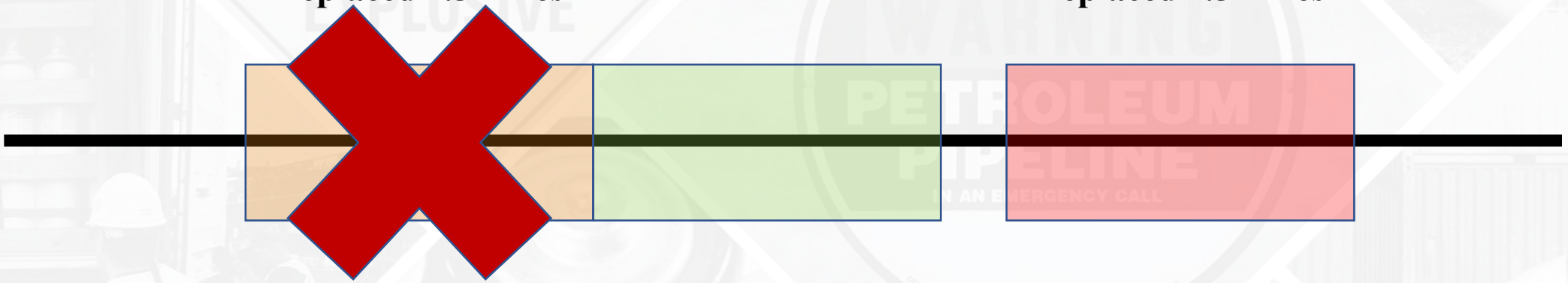
Rupture-mitigation valve (RMV) - an automatic shut-off valve (ASV) or a remote-control valve (RCV) that a pipeline operator uses to minimize the volume of gas released from the pipeline and to mitigate the consequences of a rupture

NOTE: None of these definitions apply to gathering lines

Entirely Replaced

June 2023
Replaced 1.5 Miles

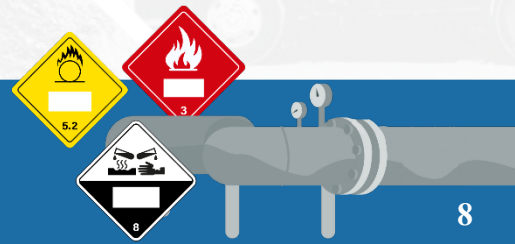
July 2025
Replaced 1.5 Miles



April 2024
Replaced 0.4 Miles

§192.179 – Transmission Line Valves

- Newly Installed Transmission
  - Constructed after April 10, 2023
  - Greater than or Equal to 6”
  - Must meet spacing in §192.179(a)
  - Exemption:
    - Pipeline segments in Class 1 or Class 2 with a PIR less than or equal to 150’
    - To request extension of installation compliance deadline must submit 192.18 Notice, demonstrating installation would be economically, technically or operationally infeasible for the new pipeline



§192.179 – Transmission Line Valves

- Entirely Replaced Transmission Pipeline Segment
  - Installed after April 10, 2023
  - Greater than or Equal to 6”
  - Replacement project involves a valve
  - Addition, Replacement, or Removal
- Exemption:
  - Class 1 or Class 2 with a PIR less than or equal to 150’
  - 192.18 Notice, demonstrating installation would be economically, technically or operationally infeasible for the replacement project
  - Gathering

§192.179 – Transmission Line Valves

- Alternative Equivalent Technology
  - Must notify PHMSA (§192.18)
  - Must include a technical and safety evaluation in the notice
  - Must comply with §192.634 and §192.636 if valves
- Exception
  - Manual Compressor Station Valve if continuously manned, no notice required but must comply with 192.636

§192.179 – Transmission Line Valves

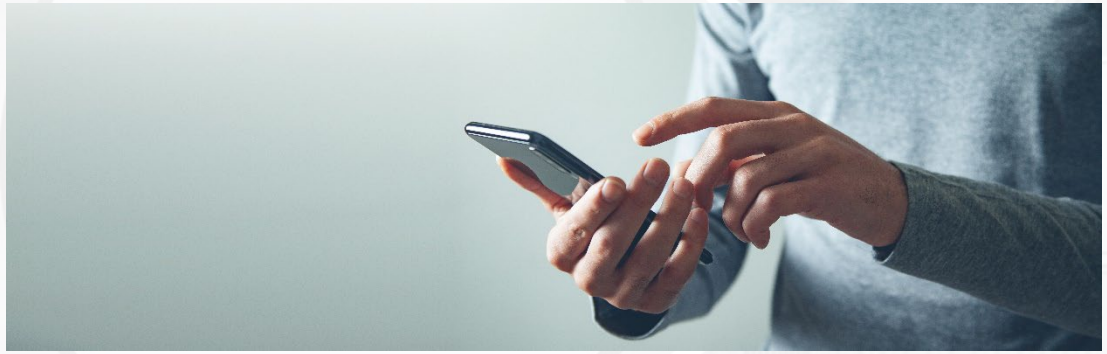
Pipe Replacements – Valve Spacing Requirements

- The valve spacing requirements of paragraph (a) of this section do not apply to pipe replacements on a pipeline if the distance between each point on the pipeline and the nearest valve does not exceed:

Class Location	Nearest Valve	Total Spacing
Class 1 or Class 2	10 Miles	20 Miles
Class 3	7 ½ Miles	15 Miles
Class 4	4 Miles	8 Miles

Notification of Potential Rupture

A notification of potential rupture occurs when an operator first receives notice of or observes an event



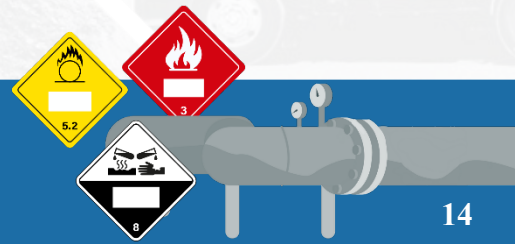
§192.634–Transmission: Valve Shutoff

- §192.634(a) – Applicability
  - New or Entirely Replaced Transmission Pipeline Segments
- Equal to or greater than 6”
- Located in HCA, Class 3 or Class 4
- After April 10, 2023, Newly installed or use of existing RMV or Alternative Equivalent Technology (AET)
- Operational within 14 days of placing into service (or returning to service)
- Exemption: Class 1 or Class 2 with PIR less than or equal to 150’

§192.634–Transmission: Valve Shutoff

- Shutoff segment valve spacing
- If pipeline is subject to 192.634(a)

Class Location	Spacing Between Valves
Class 4	Eight (8) Miles
Class 3	Fifteen (15) Miles
Class 1 or Class 2	Twenty (20) Miles



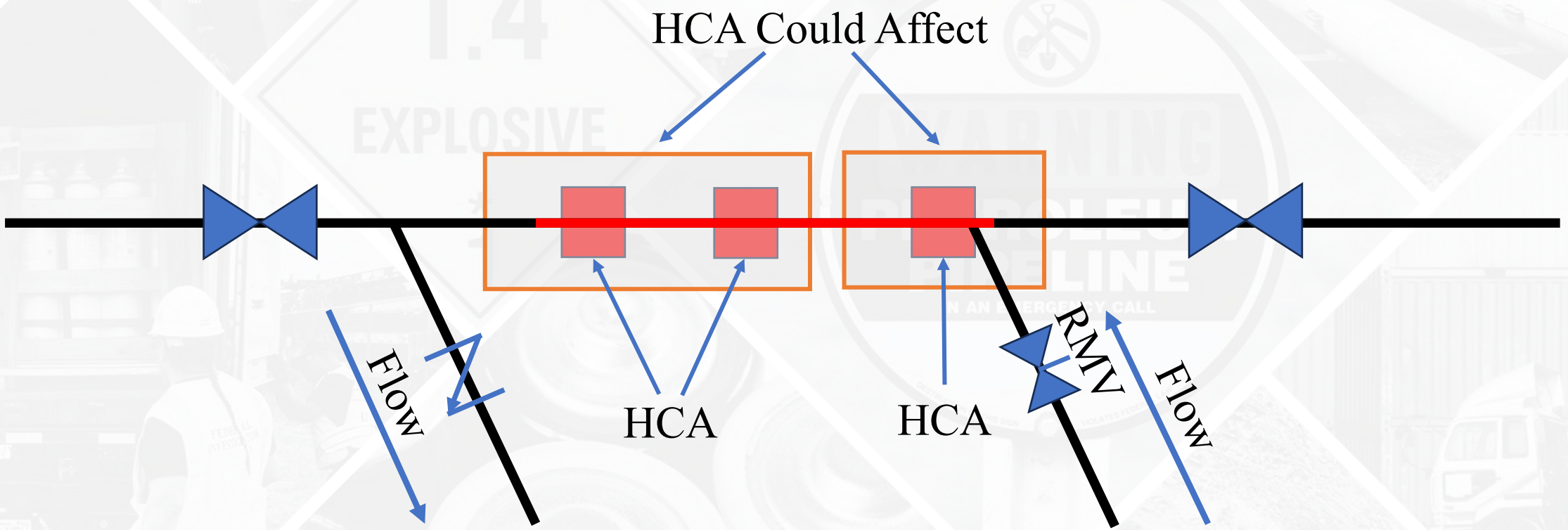
Valves: Shutoff Segment

- RMVs or AETs, must be installed in accordance with the following requirements:
  - Entirety of the new or replaced HCA, Class 3 or 4 or could affect HCA is between RMVs or AETs
  - Crossovers or laterals connected to the shut-off segment must have a valve that will stop flow back to the shut-off segment
  - Multiple HCAs, Class 3 or 4 or could affect HCAs may be within a single shut-off segment
  - A manual pump station valve at a continuously manned station may be used as an AET.
    - Notification to PHMSA is not required for this manual valve

§192.634–Laterals

- Laterals that contribute less than 5 percent of the total shut-off segment volume may have RMVs or AETs at locations other than mainline receipt/delivery points
- Laterals less than or equal to 12”, check valves can be used as an alternative equivalent technology
  - Not subject to §192.636
  - Must be inspected, operated, and remediated per §192.745
  - Must notify PHMSA per §192.18/ §192.179

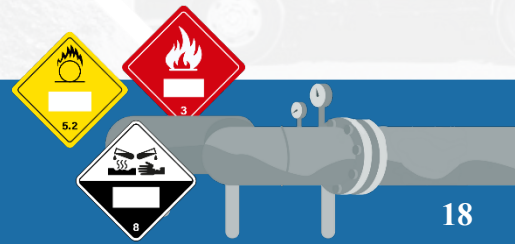
§192.634–Laterals



Crossovers

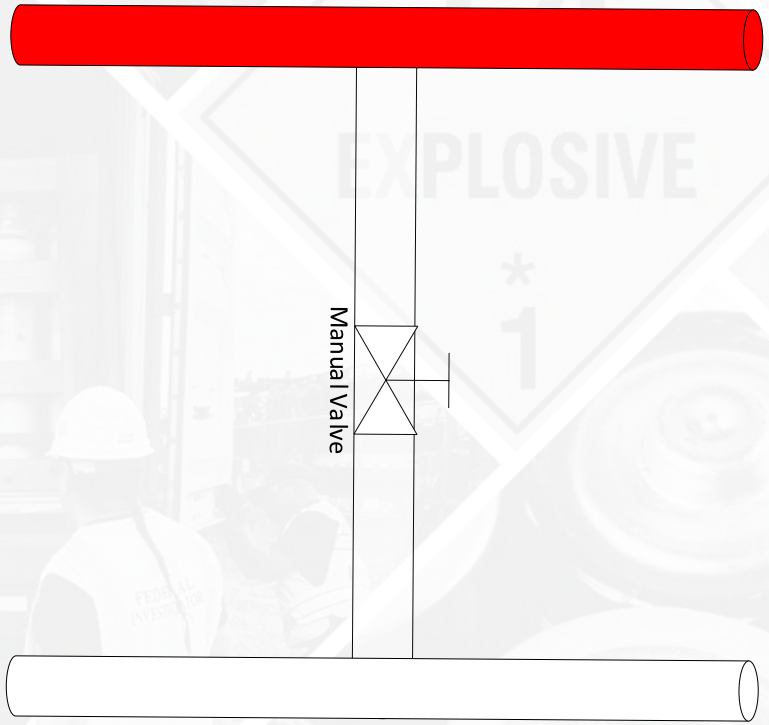
An operator may use a manual valve as an AET for a crossover connection if:

- During normal operations, the valve is closed and locked
- Documented in operator's lock-out and tag-out procedures
- Submit a request to PHMSA

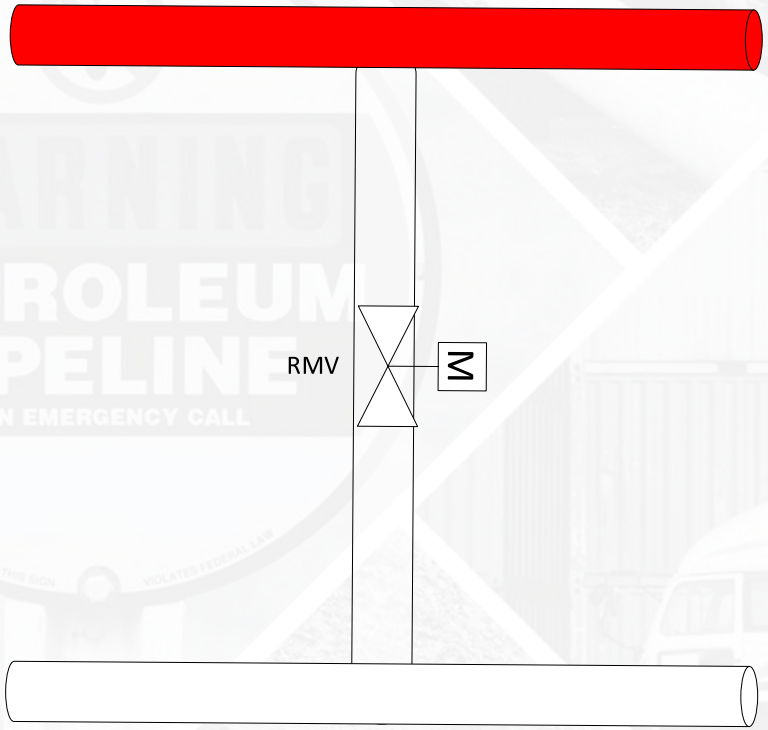


Crossovers

Manual Valve



RMV



§192.635 Notification of Potential Rupture

The notification to, or observation by, an operator of a potential unintentional or uncontrolled release of a large volume of hazardous liquids or carbon dioxide from a pipeline reported by:

- Operator (i.e. control room operator)
- Field personnel
- Nearby pipeline personnel (or other utility worker)
- Local first responders
- Public authorities
- Public

Notification of Potential Rupture+

Operator observes any unanticipated, unplanned or unexplained (according to procedures)

- Pressure loss outside of normal operations – 10% over 15 minutes
- Flow rate change
- Pressure change
- Equipment function or instrumentation indication U/S or D/S
- Rapid release of large volume of product or gas
- Fire or explosion (immediate vicinity of the pipeline)

Valve Capabilities

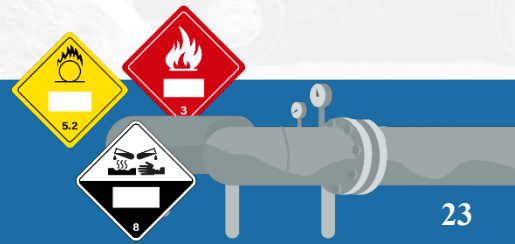
The requirements apply to RMVs or AET installed pursuant to the valve rule

An operator must, as soon as practicable but within 30 minutes of rupture identification, fully close any RMVs or AETs necessary to minimize the volume of gas released from a pipeline and mitigate the consequences of a rupture

§192.636 - Capabilities of RMVs

Left open if detrimental to Public Safety

- Established in Operating Procedures
- Notified PHMSA (§192.18)
- Coordinated with Local Emergency Responders
- Procedures to determine if left open (environmental factors included)
- Communication plan with Local Emergency Responders

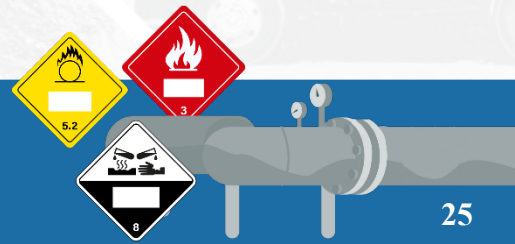


…Capabilities of RMVs

- Valve monitoring and operational capabilities
- An RMV or AET must be capable of being monitored or controlled either remotely or by on-site personnel as follows:
  - Operated during normal, abnormal, and emergency operating conditions
  - Monitored for valve status (i.e., open, closed, or partial closed/open)
  - Upstream and downstream pressure
  - Have a back-up power source to maintain SCADA systems and other remote communications or be monitored and controlled by on-site personnel
- Note: A SCADA system is not required if operator can monitor line via other means

…Capabilities of RMVs

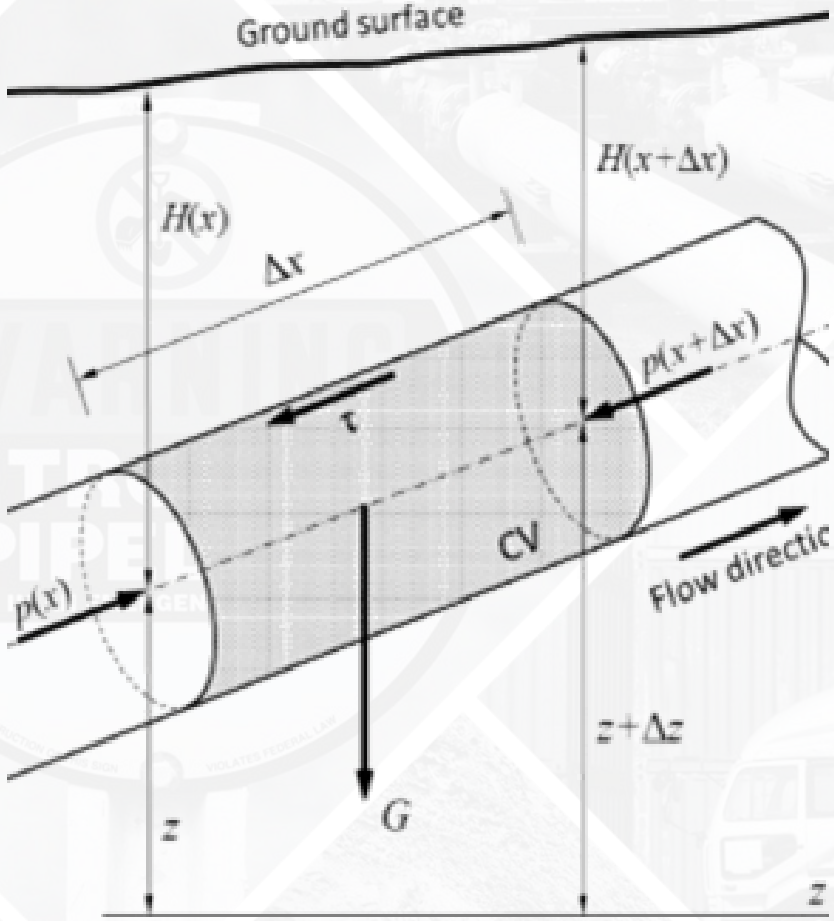
- Valve monitoring, operational capabilities and shut-off response status:
  - RMV position and operational status must be appropriately monitored through electronic communication with remote instrumentation or other equivalent means
  - ASV status does not need to be monitored remotely if pressures and flow rates are monitored to identify and locate a rupture



Flow Modeling

Prior to using an ASV as an RMV, an operator must conduct flow modeling for the shut-off segment and any laterals that feed the shut-off segment for:

- 30 minutes or less closure time following rupture identification



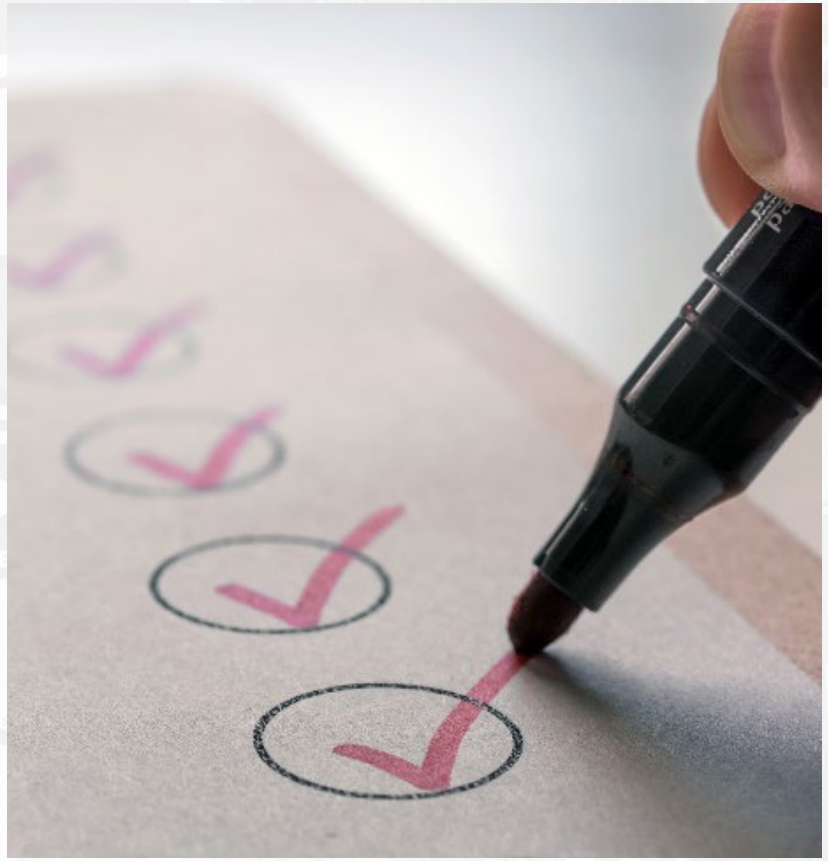
Flow Modeling

The flow modeling must include:

- Anticipated maximum, normal, or any other flow volumes, pressures, or other operating conditions that may be encountered during the year
- Modeling timeframe cannot exceed a period of 15 months
- Modeling must include the flow between the RMVs or AETs and any looped pipelines or receipt tie-ins
- A new flow model if conditions change that could affect operation
- ASV set pressure changes must be implemented prior to the next review
- Time/pressure chart for the segment containing the ASV if a rupture occurs
- If the 30-minute valve closure time may be unachievable, the flow modeling must be completed prior to making flow changes

§192.745 – Valve Maintenance

- Operator shall maintain each valve to ensure good working order at all times
- Each valve must be inspected 1/CY NTE 15 months
- Each valve must have protection from unauthorized access



Valve Maintenance

For each RCV, an operator must conduct a point-to-point verification between SCADA system displays and the installed valves, sensors, and communications equipment

Valve Maintenance

For each AET that is manually or locally operated:

- Operators must achieve a response time of 30 minutes or less
  - Initial drill and periodic validation
- An operator must review each phase of the drill response and document the results to validate the total response time, including:
  - The identification of a rupture
  - Valve shut-off time of less than or equal to 30 minutes after rupture identification

Valve Maintenance

Within each pipeline system, and within each operating or maintenance field work unit operators must randomly select an AET for:

- Annual 30-minute-total response time validation drill simulating worst- case conditions
- A minimum 25 percent valve closure is sufficient
- The response drill must occur 1/CY NTE 15 months
- Procedures must include the random selection method

Valve Maintenance

If the 30-minute-maximum response time cannot be achieved in the drill, the operator must:

- Revise response efforts to achieve compliance within 12 months after the drill
- Implement alternative valve shut-off measures within 7 days of the drill
- Include lessons learned in:
  - Training and qualifications programs
  - Design, construction, testing, maintenance, operating, and emergency procedures manuals; and
  - Any other areas identified by the operator as needing improvement

Valve Maintenance

If an RMV or AET is found inoperable or unable to maintain effective shut-off, the operator must:

- Repair or replace the valve as soon as practicable but within 12 months
  - May request an extension if economically, technically, or operationally infeasible; and
- Designate an alternative compliant valve within 7 calendar days while repairs are being made
  - Document an interim response plan to maintain safety
  - Alternative compliant valves are not required to comply with valve spacing requirements

Valve Maintenance

ASVs as an RMV, operator must 1/CY NTE 15 months:

- Document and confirm the ASV shut-in pressures
- Prove and reset shut-in pressures at each ASV

§192.935 – P & M Measures+

- §192.935(c) – If a RMV is determined to be an efficient means of adding protection to HCA in event of gas release, must install RMV or alternative equivalent technology
- §192.935(f) Risk Analysis per §192.935(c) must be reviewed by the operator and certified by a senior executive of the company. Must occur once per calendar year, not to exceed 15 months
  - Must occur within 3 months of an incident or SRC

Laboratory Analysis

Investigating and analyzing pipeline accidents, incidents and failures, including sending the failed pipe, component, or equipment for laboratory testing or examination where appropriate, to determine the cause(s) and contributing factors of the failure and to minimize the possibility of a recurrence

Lessons Learned

Each operator must develop, implement, and incorporate lessons learned from a post-failure or incident/accident review into its written procedures, including:

- Pertinent operator personnel training and qualifications programs
- Design
- Construction
- Testing
- Maintenance
- Operations
- Emergency procedure manuals
- Specifications

Analysis

If a failure or accident involves the closure of an RMV or AET, the operator's procedures must include a requirement for a post failure or accident/incident analysis

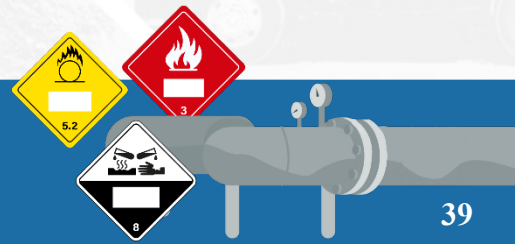
- The analysis must include all factors that impacted release volume and consequences including:
  - Detection, identification, operational response, system shut-off, and emergency-response communications
  - Appropriateness and effectiveness of procedures and pipeline systems, including SCADA, communications, valve shut-off, and operator personnel

Analysis+

(Continued) The analysis must include:

- Actual response time from identifying a rupture, initiation of mitigative actions, isolation of the segment, and the appropriateness and effectiveness of the mitigative actions taken
- Location and timeliness of actuation of all RMVs or AETs
- All other factors the operator deems appropriate

- Identifying and implementing O&M measures to minimize consequences of a future failure or accident



Rupture or RMV/AET Closure

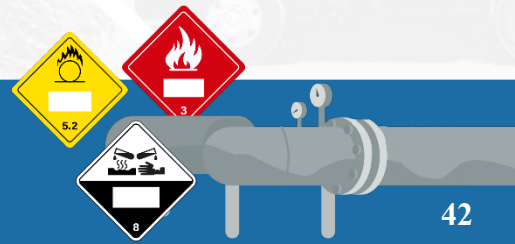
- If a failure or accident/incident involves a rupture or the closure of an RMV/AET, the operator must:
  - Complete a summary of the post-failure or accident/incident review within 90 days
  - Conduct quarterly status reviews until the investigation is completed and documented

Rupture or RMV/AET Closure

- The final summary and all other reviews and analyses produced must be:
  - Reviewed, dated, and signed by the appropriate senior executive officer
- All records associated with the analysis, review and summary are life of pipeline records
  - Summary
  - Investigation documents
  - Analysis documents
  - Lessons learned

Emergencies

- Operator's emergency procedures must include:
  - Taking emergency actions including but not limited to:
    - Emergency shutdown, valve shut-off or pressure reduction
  - Rupture identification procedures following notification of potential rupture including:
    - Sources of information
    - Operational factors
    - Other criteria the operator uses
    - Rupture identification should be provided as soon as practicable



Emergencies

- Operator's emergency procedures must include:
  - Immediate notification to 911 following a notification of potential rupture
  - Coordinate and share information with 911, for both planned and actual responses, to:
    - Determine location of release
    - Additional precautions with respect to product (HVL)

NOTE: This communication must take place regardless of whether RMVs are installed per requirements

What does it all mean?

Operator receives information from control center, field personnel, public, public authorities or any others mean

Operator evaluates information per procedures to determine a potential rupture or not

Operator must IMMEDIATELY notify 911 or other agencies of the potential rupture and share information

As soon as practicable, determine if notification of potential rupture is a rupture

Operator must take necessary actions to close valves to protect life, property and the environment. If RMVs are installed, closure must be within 30 minutes of rupture confirmation

Thank you


1.4
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1
1005
2
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