Comments to SEC on Enforcement and High Pressure Natural Gas Pipeline Amendments

June 21, 2016

VIA email (pamela.monroe@sec.nh.gov)

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NH Site Evaluation Committee
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From Mason Pipeline Committee

Response to Rule Making Related to Site 301 and 302, SEC Docket No. 2016-01

Dear Administrator Monroe.

Mason Pipeline Committee (MPC) would like to thank the NH Site Evaluation Committee (SEC) for listening to New Hampshire citizens, as demonstrated by SEC's amendment to Site 301.08 to require that a Comprehensive Health Impact Assessment be included in applications for proposed high pressure gas pipelines. Many thanks for taking this step to protect our health!

However, further criteria are needed to assure that a Comprehensive Health Impact Assessment is done impartially and to a high standard. MPC strongly supports Attorney Richard Husband's amendment proposed in his comment of June 17th. He calls for the assessment to be done by an independent qualified entity to be chosen by SEC and representatives from impacted municipalities. He further sets forth criteria for the assessment's analyses and urges that health impacts from compressor stations and all other high pressure gas pipeline infrastructure be included in the assessment.
**** Please adopt Attorney Husband's proposed amendment to Site 301.08(c)(1).**

MPC also supports **Attorney Husband's proposed amendment to Site 301.08(c)(2), regarding decommissioning.** Proper removal of abandoned pipelines is vital for groundwater quality protection. All metal pipelines need working corrosion controls. ***These corrosion controls need to be maintained after the pipeline is no longer in use (unless it is removed) to prevent the pipe being breached and becoming a source of pollution and of cross-connection between previously isolated aquifers.***

MPC greatly appreciates SEC's rules on sound and vibration assessment and exterior lighting in 301.08(c)(2) and (5), as well as the standards SEC sets forth in 301.14(f)(5)a through e. These rules and standards will significantly reduce sound, vibration, and harsh lighting impacts from high pressure gas pipelines and their infrastructure. Many thanks for including them.

However, SEC's conscientious intent to avoid, minimize or mitigate adverse effects is seriously weakened in 301.14(f)(6) by the statement "consider … the extent to which such measures represent best practical measures."

People involved in the FERC process of pipeline certification have discovered that "best practical measures" tends to mean whatever the applicant finds convenient regardless of impacts on other stakeholders.

** To avoid such an outcome, **please amend 301.14(f)(6) to say "the extent to which such measures represent best practices."** Best practices are widely adopted standards developed by a great variety of industries and endeavors to achieve goals such as health protection, pollution control, environmental

quality, and other community benefits. Requiring **best practices** rather than "best practical measures" will result in better outcomes for all stakeholders affected by an application.

At the SEC hearing on June 17th, George Stoltz of Temple, a long-time engineer in the energy field, testified that there are responsible energy companies who follow best practices consistently. In its rule-making, SEC can protect NH's people and assure a level playing field among energy companies by **requiring all energy projects to use best practices**.

Site 301.08(c)(3) requires applicants to show pipeline setbacks from buildings, residences, schools, farms etc. within a one mile radius and electric transmission lines within one-half mile of the pipeline. This is all useful information which could indicate risky pipeline siting.

But instead of setting standards to reduce risk, SEC simply asks the applicant to explain why its setbacks are adequate. The explanation required by 301.08(4) could be conducive to unfounded assertions by applicants, such as occurred in Kinder Morgan's Resource Reports to FERC.

Instead of an explanation by the applicant, SEC should set clear standards for setbacks and require specific mitigation measures from applicants if they cannot meet the setback standards.

Mason Pipeline Committee strongly urges SEC to set the following standards for setbacks:

***1. High Pressure Pipelines and Infrastructure must be sited beyond the Potential Impact Radius (PIR) from residences.** The PIR is calculated based on the diameter and operating pressure of the pipeline. PIR is codified in the Code of Federal Regulations (CFR) under 49 CFR 192.903, which states: "*Potential impact radius (PIR) means the radius of a circle within which the potential failure of a pipeline could have significant impact on people or property. PIR is determined by the formula r = 0.69* (square root of (p*d^2)), where 'r' is the radius of a circular area in feet surrounding the point of failure, 'p' is the maximum allowable operating pressure (MAOP) in the pipeline segment in pounds per square inch and 'd' is the nominal diameter of the pipeline in inches*."

SEC is strongly encouraged to read the source documents for determining PIR calculations. The codified calculations result in a relatively narrow radius since they do not factor in fireball effects in cases of delayed ignition from pipeline failure. Links are provided in footnote [1.]

[1.] The primary reference for the calculation of safety setbacks from natural gas pipelines is a study by the Gas Research Institute titled "*Report GRI-00/0189, A Model for Sizing High Consequence Areas Associated with Natural Gas Pipelines*", 2001, prepared by C-FER Technologies <pstrust.org/docs/C-FERstudy.pdf>

It recommends the following formula for calculating a Potential Impact Radius (PIR), the distance from the pipeline that would provide 30 seconds for a person to run to shelter with a 1% or lower chance of death.

r = 0.685 * sqrt (p * d^2), for natural gas, where
r = potential impact radius (PIR) in feet
p = pressure in PSI
d = diameter of pipeline in inches
sqrt() = square root of ()

Example: 24" pipeline at 1,000 PSI
r = 0.685 * sqrt(1000 * 24^2) = 0.685 * sqrt (1000 * 576)
= 0.685 * sqrt (576000) = 0.685 * 758.95
= 520 feet

The above formula is incorporated in 49 CFR 192.903. The same formula, recast as r = 69 * d * sqrt(p), is used in ASME B31.8S which in turn has been incorporated by reference at least 34 other places in the Code of Federal Regulations (CFR). <https://law.resource.org/pub/us/cfr/regulations.gov.docket.03/asme.b31.8s.comentary.pdf>

It also was used to calculate evacuation distances in Appendix A of the Pipeline Association for Public Awareness' 2007 "*Pipeline Emergency Response Guidelines*".
<http://www.sourcegas.com/UserFiles/File/Pipeline_ER_Guidelines.pdf>

Note, however, that R. D. Deaver's 2008 "*Analysis of Report No. GRI – 00/0189 on 'A Model for Sizing High Consequence Areas Associated with Natural Gas Pipelines*'", DEATECH Consulting Company, 203 Sarasota Circle South, Montgomery, TX 77356-8418, criticizes the C-FERstudy model as being over-simplified and for neglecting fireball contributions in cases of delayed ignition. Instead of the 520 foot PIR predicted by the C-FERstudy's formula, Deaver proposes 1% mortality PIR contours of 1,321, 1,638 or 2,080 feet for 30, 60 and 120 second delays in ignition, respectively. <pstrust.org/docs/AnlyssRprtNoGRI000189.pdf>

*** 2. Compressor Stations must be 3 miles from residential neighborhoods, schools, day-care centers, health care facilities, places of worship, elderly care facilities, and farms, for 12,000 HP compressor stations. The setback needs to be increased accordingly for larger compressor stations**.

*** 3. High Pressure Pipelines and Infrastructure must be set back from high voltage electrical transmission lines at least 1,000 feet**, based on INGAA Severity Ranking of HVAC Interference. (Table 3 on page 4 "Criteria for Pipelines Co-existing with Electric Power Lines", The INGAA Foundation, Inc. Final Report Number 2015-04, October 2015.)

If the applicant cannot adhere to these setbacks, MPC urges SEC to require the following mitigation measures:

*** 1. All affected property owners and property owners with residences located within the Potential Impact Radius (PIR) have the option to require the applicant to buy their property at fair market value as appraised within six months before the pipeline application was filed.** The PIR, as codified in 49 CFR 192.903, is a distance that still includes substantial risk. (See footnote 1)

*** 2. Technology must be used to control air pollutants at the source to protect public health.** At a minimum:

- **Electric motors** to run the compressors;
- **Air-operated control valves** rather than gas-operated valves which vent gas to the air each time they open or shut;
- **Sufficient on-site containment for venting events** such as blow-downs. To continue industry practices of chronically venting gas to the atmosphere is similar to the days before the Clean Air and Clean Water Acts when factories routinely dumped their waste into our environment.
- **All above-ground gas pipeline facilities to be housed in structures with equipment to capture and recover fugitive emissions**

The cost of these measures to the applicants would certainly be less than the cost of negative health effects in surrounding communities.

*** 3. If applicants propose to site pipelines within 1,000 feet of high voltage electrical transmission lines, they must provide SEC with pipeline grounding and corrosion control installation and maintenance plans, to be reviewed by independent engineers at applicant's expense. Quarterly reports on grounding and corrosion control maintenance should be filed with the appropriate state agency.** Corrosion control methods used include buried anodes (which need periodic replacement) or active cathodic protection which requires continuous electrical power.

Mason Pipeline Committee is grateful that SEC has set a high standard for pipeline quality, specifying in 301.14(f)(5)e that high pressure gas pipelines meet the requirements for Class 4 location in a high consequence area. Thank you for taking this important step to protect New Hampshire.

But further steps are needed to reduce adverse effects from pipelines. MPC would like to re-emphasize the following recommendations from MPC's February 28, 2016 comment to SEC, and ask that SEC include them as standards under 301.14(f)(5).

Please require that applicants meet the following standards for construction, as well as the requirements of PUC 506 and 508**:**

- High pressure pipelines should be buried below the frost line all along their routes. PUC 508 only requires 18" of cover in reference to gas distribution lines.
- Daily inspections during construction by independent contractors (funded by the applicant) for pipe welds, grounding arrays, corrosion controls, fill material and placement, blasting, and whatever else needs inspection before the pipeline is buried. **X-ray** inspection for **ALL welds** should be required. PUC 506.01(e) only requires visual inspection.
- **Industry best practices shall be followed when high voltage transmission lines (>50KV) and high pressure metal gas pipelines (>300PSI)** (definition source: Natural Gas Supply Association <naturalgas.org>) **are located within 5000 feet of each other.** Independent electrical engineers (funded by the applicant) should determine that the best practices for high-pressure gas pipelines are being followed.
- High-pressure pipeline applicants should map all potential blasting areas before construction, and list the anticipated depths and composition of the explosive charges, and assess the impacts of blasting to soils and hydrology within 1500 feet of blast sites.
- High-pressure pipeline applicants should be required to do well testing and foundation inspections before and periodically after blasting for all wells and buildings up to 1,500 feet away from pipeline blasting sites. Well tests should be done at applicants' expense by a state certified laboratory for flow rate, general water quality parameters, dissolved metals, and oil and hazardous materials likely to be used in the installation, maintenance, and future monitoring/operation of the pipeline, and include radon, arsenic, benzene, VOCs and chemicals used in blasting among other parameters. Foundation inspections should include basement air testing for radon. Applicants must be required to fund the restoration of damaged water supplies and the repair of damaged foundations.
- High-pressure pipeline applicants should be required to use the best industry practices for minimizing off-site damage when trenching pipe in bedrock wherever there is a risk to the quality and stability of aquifers and water supplies from the effects of blasting.
- High-pressure pipeline applicants should be required to take measures to minimize outside force damage to pipelines from future potential seismicity wherever they are near fault zones. (NED pipeline route is associated with the Campbell Hill Fault Zone in Mason.)

Please require that high-pressure gas pipeline applicants meet the following standards for maintenance, as conditions of approval:

- Staff present daily at compressor stations to monitor and eliminate leaks. Industry practice appears to be for compressor stations to be unstaffed most of the week.
- Appropriate security measures in place to prevent Internet hackers from taking control of the computer systems at compressor stations and other pipeline facilities.
- Pigging stations must properly contain and dispose of residue from cleaning pipelines.
- A maintenance plan for all above-ground infrastructure should be approved by independent engineers and filed with the appropriate state agency.

Please require that high-pressure gas pipeline applicants address other pipeline-related public

safety issues by:

- Developing and funding the implementation of a comprehensive public safety plan for pipeline-affected towns which provides emergency planning, training, preparedness, and applicants' accountability for the cost of training police and firefighters and first responders, and acquiring necessary capital equipment to successfully respond to pipeline emergencies/failures. Funds for maintaining and replacing this equipment should be contributed by the applicant. Fire departments and first responders of surrounding towns that provide mutual aid to pipeline towns should be included in this funding and training.
- Identification of an existing adequate alternative drinking water source for each pipeline-affected town that will meet the consumptive, hygiene, and firefighting requirements of the town population for at least six months (49 CFR 195.6 (5)(c)), in the event of aquifer contamination from the pipeline.

As Julia Steed Mawson of Pelham requested at the June 17th SEC hearing, **please incorporate the new Pipeline and Hazardous Materials Safety Administration (PHMSA) rules into SEC's standards**.

In closing, Mason Pipeline Committee understands that by law, SEC must make a separate finding that an energy project as proposed is in the public interest. To make this finding**,** SEC should consider the larger energy picture for NH as addressed by the 2014 Ten Year Energy Strategy for New Hampshire. http://www.nh.gov/oep/energy/programs/SB191.htm This plan calls for increased energy efficiency as the cheapest available energy source for NH. Its recommendations for gas pipelines are only for increased gas storage and infill service on existing lines. **Please use the Ten Year Energy Strategy as a reference to make a full investigation of the public interest regarding energy choices for New Hampshire, prior to ruling on siting for high-pressure gas pipelines**.

Thank you for your consideration.

Liz Fletcher, compiler of SEC comments for Mason Pipeline Committee
288 Marcel Road, Mason NH 03048

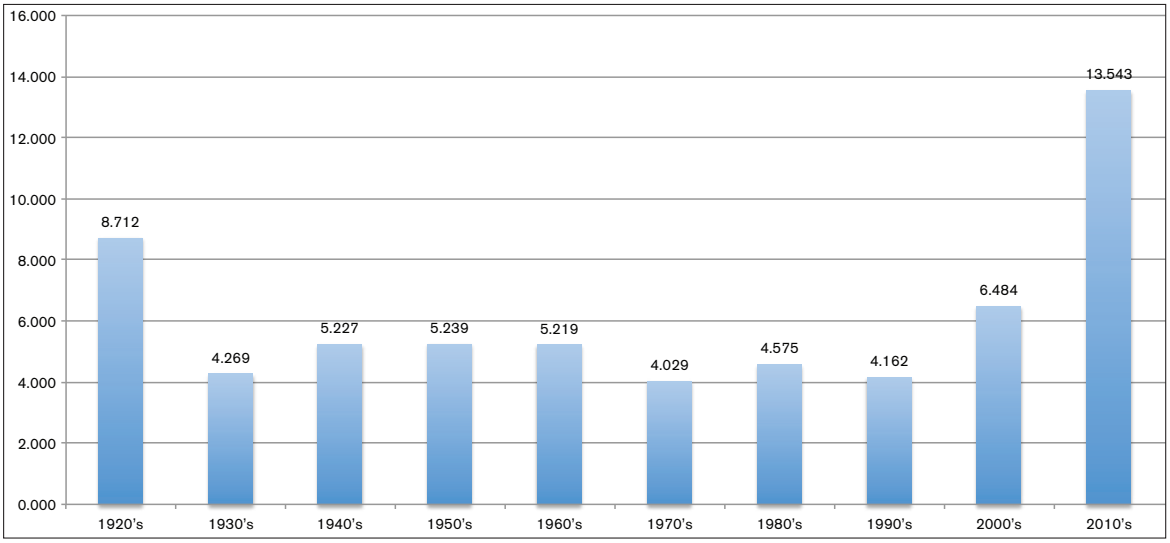
cc: Governor Maggie Hassan

Attachment: US Pipeline Safety Trust. Safe Pipelines Spring 2015, page 6 "Are Old Pipelines Really More Dangerous?"

Are Old Pipelines Really More Dangerous?

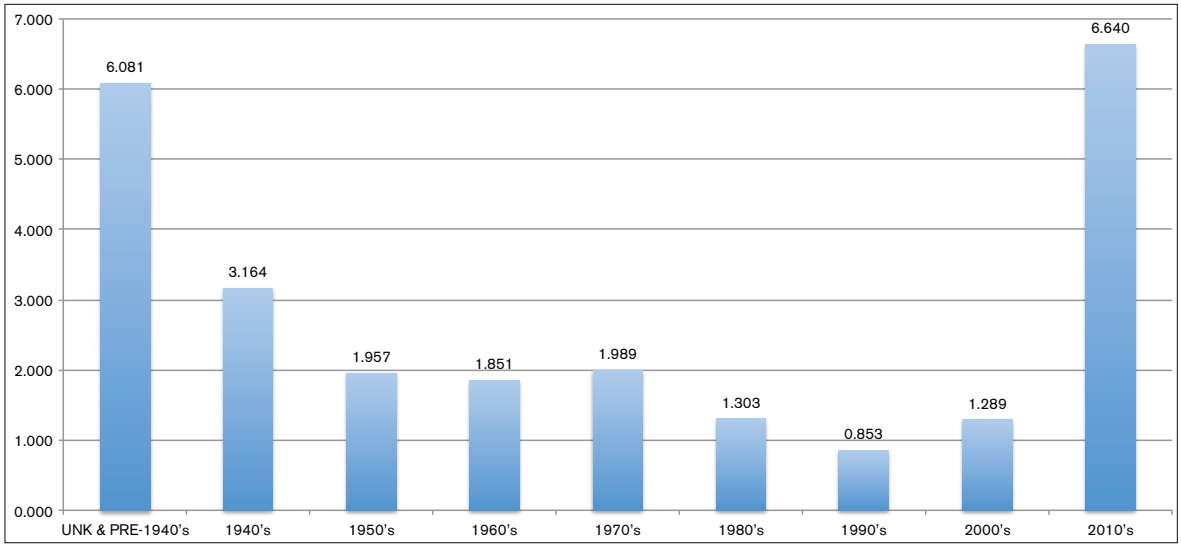
This sentiment is heard frequently, and even more often turned into a statement of fact, that old pipelines are more dangerous. But the truth is that is not necessarily the case. While some *types* of old pipelines are well-known to be riskier, like cast iron pipes and pipes with seams welded using LF-ERW (low frequency electric resistance weld), in general we do not see older pipes failing much more than new pipes on a per mile basis. In fact, we recently analyzed pipeline incidents in relation to the decade those same failed pipes were installed – one analysis for onshore hazardous liquid (HL) pipelines, and one for onshore gas transmission pipelines. The results were surprising. Though they varied between hazardous liquid and gas transmission pipelines (all onshore), generally the very oldest pipes were more dangerous (pipe installed before the 1930s), and – here's the surprising part – more dangerous still were the very newest pipelines – those installed since 2010. Is this a reflection of "getting the kinks out" when pipelines are first installed? Is it a pattern that will continue or change? Unfortunately, we don't have the kind of data we would need to replicate this analysis in decades past, so it will only be in the future that we're able to answer our questions. The graphs are concerning to us though, as one interpretation of the results is that some pipelines are initially installed with weak and vulnerable aspects which fail; and only after fixing these initial failures do the pipelines operate safely. There are surely other interpretations of the results, and we would love to hear from you if you have ideas of why this is occurring. The uncertainty surrounding the safety of new pipelines underscores the need to push for pipelines to be sited, installed, tested and inspected in the best way possible, and for the regulators to ensure that is the case through strong and enforced regulations. And all of this only works well when the public has the ability to be involved in the process and has access to the information needed to understand and review all aspects of pipeline safety. We still have a long way to go.

 # Incidents Per 10,000 Miles Of Onshore Hazardous Liquid Pipeline By Decade Of Pipe Installed
(Avg Of Annual Incidents 2005-2013)



All data from PHMSA. Mileage data from operator's annual reports, incident data from flagged incident reports.
Contact us for more specifics.

 # Incidents Per 10,000 Miles Of Onshore Gas Transmission Pipeline By Decade Of Pipe Installed
(Avg Of Annual Incidents 2005-2013)



All data from PHMSA. Mileage data from operator's annual reports, incident data from flagged incident reports.
Contact us for more specifics.