Valve Installation and Minimum Rupture Detection Standards

Docket No. PHMSA-2013-0255 (Amendment 192-134)

RIN: 2137-AF06

Effective Date: August 1, 2023

Why did this Rulemaking Occur?

Edison, NJ – March 24, 1994

- 1 person died*
- Destroyed 8 buildings
- 1,500 Residents Displaced
- $25 Million in Damages
- 2½ Hours

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

PIPES Act of 2011

PIPES Act of 2011

§60102(n) – Purpose and General Authority, Automatic and Remote-Controlled Shut-off Valves for New Transmission Pipelines

(1) IN GENERAL-….the Secretary, if appropriate, shall require by regulation the use of automatic or remote-controlled shut-off valves, or equivalent technology, …on transmission pipeline facilities constructed or entirely replaced after the date on which the Secretary issues the final rule containing such requirement.

PIPES Act of 2011

§60102(n) – Purpose and General Authority, Automatic and Remote-Controlled Shut-off Valves for New Transmission Pipelines

(2) HIGH-CONSEQUENCE AREA STUDY-

(A) STUDY- …. conduct a study on the ability of transmission pipeline facility operators to respond to a hazardous liquid or gas release from a pipeline segment located in a high-consequence area.

(B) CONSIDERATIONS- ….shall consider the swiftness of leak detection and pipeline shutdown capabilities, the location of the nearest response personnel, and the costs, risks, and benefits of installing automatic and remote-controlled shut-off valves.

What Part 192 code sections changed?

The following is a list of new or amended code sections:

§192.3 – Definitions

§192.9 – What requirements apply to gathering lines?

§192.18 – How to notify PHMSA

§192.179 – Transmission line valves

§192.610 – Change in class location: Change in valve spacing

§192.615 – Emergency Plans

§192.617 – Investigation of Failures and incidents

§192.634 – Transmission lines: Onshore valve shut-off for rupture mitigation

§192.635 – Notification of potential rupture

§192.636 – Transmission lines: Response to a rupture; capabilities of rupture-mitigation valves (RMVs) or alternative equivalent technologies

§192.745 – Valve Maintenance: Transmission lines

§192.935 – What additional preventive and mitigative measures must an operator take?

§192.3 – Definitions

Entirely replaced onshore transmission pipeline segment means, for the purposes of §192.179 and §192.634, where 2 or more miles, in the aggregate, of onshore transmission pipeline have been replaced within any 5 contiguous miles of pipeline within any 24-month period.

§192.3 – Definitions

Entirely replaced onshore transmission pipeline segment

June 2023
Replaced 1.5 Miles

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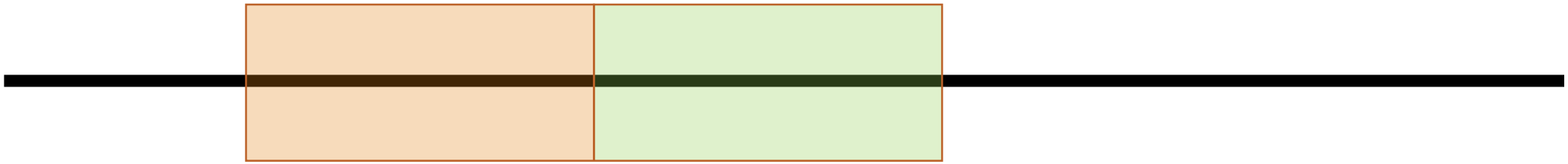
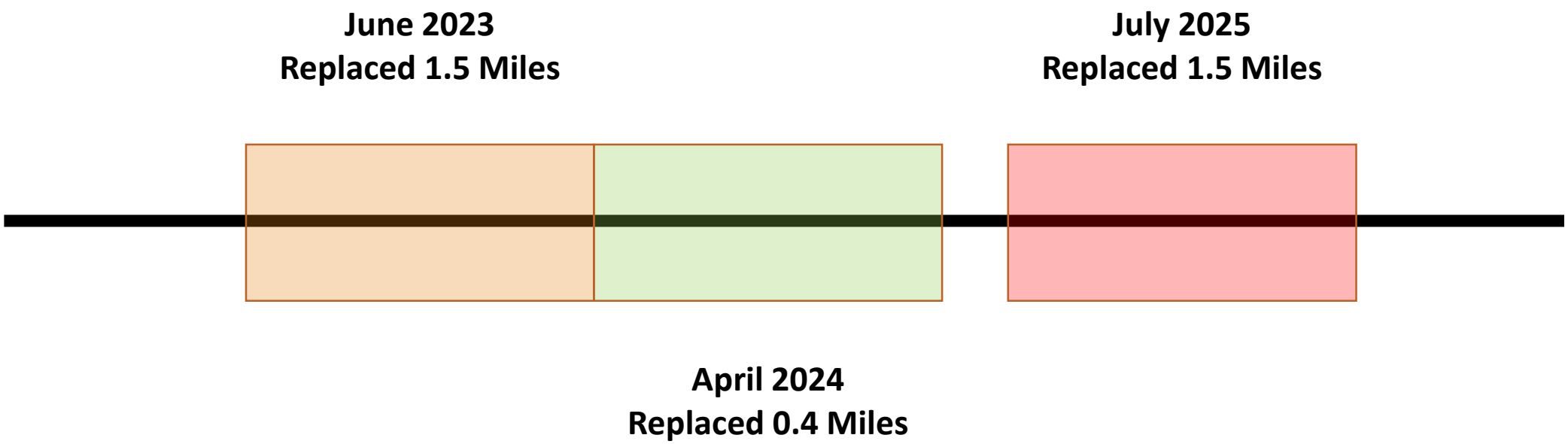


April 2024
Replaced 0.4 Miles

§192.3 – Definitions

Entirely replaced onshore transmission pipeline segment



§192.3 – Definitions

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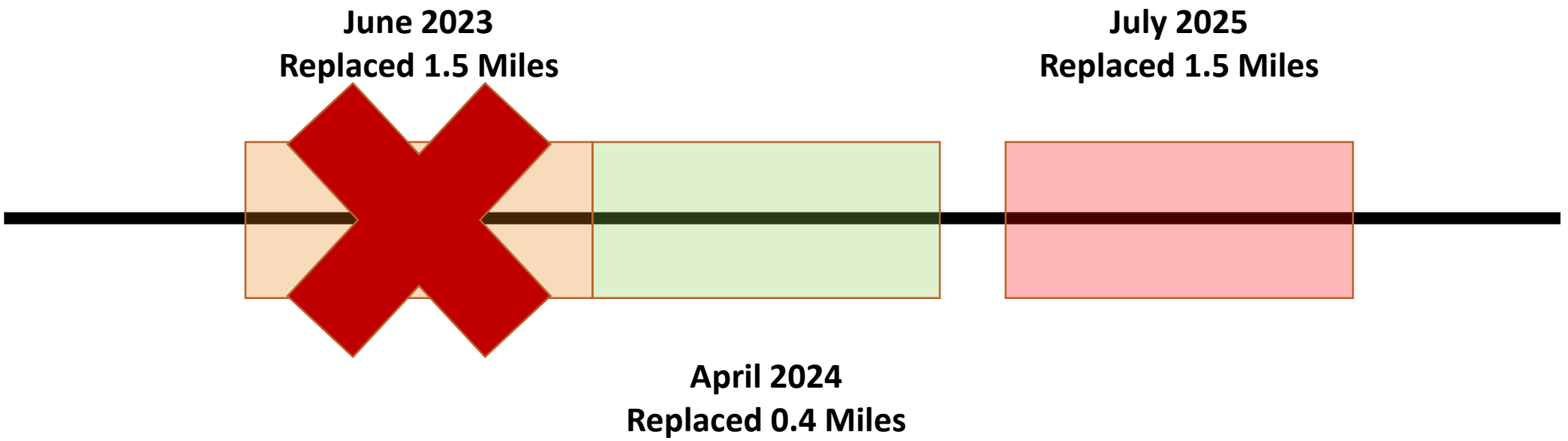


§192.3 – Definitions

Notification of potential rupture means 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.

§192.3 – Definitions

Rupture-mitigation valve (RMV) means 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.

§192.9 – What requirements apply to gathering lines?

RMV rule was vacated by US Supreme Court ruling on May 16, 2023, as it applies to gathering pipeline facilities.

§192.18 – How to notify PHMSA

(c) Unless otherwise specified, if an operator submits, pursuant to §192.8, §192.9, **§192.179**, §192.506, §192.607, §192.619, §192.624, §192.632, **§192.634**, **§192.636**, §192.710, §192.712, **§192.745**, §192.921, or §192.937, a notification for use of a different integrity assessment method, analytical method, sampling approach, or technique (e.g., "**other technology**" or "**alternative equivalent technology**") than otherwise prescribed in those sections, that notification must be submitted to PHMSA for review at least 90 days in advance of using the other method, approach, compliance timeline, or technique.

§192.179 – Transmission Line Valves

§192.179 – Transmission Line Valves

(e) Newly Installed Transmission

- Constructed after April 10, 2023
- Greater than or Equal to 6”

- Exemption:
  - Class 1 or Class 2 with a PIR less than or equal to 150’
  - §192.8 Notice, demonstrating installation would be economically, technically or operationally infeasible for the new pipeline

§192.179 – Transmission Line Valves

Part 192 - Amendment 192-130

(f) Entirely Replaced Transmission Pipeline Segment

- Constructed 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’
  - §192.8 Notice, demonstrating installation would be economically, technically or operationally infeasible for the replacement project.

§192.179 – Transmission Line Valves

(g) 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

§192.179 – Transmission Line Valves

Part 192 - Amendment 192-130

(g) Alternative Equivalent Technology – Manual Valve

Must include with notification a demonstration that installation of RMV as otherwise required would be:

- Economically,
- Technically, or
- Operationally infeasible

Exception: Manual Compressor Station Valve if continuously manned, no notice required but must comply with §192.636.

§192.179 – Transmission Line Valves

(h) 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

§192.610 – Change in Class Location: Change in valve spacing

§192.610 – Change in Class Location: Change in valve spacing

Pipe Replacement to meet MAOP (§192.611, §192.619, §192.620)

Class Location change occurs after October 5, 2022

Length of Replacement	Replacement Period	Applicable Rule
2 or More Miles / 5 Contiguous Miles	24 Months	§192.610(a)
Less than 2 miles / 5 Contiguous Miles	24 Months	§192.610(b)
Less than 1000'/ 1 Contiguous Mile	24 Months	§192.610(c)

§192.610 – Change in Class Location: Change in valve spacing

§192.610(a) – 2 or more miles

- §192.179, §192.634 and §192.635 apply
- Apply to **NEW** Class Location
- Must install RMV (or alternative equivalent technologies)
- Must be installed within 24 months of class location change

§192.610 – Change in Class Location: Change in valve spacing

§192.610(b) – Less than 2 miles

- Comply with Valve Spacing in §192.179(a)

or

- Install or use existing RMVs or alternative existing technologies
- Must not exceed 20 miles between RMVs
- Must comply with §192.636

- Must comply within 24 months of class location change

§192.610 – Change in Class Location: Change in valve spacing

§192.610(c)- within 1 mile

The provisions of paragraph (b) do not apply to replacements of less than 1000 feet within any one contiguous mile during a 24-month period.

§192.634 – Transmission Lines: Onshore Valve shut-off for rupture mitigation

§192.634 – Transmission Lines: Onshore Valve shut-off for rupture mitigation

Part 192 - Amendment 192-130

§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 or placing into service (or returning to service)
- Exemption: Class 1 or Class 2 with PIR less than 150’

§192.634 – Transmission Lines: Onshore Valve shut-off for rupture mitigation

Part 192 - Amendment 192-130

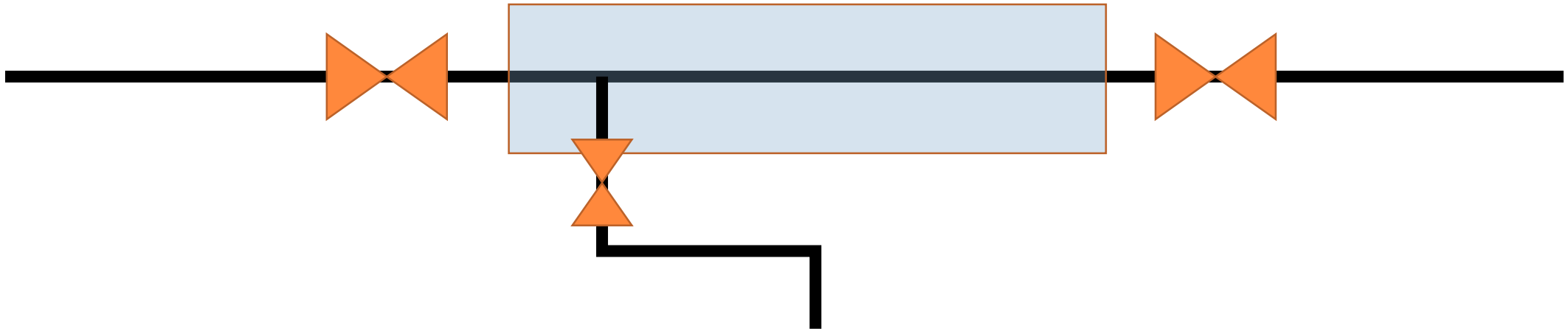
§192.634(b)(1) – Shut-off segment

Class 3, Class 4, or HCA

§192.634 – Transmission Lines: Onshore Valve shut-off for rupture mitigation

Part 192 - Amendment 192-130

§192.634(b)(1) – Shut-off segment (Lateral/Crossover)

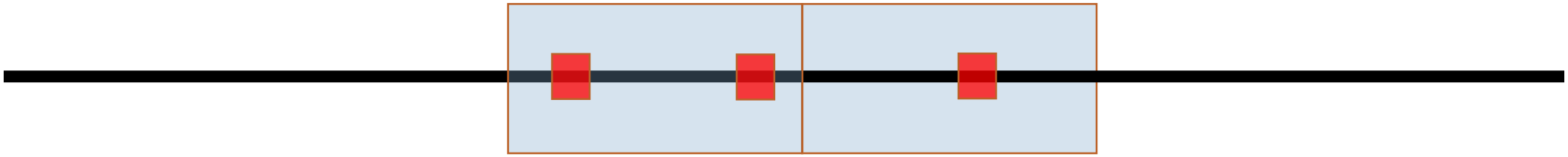


Class 3, Class 4, or HCA

§192.634 – Transmission Lines: Onshore Valve shut-off for rupture mitigation

Part 192 - Amendment 192-130

§192.634(b)(1) – Shut-off segment (Multiple Criteria)



§192.634 – Transmission Lines: Onshore Valve shut-off for rupture mitigation

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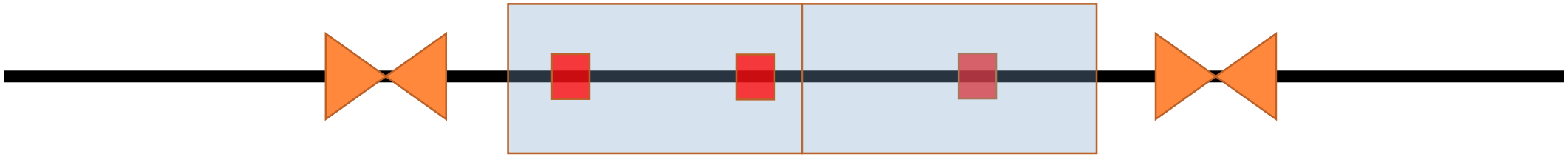

Class 3 Class 4

§192.634 – Transmission Lines: Onshore Valve shut-off for rupture mitigation

Part 192 - Amendment 192-130

§192.634(b)(2) – Shut-off 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

§192.634 – Transmission Lines: Onshore Valve shut-off for rupture mitigation

Part 192 - Amendment 192-130

§192.634(b)(3) – Laterals

RMVs or Alternative Equivalent Technologies can be installed at points other than mainline receipt or delivery points if the length of the lateral does not contribute more than 5% of Total Shut-Off Segments gas volume. (Calculated as Max Flow at Operating Pressure)

§192.634 – Transmission Lines: Onshore Valve shut-off for rupture mitigation

Part 192 - Amendment 192-130

§192.634(b)(3) – Laterals (Check valves)

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 – Transmission Lines: Onshore Valve shut-off for rupture mitigation

Part 192 - Amendment 192-130

§192.634(b)(4) – Crossovers (Manual valves)

Manual Valves as an alternative equivalent technology can be used in lieu of RMV if:

- Locked and closed during normal operations
- Develop and Implement operating procedures
- Document the valves are closed and locked (lock-out/tag-out)
- Notify PHMSA per §192.18 and §192.179

§192.635 – Notification of Potential Rupture

§192.635(a) – Notification of Potential Rupture

Who must the operator consider as sources of rupture notification or observation?

- Operator (i.e. Control Room Operator)
- Field Personnel
- Nearby Pipeline Personnel (or other utility worker)
- Local First Responders
- Public Authorities
- Public

§192.635(a) – Notification of Potential Rupture

Part 192 - Amendment 192-130

What indications must an operator consider?

Unanticipated or Unexplained:

- Pressure Loss
- Flow Rate Change
- Pressure Change
- Equipment Function or Instrumentation Indication
- Release of Large Volume of Gas
- Fire or Explosion (immediate vicinity)

§192.635(a) – Notification of Potential Rupture

When does a notification occur?

A notification of potential rupture occurs when an operator first receives notice of or observes an event specified in §192.635(a).

§192.636 – Response to a rupture and capabilities of RMV

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When must a valve be fully closed after rupture identification?

- (b) – Fully Closed within 30 Minutes
- (c) – 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

§192.636 – Response to a rupture and capabilities of RMV

Valve Monitoring and Operation Capabilities

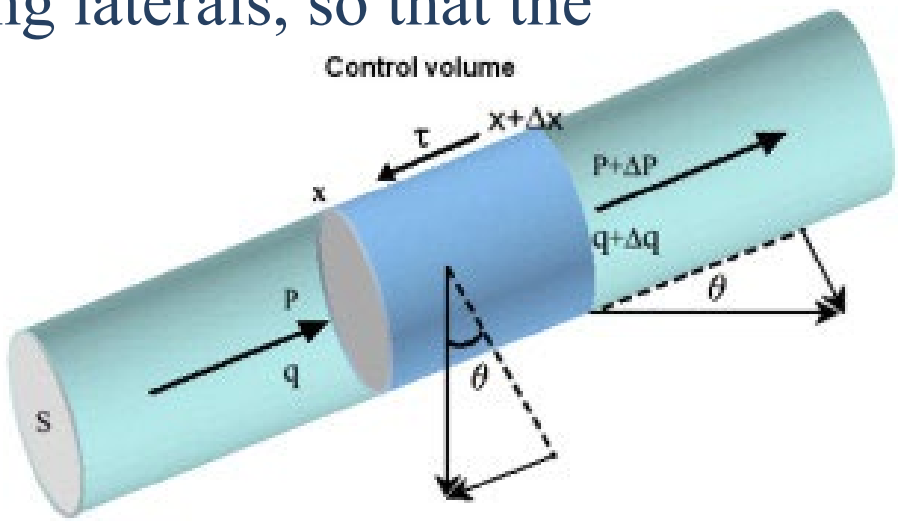
Must be capable of monitoring or controlled as follows:

- (d)(1) – Operated during normal, abnormal and emergency conditions
- (d)(2) – Monitored for Status
  - Position and Upstream/Downstream Pressures
  - ASV/Manual – Monitor pressure or flow between RMV
- (d)(3) – Back-up power to SCADA or Communications System

§192.636 – Response to a rupture and capabilities of RMV

Flow Modeling for Automatic Shutoff Valves

Flow Modeling for the Shut-Off Segment, including laterals, so that the valves will close within 30 minutes.



Must Include:

- Anticipated Maximum, Normal or other flow volumes
- Operating Conditions (15 Month)
- Must be modeled between RMV or Looped System
- If conditions change, a new model must be made, then reset ASV

§192.636 – Response to a rupture and capabilities of RMV

Non-HCA Manual Valves – Class 1

If a request pursuant to §192.18 and §192.179 for manual valves, the operator can also request an exemption from §192.636(b)

(30 Minute time to closure)

§192.745 – Valve Maintenance: Transmission lines

§192.745 – Valve Maintenance: Transmission lines

(c) – Must conduct Point-to-Point Verification on RVCs per §§192.631 (c) & (d)

(d) – Alternative Equivalent Technology

- 30 Minute Drill – Initial drill and Periodic Validation (Full Closure)
- Random Selection AEV in lieu of RMV (25% Drill), each pipeline system and within each O&M field work unit
- Revise Response Efforts (30 Minute Failure), must select Alternative valve within 7 days of failed drill, and must revise to meet §192.636 but within 12 months
- Lessons Learned
- Does not apply to §192.636(g)

§192.745 – Valve Maintenance: Transmission lines

(e) – Remedial Measures

Repair / Replace within 12 months **and**

Designate alternative valve withing 7 calendar days

(f) – Document and confirm ASV shut-in pressures annually (not to exceed 15 months)

§192.935 – What additional preventive and mitigative measures must an operator take?

Part 192 - Amendment 192-130

(c) – Risk Analysis for gas releases and protection against ruptures
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.

(f) – Periodic Evaluations
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. Also occurs within 3 months of an incident or SRC.

Anyone have a friend who owns a pipeline?