**INTERNATIONAL GAS UNION – WORKING COMMITTEE 3**

**“GAS TRANSMISSION”**

**Study Group 3.2 “Integrity of gas transmission systems and environmental footprint reduction”**

**Questionnaire about investigation into threats affecting the integrity of gas pipelines and effectiveness of mitigation measures to reduce the risk related to these threats.**

**GENERAL INFORMATION ABOUT THE QUESTIONNAIRE**

**SCOPE OF SG 3.2**

**Under this topic, Study Group 3.2 aims to investigate the following aspects of PIMS (Pipeline Integrity Management System):**

* **The threats that could affect the integrity of onshore and offshore gas transmission pipelines. Most gas transmission companies have specific definition of pipeline threats and pipeline integrity based on their own business requirements and operations, and also based on codes, standards and best practices. The investigation would like to determine what the definitions are and further on, what those threats are. Particularly, is the evolution of threats monitored, are emerging threats identified and how?**
* **Best practices, i.e. the activities and actions that gas transmission companies conduct or perform in order to reduce or mitigate the risk of pipeline failure due to the above threats. Here, SG 3.2 would like to investigate whether a particular gas transmission company needs to follow/adhere to specific regulatory requirements pertaining to reduction or mitigation of pipeline risk.**
* **The effectiveness of these measures, activities and actions in reducing or mitigating the risk of pipeline failure. SG 3.2 would also like to investigate whether gas transmission companies use specific performance indicators to measure the effectiveness of these activities and actions in reducing pipeline risk of failure.**

**The investigation shall help set up the diagnosis of the current state of the Gas Transmission industry on pipeline integrity management, identify the most relevant problems and emerging issues affecting the Gas Transmission industry, the approaches implemented to manage them, the gaps to be filled for strengthening the position of the industry.**

**From the experiences and the indications that will be collected, SG 3.2 aims at identifying the items to be further analysed and studied in its future activity for presentation at the next World Gas Conference; elements for an open and complete discussion among the Participants about the threats to pipeline integrity, activities and actions to reduce risk of pipeline failure (due to the threats), and the effectiveness of those activities and actions in reducing the pipeline risk.**

**In order to achieve the above, the Group has identified as first step the need to collect information from the different gas transmission companies worldwide.**

* **Update the description of the current state of the gas industry on the above subject**
* **Identify emerging issues, open questions, evolutions, new constraints, new opportunities, and best practices to be disseminated**

**This step will be fulfilled with the collaboration of the WOC 3 Companies that are kindly requested to respond to the attached questionnaire.**

**To clarify the general framework, the following terms are used in pipeline integrity:**

* **Pipeline integrity is affected when a given pipeline is damaged and/or the pipeline has typical defects i.e. corrosion, dent, gouge, scratch, weld defects, buckle, wrinkle, crack etc. that is affecting the structural capability of the pipeline**
* **Pipeline failure means a leak or rupture**
* **A near-miss is a damage to a pipeline that was very likely to occur but has not occurred**
* **A damage on a pipeline results in:**
  + **Immediate leak / rupture**
  + **Delayed leak / rupture**
  + **Stable damage**
* **Pipeline Integrity Management operates like a Quality Assurance System:**
  + **It sets requirements and performance expectations**
  + **It collects information on actual system performance and on how issues are dealt with**
  + **It monitors trends and suggests improvements**
* **Pipeline Integrity Management has two different timescales have to be accounted for:**
  + **A long time scale, based on routing and design decisions, as well as on evolution of the environment around the pipeline; the processes to incorporate evolutions into this process are not necessarily formalised**
  + **A short time scale, that of inspection / assessment / maintenance cycles; evolution monitoring is part of the management system, so the process of incorporating updates is planned for**
* **Field feedback operational data is collected to cover several aspects:**
  + **Incident (failure) statistics (leaks or ruptures / km / year) indicating also corresponding causes; immediate vs delayed failures distinguished?**
  + **Damage statistics for stable damage**
  + **Statistics for inspection, assessment and repair**
  + **Statistics for prevention activities**
  + **Statistics for efficiency evaluation of prevention and remediation measures**
* **Prevention measures are used to avoid that a threat damages the pipeline**
* **Protection measures are used to decrease the severity of consequences in case of an accident**
* **Mitigation or repair measures are used to restore the pipeline condition for normal operation**
* **A pipeline is fit for service when its condition allows for normal operation with an acceptable safety margin**

**GUIDELINES FOR THE COMPILER**

**The Company’s Compiler should describe in synthetic way the situation existing in its Country allowing the SG 3.2 to elaborate a general framework for planning the next activities.**

**For this description the Compiler shall fill the green boxes. The dimension of the boxes is not fixed and the Compiler can insert the text as long as necessary.**

**DATA ABOUT THE COMPILER**

**COMPANY NAME:**

**COUNTRY:**

**NAME**

**TELEPHONE NUMBER**

**E-MAIL ADDRESS**

**DOES THE GOVERNMENT HAVE A MAJORITY STAKE IN YOUR COMPANY’S CAPITAL? (I.E. DOES THE GOVERNMENT OWN MORE THAN 50% OF YOUR COMPANY’S CAPITAL?)**

**ANSWER: YES OR NO**

**YOUR GAS TRANSMISSION NETWORK LENGTH**

**MEAN AGE OF YOU NETWORK**

1. **Does your country have specific regulations/laws to regulate the pipeline integrity management for Gas Transmission Company? If YES, please describe the specific areas that the regulation/law regulates.**

**□ YES □ NO**

**If YES, please mark the affected area in the list below:**

**□ Route selection**

**□ Design**

**□ Construction & testing**

**□ Operation**

**□ Maintenance (inspection, assessment, repair, mitigation etc.)**

**□ Other, please specify \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**□ Other, please specify \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Additional notes:**

1. **Does your Gas Transmission Company follow specific any code, standard and/or professional guidelines in managing integrity of gas transmission pipelines? If YES, please name the code, standard and/or guideline and the specific area(s) that are specified so (see above for list of areas). Have these codes, standards and professional guidelines evolved in the last 5 years? Are specific questions still open, and if YES, what are they?**

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1. **Does your Gas Transmission Company in your country have specific definitions for ‘*Pipeline Integrity’* and ‘*threats*’ to pipeline integrity? If YES, please provide the definitions (see aspects to cover at the beginning of the questionnaire).**
2. **What approach does your Gas Transmission Company use to determine the different threats or failure causes? Is it industry incident data (like EGIG, or US DOT, etc.), own incident data, or both, or failure cause analysis, etc. Please describe the specific approaches used and the corresponding data sources. Is there any gap you identify, or an unsolved issue?**
3. **In the last five (5) years, has your / a Gas Transmission Company in your country experienced one or several pipeline incident(s) i.e. leak and/or rupture? If YES, please provide the nature of the failure (leak / rupture), when and what was /were the cause/s of the incident.**
4. **Does your Gas Transmission Company consider necessary to update incident statistics at a global industry level? If YES, please mention what aspect should require special attention.**
5. **Based on the approach described in Question 4, present the ranking of threats to pipeline integrity / failure causes for a particular Gas Transmission Company in your country. Please indicate the percentage attributable to each cause, on one hand for damage and on the other hand for failures. Please indicate the period for which this data is relevant (1, 5 years, etc.)**

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1. **What are the actions and/or activities undertaken to mitigate the risk of pipeline failure (leak/rupture) or damage due to *external interference*? Please list at least the five (5) main ones. Is there any gap you identify, or an unsolved issue?**

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1. **What are the actions and/or activities undertaken to mitigate the risk of pipeline failure (leak/rupture) or damage due to *external corrosion*? Please list at least the three (3) main ones. Is there any gap you identify, or an unsolved issue?**
2. **What are the actions and/or activities undertaken to mitigate the risk of pipeline failure (leak/rupture) or damage due to *geotechnical problems* i.e. ground subsidence, slope erosion/failure etc.? Please list at least the three (3) main ones. Is there any gap you identify, or an unsolved issue?**

1. **What are the actions and/or activities undertaken to mitigate the risk of pipeline failure (leak/rupture) or damage due to *human/operator error*? Please list at least the three (3) main ones. Is there any gap you identify, or an unsolved issue?**

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1. **What are the actions and/or activities undertaken to mitigate the risk of pipeline failure (leak/rupture) or damage due to *materials defects*? Please list at least the three (3) main ones. Is there any gap you identify, or an unsolved issue?**

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1. **What are the actions and/or activities undertaken to mitigate the risk of pipeline failure (leak/rupture) or damage due to *construction errors*? Please list at least the three (3) main ones. Is there any gap you identify, or an unsolved issue?**

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1. **What are the actions and/or activities undertaken to mitigate the risk of pipeline failure (leak/rupture) or damage due to *other causes*? Please identify the cause and list at least the three (3) main ones. Is there any gap you identify, or an unsolved issue?**

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1. **Does your Gas Transmission Company use *leading* and *lagging* Key Performance Indicators (KPIs) to measure the effectiveness of mitigation actions above? If YES, please provide at least five (5) examples for both leading and lagging KPIs. Is there any gap you identify, or an unsolved issue? E.g. the number of leaks per km/year is a (global) lagging indicator, and an insufficient CP level is a (local) leading indicator *(note to editors: if other leading indicators are better examples, please use them)*.**

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1. **Does the Gas Transmission Company’s management (top, senior and middle management) hold and monitor any *lagging* Key Performance Indicators (KPIs) described above? If YES, please name the lagging KPIs (and others if necessary). Is there any gap you identify, or an unsolved issue? Same questions for leading indicators described above.**

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1. **What are at least the five (5) main issues about *risk management* and *threats mitigation* that your Gas Transmission Company has to *communicate* on one hand to the authorities, on the other hand to the public? Same questions for the communication items done voluntarily by your company. Is there any gap you identify, or an unsolved issue?**

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**18) If you have anything to add to this questionnaire i.e. other information, suggestions for issues to study during the triennium, etc., please do so in the box below.**

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