

Working Group #2

Preventing & Mitigating Geo- Forces on Pipelines and Facilities

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Attendance Breakdown

Approximate total attendance	36 persons
Regulators	5 persons
Operators	13 persons
Pipeline Industry/Service Providers	9 persons
Standard Developing Organizations	0 persons
Researchers	6 persons
Academics	3 persons
Other	0 persons

Top 3 Identified R&D Gaps

Gap #1 – We do not know the current strain condition of existing pipelines. Need to develop **technology** to determine current state of strain in existing in situ pipelines.*

Gap #2 – We do not know the strain capacity of existing pipelines. Closing this gap will enable operators to determine how much time they have before they need to intervene. Likely **technology** and **general knowledge** gap.

Gap #3 – Geohazard monitoring data sets are not readily available or shared among operators, regulators and service providers. Integration of multiple data sets, both geohazard and other integrity related data, is a challenge particularly the alignment of data to make Pipeline and Facility safety decisions. Likely a **Technology** and **General Knowledge** gap. *

NOTE: Identify gaps with* that may be addressed with University Partnerships

Associated Details

(Gap #1)

Strain State of Existing Pipelines

- Applicable to HL and NG pipelines
- Likely need an above ground or in-pipe solution that is spatially accurate
- Should be a direct measurement of strain
- Closing this gap would address some regulatory, congressional, or NTSB drivers in that it allows operators to determine when to intervene prior to failures.
- May provide a solution that can be referenced or used in consensus standards
- No real roadblocks however new technology so cost/limitations of science may exist
- Likely a 2-3 year R&D project

Associated Details

(Gap #2)

Strain Capacity of Existing Pipelines

- Applicable to HL and NG pipelines
- Likely an analytic solution based on researching operator, manufacture, engineering consultant and failure data
- Intelligent solution based on vintage/manufacture and weld materials/techniques.
- Closing the gap would also enable improved/coordinated codes and standards for new pipelines.
- Closing this gap would address some regulatory, congressional, or NTSB drivers in that it allows operators to determine when to intervene prior to failures.
- May provide a solution that can be referenced or used in consensus standards
- No real roadblocks
- Likely a 1-2 year research project

Associated Details

(Gap #3)

Geohazard monitoring and data integration

- Applicable to HL and NG pipelines
- Likely a technology and general knowledge solution
- Externally focused to provide access to and vehicles for data sharing amongst operators, regulators, service providers. This includes notification of incidents or potential immediate concerns.
- Identify data quality and reliability challenges to enable improvements to data
- Closing this gap would address some regulatory, congressional, or NTSB drivers in that it allows operators to determine when to intervene prior to failures.
- May provide a solution that can be referenced or used in consensus standards
- A roadblock may be potential data sharing issues and different terminology.
- Likely a 2-3 year research project

Additional Identified Gaps

- Space weather/ geomagnetic disturbances
- Earthquake related pipeline failure prediction
- Relative risk analysis – should develop quantitative risk models
- Coordination gaps within codes and standards
- Lower cost geohazard mitigation methods
- Availability of high resolution data sets in North America (lidar, insar, lidar change detection...)
- Accurate more frequent or even real time monitoring
- Technology to detect, identify and size planar flaws in girth welds in existing pipelines

NOTE: Identify gaps with* that may be addressed with University Partnerships