Gathering Definition

Rocky Mountain EHS Peer Group Meeting

July 25, 2006

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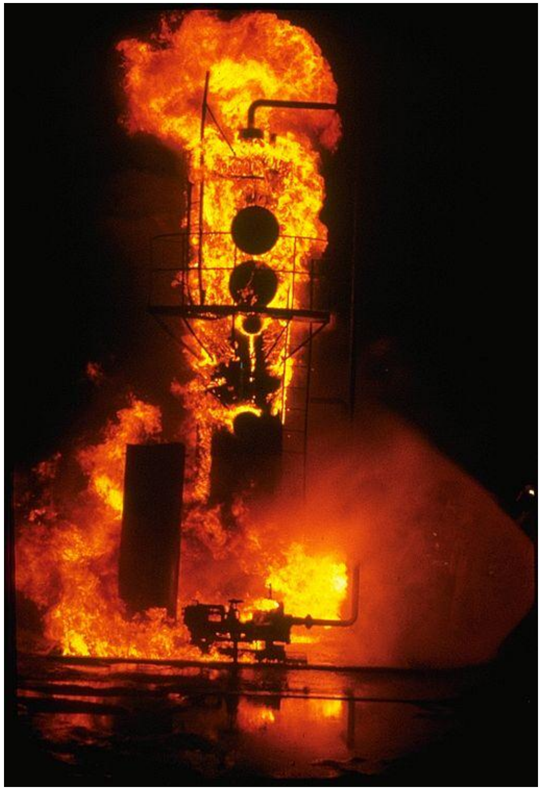
Industry Incidents

- Industry accidents brought focus on pipeline safety



Introduction to Pipeline Compliance & History of Gathering Definition

- Pipeline and Hazardous Materials Safety Administration (PHMSA) regulates hazardous pipelines
  - Two codes (DOT 49 CFR Part 192 and 195) dictate how pipelines must be designed, operated, and maintained for safety

- History of Gathering:
  - The definition of "gas gathering" has been the subject of much discussion for over 30 years.
    - Circular Definitions existed: Gathering begins at the end of production, gathering ends at the beginning of transmission, and transmission begins at the end of gathering.
  - PHMSA's safety standards did not apply to onshore gathering lines in rural locations
  - Onshore gathering lines in non-rural locations had to meet the same requirements as transmission lines.

Final Rule Published

- March 15, 2006 PHMSA promulgated new gas gathering definition
  - API RP-80 ““Guidelines for the Definition of Onshore Gas Gathering Lines'' (1st edition, April 2000) is incorporated by reference - with certain limitations - to define the beginning and the end of gas gathering
  - Regulated Gathering is defined by a new risk classification system based on population density near a pipeline and operating pressure as a percent of SMYS
  - System establishes safety standards for the higher-risk gathering lines and relaxes current standards on the low-risk gathering lines.
  - Became effective on April 14, 2006

Proximity to public regulates gathering lines

- New gathering definition allows Operators to better focus resources for public safety benefits

Incorporation by Reference

- **§192.7 What documents are incorporated by reference partly or wholly in this part?**
  (4) API Recommended Practice 80 (API RP 80) "Guidelines for the Definition of Onshore Gas Gathering Lines" (1st edition, April 2000)

- §192.8(a) Operator must use API RP-80 to determine if an onshore pipeline… is an onshore gathering line. (Four limitations on RP-80 apply)

Beginning of Gathering

- (a)(1) The beginning of gathering, under section 2.2(a)(1) of API RP 80, may not extend beyond the furthermost downstream point in a production operation as defined in section 2.3 of API RP 80.
- This furthermost downstream point does not include equipment that can be used in either production or transportation, such as separators or dehydrators, unless that equipment is involved in the processes of “production and preparation for transportation or delivery of hydrocarbon gas" within the meaning of “production operation."

End of Gathering – one possible endpoint

- (2) The endpoint of gathering, under section 2.2(a)(1)(A) of API RP 80, may not extend beyond the first downstream natural gas processing plant, unless the operator can demonstrate, using sound engineering principles, that gathering extends to a further downstream plant.

End of Gathering – one possible endpoint

- RP-80 2.2(a)(1)(B):

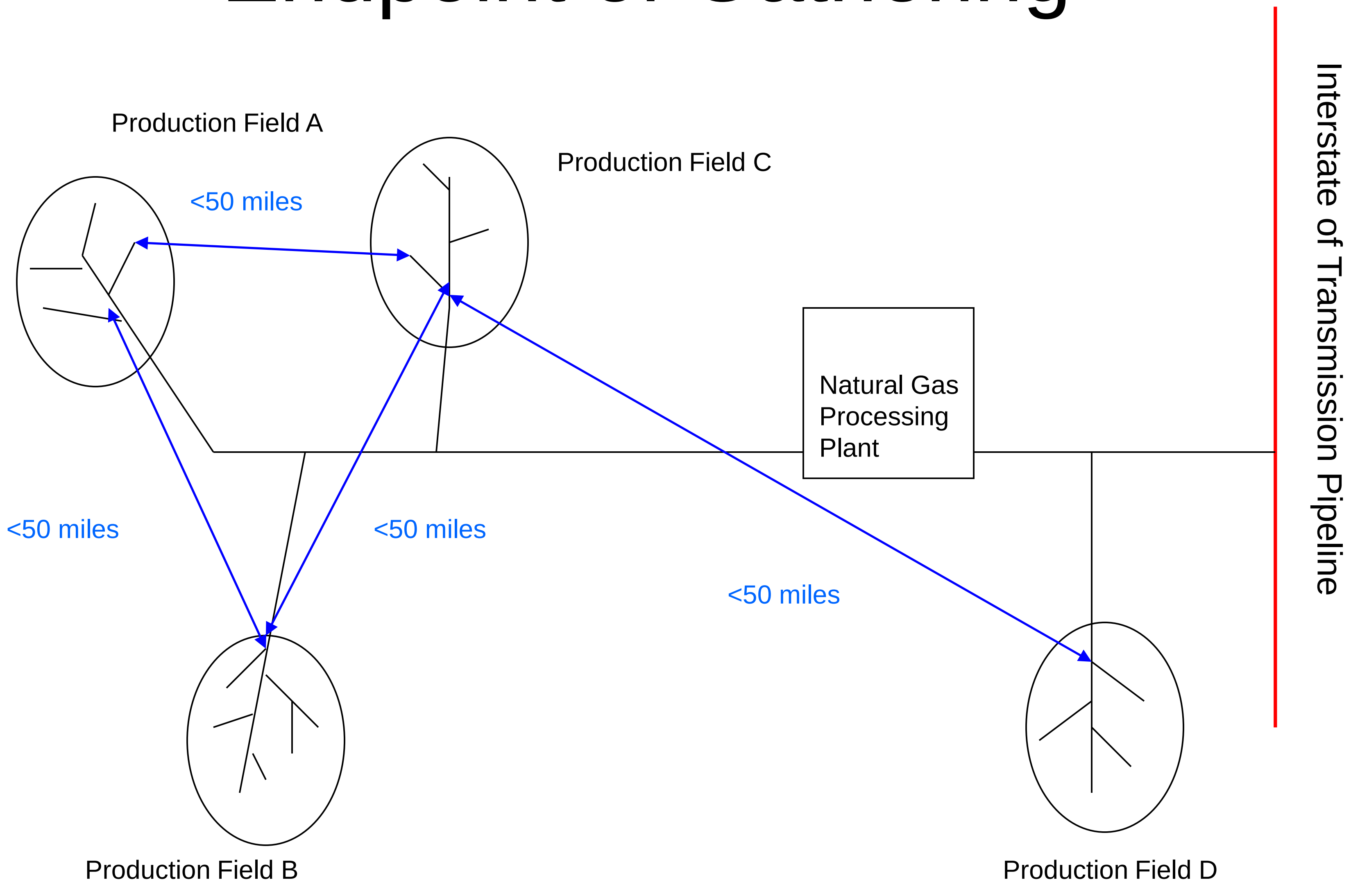
  the outlet of the furthermost downstream gathering line gas treatment facility

- PHMSA did not place any limitations on this endpoint because RP-80 explains gas treatment facility involves stand alone facilities
  - DOT was concerned that Operators might manipulate the system and install a simple piece of equipment such as a separator or dehydrator to move the endpoint further downstream

End of Gathering – one possible endpoint

- (3) If the endpoint of gathering, under section 2.2(a)(1)(C) of API RP 80, is determined by the commingling of gas from separate production fields, the fields may not be more than 50 miles from each other, unless the Administrator finds a longer separation distance is justified in a particular case (see 49 CFR §190.9).

Explanation for Commingling as Endpoint of Gathering



End of Gathering – one possible endpoint

- (4) The endpoint of gathering, under section 2.2(a)(1)(D) of API RP 80, may not extend beyond the furthermost downstream compressor used to increase gathering line pressure for delivery to another pipeline.

End of Gathering – one possible endpoint

- (5) the connection to another pipeline downstream of

  (i) the furthermost downstream endpoint identified in (A), (B), (C) or (D), or (in the absence of such endpoint)

  (ii) the furthermost downstream production operation
- This is “incidental gathering” as defined in RP-80. PHMSA put no limitation on this possible endpoint
- Industry believes incidental gathering is allowed downstream of gas plants (within reason)
  - Industry is concerned that these lines are transmission (requires integrity assessments); short pipelines are difficult to inspect
- PHMSA allows incidental gathering only downstream of a treatment facility
  - Coalition and GPA are working with PHMSA to resolve this issue

Review: What is Gathering?

- Use RP-80 to define the beginning and endpoint of gathering
- Only onshore gathering lines are subject to the new regulation (Production is not subject to the new regulation)

What are regulated segments?

- (b) For purposes of §192.9, “regulated onshore gathering line'' means:

  (1) Each onshore gathering line (or segment of onshore gathering line) with a feature described in the second column that lies in an area described in the third column; and

  (2) As applicable, additional lengths of line described in the fourth column to provide a safety buffer:

Categories

- Type “A”

  ≥ 20% SMYS for steel lines; or

  Above 125 psig for non-metallic

- Type “B”

  < 20% SMYS for steel lines; or

  At or below 125 psig for non-metallic

Type A	Feature	Area	Safety Buffer
	—Metallic and the MAOP produces a hoop stress of 20 percent or more of SMYS. If the stress level is unknown, an operator must determine the stress level according to the applicable provisions in subpart C of this part. —Non-metallic and the MAOP is more than 125 psig (862 kPa).	Class 2, 3, 4	None

What is a Class Location?

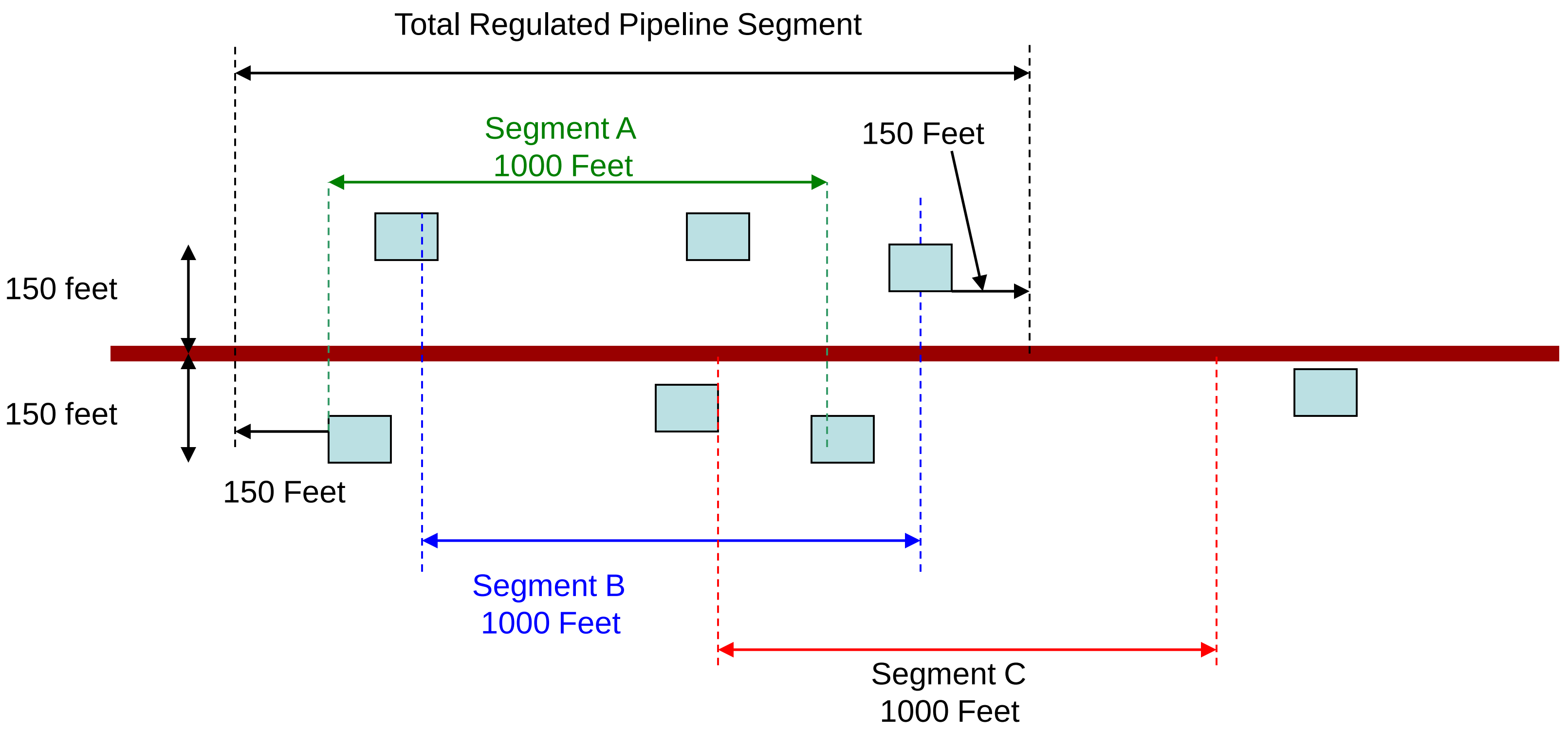
- Class location is defined as 220 yards either side of pipeline on any continuous 1 mile length
  - 1: ≤10 buildings
  - 2: 11 to 45 buildings
  - 3 : ≥ 46 buildings (or school, church, etc. that lies within 100 yards of pipeline)
  - 4: buildings with 4 or more stories prevalent

B	—Metallic and the MAOP produces a hoop stress of less than 20 percent of SMYS. If the stress level is unknown, an operator must determine the stress level according to the applicable provisions in subpart C of this part. —Non-metallic and the MAOP is 125 psig (862 kPa) or less.	*Area 1*. Class 3 or 4 location.	

Special Rules Applied to Class 2, Type B Lines

- The new rule has 3 methods for determining whether a Class 2, Type B line is regulated
  - a) Use traditional Class 2 approach (§ 192.5).
  - b) Apply an area extending 150 feet on either side of the pipeline for 1 continuous mile that includes more than 10 but fewer than 46 dwellings.
  - c) Apply an area extending 150 on either side of the pipeline for continuous 1000 feet that includes 5 or more dwellings.
- Any of the three methods are correct; different answers may result
- Method (a) is most conservative approach but easiest
- It will take more resources to do methods (b) and (c); may have less regulated pipe (or no regulated pipe)
- These methods are not valid for Type A lines or Type B, Class 3 or 4 lines

Type B Method (c) Application



Documenting Surveys – What's Required?

- **DEFS and Coalition comment influenced Final Rule: Performing Class Location Surveys on all pipe <u>dilutes</u> focus on public safety**
- PHMSA's goal is for industry resources to be focused on those segments that are subject to Part 192.
- An Operator must identify those pipeline segments in Class 2, 3, or 4 locations.
- Operators should work with the applicable regulatory agency having jurisdiction in their state as to what that agency will accept for documentation regarding segments that are not subject to Part 192 – Class 1.
- An Operator must have a method for continuing surveillance to identify any lines becoming subject to Part 192 because of Class Location change from Class 1 to Class 2, 3, or 4. For regulated Type A pipelines, an Operator must have a procedure for Continuing Surveillance to address the requirements of 192.613(a).

Review: What Has Changed?

- Old way: gathering lines were subject to 192 if
  - the line was within the limits of an incorporated or unincorporated city town, or village
  - The line was in a designated residential or commercial area such as a subdivision, business, shopping area, or community development
- New way: gathering lines subject to 192 will be determined by class location and Type
  - Operators will evaluate pipelines within city limits as well as outside of city limits (look for populated areas where there is risk to the public)

What Regulations Apply?

- **Type A – Metallic & MAOP produces hoop stress ≥ 20 % of SMYS or Non-metallic & MAOP is more than 125 psig**
  - All 192 except §192.150 (passage of internal inspection device) and Subpart O (Integrity Management)
  - Class 3 and 4 must comply with Operator Qualification requirements
  - Class 2 pipelines may demonstrate compliance with operator Qualification by describing the process used by the operator to determine qualification of the persons performing the O&M tasks.
- **Type B – Metallic & MAOP produces a hoop stress of < 20 % of SMYS or Non-metallic and the MAOP is less than 125 psig**
  - If a line is new, replaced, relocated, or otherwise changed, the design, installation, construction, initial inspection, and initial test must be in accordance with Part 192;
  - Corrosion control according to Subpart I
  - Damage prevention program under §192.614
  - MAOP established under §192.619
  - Line markers according to §192.707
  - Public education established under §192.616

Other Considerations

- New rule applies to onshore gathering
- Vacuum systems are exempt from the new regulation
  - Some state rules may still have vacuum line regulated
- New rule allows operators to apply DOT classification to pipelines regardless of FERC status.
  - Lines can be regulated by FERC and still not be regulated by DOT
  - Lines can be FERC transmission and DOT gathering
- Use Caution: some states may still have more requirements for compliance.

Compliance Deadlines

Requirement	Compliance Deadline
Control corrosion according to Subpart I requirements for transmission lines.	**April 15, 2009**
Carry out a damage prevention program under Sec. 192.614.	**October 15, 2007**
Establish MAOP under Sec. 192.619	**October 15, 2007**
Install and maintain line markers under Sec. 192.707.	**April 15, 2008**
Establish a public education program under Sec. 192.616	**April 15, 2008**
Other provisions of this part as required by paragraph (c) of this section for Type A lines.	**April 15, 2009**

Determining Hoop Stress as % of SMYS

- Hoop stress as a percentage of SMYS is another filtering component and will need to be calculated for each pipe segment.
- Barlow's Formula is the common method for determining hoop stress in the wall of a pipe.

  Hoop Stress = PD / 2t

- Solving for Pressure and using the yield strength for the pipe results in a formula that looks a lot like the §192 design formula.

  P = 2t * S / D

- This will give you the pressure that results in 100% Hoop Stress or the pressure at 100% SMYS. Dividing your MAOP by this pressure will give you the maximum % SMYS that the pipeline is operated at.

Example Calculation

- 4 inch pipeline (OD = 4.5), wall thickness 0.188 (t = 0.188), MAOP = 720 psi, SMYS = 52,000 psi (dual stamp X-42/X-52)
- 100% SMYS Pressure =

  52,000 * 2(0.188 in) / 4.5 = 4345 psi

- Hoop Stress as a % of SMYS =

  720 psi / 4345 psi = 17%

- Since 17% is less than 20% criteria, this line is Type B

Unknown Data

- **What are the minimum assumptions for steel pipe for calculating MAOP when records do not exist?**
- For steel pipe yield strength per § 192.107 and wall thickness per § 192.109.
- Unknown yield strength? Default = 24000
- Unknown nominal OD or wall thickness?
  - Use ultra sonic devices to help with the wall thickness determination
- Under 192.619 additional options are available for establishing MAOP

§192.619 **What is the maximum allowable operating pressure for steel or plastic pipelines?**

- (3) The highest actual operating pressure to which the segment was subjected during the 5 years preceding the applicable date in the second column. This pressure restriction applies unless the segment was tested according to the requirements in paragraph (a)(2) of this section after the applicable date in the third column or the segment was uprated according to the requirements in subpart K of this part

Pipeline segment	Pressure date	Test date
—Onshore gathering line that first became subject to this part (other than §192.612) after April 13, 2006. —Onshore transmission line that was a gathering line not subject to this part before March 15, 2006.	March 15, 2006, or date line becomes subject to this part, whichever is later.	5 years preceding applicable date in second column.
Offshore gathering lines.	July 1, 1976.	July 1, 1971.
All other pipelines.	July 1, 1970.	July 1, 1965.

Next Steps

- Perform Calculations
- Document & Retain Paperwork used to categorize Type & Class Location
- Update mapping & databases (PODS)
- Update Permits

Where to Get Help

- FAQs on PHMSA website
  - Coalition is working on this effort with PHMSA
  - First FAQs to post soon

How are deactivated lines treated?

- **If a segment is out of service and first becomes subject to Part 192 after 04/13/06, can the qualification of pipe according to 192.14 and the establishment of MAOP under 192.619(a)(2) be deferred until prior to placing the segment back into service? Would the other Part 192 requirements such as damage prevention, corrosion protection, and pipeline markers apply the same as for an active line that first becomes subject to Part 192 after 04/13/06?**
- Either the line is in-service which includes idled lines and is subject to all the requirements of Part 192 or it is deactivated and subject to § 192.727, Abandonment or deactivation of facilities, and §192.14, Conversion to service, before placing the line back in-service.