Voluntary Information Sharing - Best Practices Sub-Committee
Draft Recommendations and other Concepts – Pre-Deliberative

Background

The Best Practices Sub-Committee (BPSC) was commissioned as part of the broader Voluntary Information Sharing Task Team. The BPSC task statement follows:

Evaluate existing processes (including other industry VIS models and practices) and make recommendations on best practices that will promote the sharing of data and information.

Evaluations and resulting recommendations are intended to accomplish:
- *Active participation of all stakeholders; compelled by the value proposition*
- *Integrity management process and technology improvements*
    - *Identification of current industry VIS processes and systems (PRCI, API, INGAA, SGA, Service Providers) and assessment of active participation by stakeholders*
    - *Identification of current gaps in data, technology and/or analytics that need to be closed*
        - *Sharing occurs between technology providers and operators*
    - *Sharing of enhanced processes and practices i.e. solutions to known problems including experience with new data/information technology*
    - *Training and education of lessons learned with respect to execution of the various integrity management processes*
        - *Improved analytics*
        - *Near misses*
- *Post incident related RCFA's and subsequent company/regulator learning*
    - *Systemic or acute process improvements*
    - *Cultural improvements*
    - *Technology/Technology deployment improvements*
- *Communication to and with stakeholders including regulators, public advocacy, public*

Notes/Comments

- The Best Practices sub-committee is focused on learning from past experience and existing processes to effect viable voluntary information sharing systems and bring those to bear for this Committees task.

- Clear overlap with Process Sharing and Technology sub-committees. Some of the recommendations provided below are still a work in progress and may be combined with others.

The BPSC established work groups to pursue the existing best practices currently being deployed in the following areas which align with our task statement:

- **ILI Data and In-ditch Data Management – Cliff, Bryce, Jason**
  - Individual Operator processes and procedures – best practice (over and above RP 1163)
  - API 1163 Process between ILI Service Providers and Operators
  - PRCI ILI Data Analytics (PRCI Project NDE4-X) – Data Standards, Data Gathering, De-identification Techniques, Security
  - ASIAS Data Standards (impacting how operators report data, statistics, information), De-identification Techniques, Security
- **Pipeline Safety and Integrity Management Process Improvement – Eric, Mike, Mark, Joe, Max**
  - INGAA, API, AOPL, SGA PLS, API/COS Lessons Learned Processes
  - PRCI R&D Programs – Technology and Knowledge Base Improvements and Programmatic Efforts (NDE4, etc.)
  - Industry and Operator PSMS 1173
  - CAST Safety Data Analysis Process and Resolution (ASIAS, Pilots, Maintenance and Inspection, Manufacturers turning data and information into actionable improvements)
  - Training and Qualification Programs within the Industry – SGA, PRCI, others
  - Incident and RCFA Based Learning
    - ✓ PHMSA and State Enforcement Actions/Operator Process Improvement
    - ✓ NTSB recommendations and resolutions
    - ✓ Individual Operator Internal Processes
    - ✓ Industry and Operator PSMS 1173 Lessons Learned Process – AOPL/API Best Practice
- **Communication and Stakeholder Outreach – Kate, John, Leif, Warren**
  - Common Ground Alliance Processes and Practices (DIRT)
  - PHMSA Performance Metrics and Annual Reporting – Leverage and Enhance
    - ✓ KPIs for distribution and transmission companies
    - ✓ Other examples?
  - Examples from operators
  - Leverage 1162 and public awareness aspects. Also short piece in 1173… better way to view in context of VIS (Similar to PS-10)
  - Others?

Recommendations and other concepts

BP-1 (may also be used as intro material for report… i.e. what we based our recommendations on): A Voluntary Information Sharing system for the energy pipeline industry should leverage existing practices, processes, procedures and governance models currently being utilized within the pipeline industry as well as those in other industries.

As a result of the VIS effort the BPSC is familiar with or has become aware of several existing and ongoing processes that focus on data and information sharing for the purpose of improving safety performance. In some cases the level of sophistication and overall systems are quite elaborate and have been developed over time. The BPSC highly recommends that any future VIS effort consider adoption or development of processes and procedures based on best practices embodied in the programs highlighted below:

Aviation Safety Information Analysis and Sharing (ASIAS) - The Aviation Safety Information Analysis and Sharing (ASIAS) program connects approximately 185 data and information sources across government and industry, including voluntarily provided safety data. The ASIAS program works closely with the Commercial Aviation Safety Team (CAST) and the General Aviation Joint Steering Committee (GAJSC) to monitor known risk, evaluate the effectiveness of deployed mitigations, and detect emerging risk. The following characterizes this existing program:

      a. A collaborative Government – Industry initiative on safety data analysis and sharing
      b. A risk-based approach to aviation safety, identifying and understanding risks before accidents or incidents occur
      c. Timely mitigation and prevention
      d. Governing Principles
            i. Voluntary Submission of safety sensitive data
            ii. Transparency for how data are managed and utilized
            iii. Analysis approved by an ASIAS Executive Board
            iv. Procedures and policies based on collaborative governance
            v. Operator/OEM/MRO date are de-identified
            vi. Data used solely for advancement of safety

The BPSC recognizes the ASIAS system as the leading example and best model to be emulated by the pipeline industry for information sharing; it can potentially provide initial studies and reports used as a catalyst for its formation. Considerable reference material is available including chronological development, process framework, governance framework, funding, lessons learned, etc. The BPSC highly recommends that any future Voluntary Information Sharing System for the pipeline industry consider and utilize to the fullest extent possible the information and knowledge available from the ASIAS program, it's developers, managers and user community. Additionally and equally useful are existing governance documents, operating procedures, cooperative agreements, etc. that might be applicable to the pipeline industry model. This information is included in the appendices.

Center for Offshore Safety - The Center for Offshore Safety COS) is designed to promote the highest level of safety for offshore drilling, completions, and operations through leadership and effective

management systems addressing communication, teamwork, and independent third-party auditing and certification. The COS has developed tools for reporting and analyzing incidents and events that are applicable to the VIS effort and should be considered for adoption. The COS endeavors to achieve operational excellence by:

1. Enhancing and continuously improving industry's safety and environmental performance
2. Gaining and sustaining public confidence and trust in the oil and gas industry
3. Increasing public awareness of the industry's safety and environmental performance
4. Stimulating cooperation within industry to share best practices and learn from each other
5. Providing a platform for collaboration between industry, the government, and other stakeholders

Guiding Principles

1. COS Members demonstrate a visible commitment to safety
2. COS Members work together to create a pervasive culture of safety
3. Decision making at all levels will not compromise safety
4. Safety processes, equipment, training, and technology undergo continual improvement
5. Members share learnings and embrace industry Standards and best practices, to promote continual improvement
6. Open communication and transparency of safety information is utilized to build mutual trust among stakeholders and promote collective improvement in industry performance
7. Collaborative approaches are utilized to drive safe and responsible operations, and mutual accountability
8. Everyone is personally responsible for safety and empowered to take action

Pipeline Research Council International (PRCI) - PRCI is a research and technology based consortium established by and for the energy pipeline industry. The organization was founded in the 1950's on the basis of a voluntary and collaborative approach to solving a very specific pipeline industry problem. Since that time the association has continued in a collaborative manner to solve common challenges via data and information sharing, knowledge transfer and technology development. In particular PRCI has recently endeavored to collaborate on an ILI data sharing project that is specifically synergistic to the VIS. Presentations by PRCI have been made to the VIS Committee and a report has been authored for the purposes of a reference document for both the BPSC and the Technology SC. This report provides an overview of the project (NDE-4E In-line Inspection Crack Tool Performance Evaluation) and offers recommendations and guidance for such an effort. The case study *NDE-4E* describes the performance of ILI tools as they relate to the measurement of crack-like features in pipelines. The recommendations contained in the report focus on process and technology gaps to be addressed to support information sharing.

Additionally the report provides guidance relative to the implementation of an existing industry recommended practice; *API 1163 ILI Systems Qualification Standard.* API 1163 broadly describes the best-practice related to the use of in-line inspection technologies including data requirements, system validation, and qualification of technology and personnel and management systems. In practice, the broad nature of such a standard means that the possible range of implementations intended to satisfy the standard varies widely, increasing the chance for inconsistency and misinterpretation of data

records. The recommendations contained in the report focus on improvements in the application of best practice(s) to meet the intention of the codes and standards (e.g. *CFR*, *API 1163*, etc.) which will facilitate information sharing across the industry.

Industry Associations - Build upon current trade association initiatives without disrupting or changing their current approaches. Guidance documents and workflow are available from the various associations (API, AOPL, PRCI, INGAA, SGA, AGA, APGA, CGA others) that describe their processes, best practices, protections, performance measures, etc.   Industry-wide VIS would enable a broader context for sharing and allow them to share their own lessons but benefit from all lessons (cross-associations).

–   Lessons Learned from failures (including near misses)

–   Lessons from unique or unexpected situations and solutions

–   Lessons Learned from routine assessments

-        Provide specific examples from each on how they help this effort? Use some examples. Develop chart with cross references. Who has good examples of information sharing? deidentification of data? funding models? (may be different examples for each)

Interstate Natural Gas Association of America/INGAA Foundation Lessons Learned

American Petroleum Institute Virtual Tailgate

American Petroleum Institute Pipeline Information eXchange (PIX) - The Annual Pipeline Information eXchange (PIX) provides operators with a learning and sharing opportunity about pipeline incidents.

BP-2: A Voluntary Information Sharing system for the energy pipeline industry should [complement, build upon, and/or leverage] existing information sharing that currently occurs at the operator level, within industry associations or between Operators and Service providers. The VIS should provide a means to share information, knowledge and solutions relative to high value learning events from existing industry efforts and programs for the benefit of all Operators (regardless of affiliation or not with specific associations or interest groups) and broader audiences or stakeholders.

A graphical representation of the various information sharing processes currently in place is included in the appendices, Figure 1 and below (note de-identified data and data quality pieces should switch places):
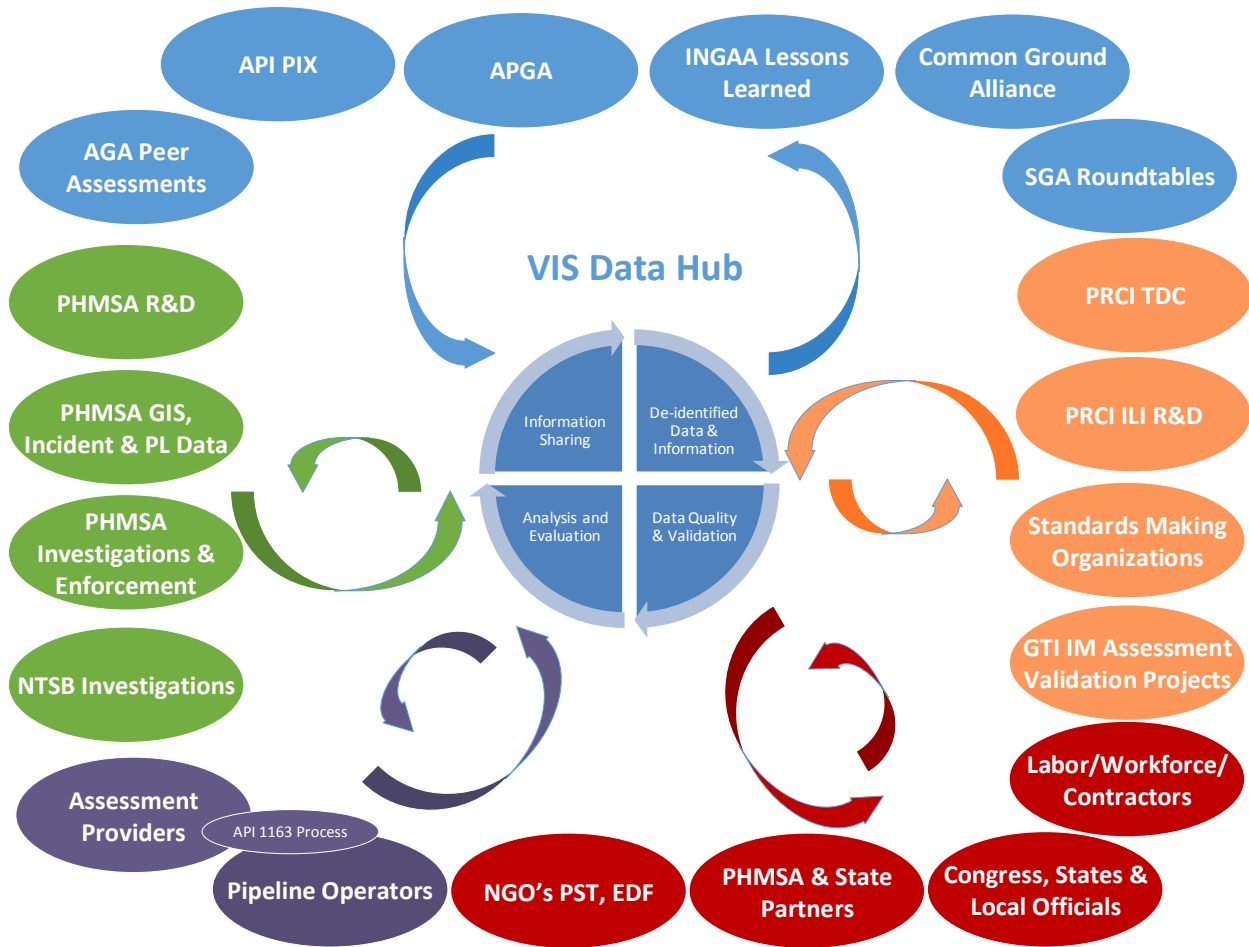

VIS should include a means, processes and systems to share data, information, and knowledge amongst the above stakeholders and entities. A Taxonomy Model developed by Joe Subsits or brief description should be referenced here and included more fully in an appendix.

BP-3: A Voluntary Information Sharing system for the energy pipeline industry should provide a framework to manage the sharing context and include fundamental elements found in various other businesses or entities including but not limited to:

- Governance, policies, procedures and recommended practice

- Quality Assurance/Quality Control of data, information and knowledge

- Security of Data and Information including methods to de-identify data and provide anonymity

- Recognition of potential barriers to participation and methods to mitigate

- Communication of results and performance measures

Examples and specific details for the above can be found in reference documents included herein or available as referenced*.* The core process of information sharing should embody a continuous improvement cycle:
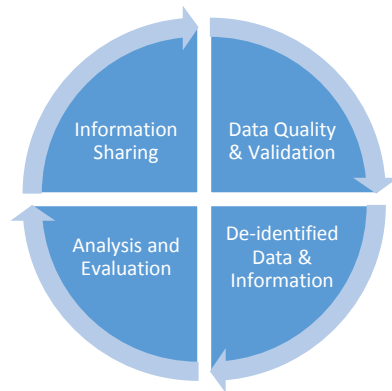
BP-4: A Voluntary Information Sharing system for the energy pipeline industry should not be limited specifically to pipeline in-line inspection data. Considerable value and safety improvement is possible if the sharing is expanded to include data, information, knowledge, lessons learned and solutions within the context of pipeline integrity management.

Data and Information Layers/Records/Focus Areas

De-Identified Data and Information
- ILI Data
- In-the-ditch defect characterization and measurement data
- Specific threat or interacting threat characterization and examples/samples
- Near Miss Data and Information
- Incident Based RCFA Conclusions and Recommendations
- Operator Integrity Management and Operational Lessons Learned
  - Enhancing the utilization of existing technology to improve detection
- Technology Gaps or known process shortcomings

Improvement Resolution/Outputs

- R&D Projects to address gaps
- Operator Actions to Prevent Reoccurrence
- Operator and Service Provider Best Practices/Procedures
- Operator and Engineering Service Provider Engineering Standards

Performance Metrics/Leading Indicators on VIS
- Number of active participants in the sharing process
- Quantitative statistics relative to data and information available
- How do you demonstrate improvement?
- Show impact in terms of pipeline safety improvement
- What did we learn from others that would be relevant for VIS?
- Etc.

BP-5: A Voluntary Information Sharing system for the energy pipeline industry should provide a broad context for the sharing process and be flexible and amenable to ad hoc or customized sharing opportunities as appropriate.

Context for Information Sharing
- Integrity management process and technology improvements
    - Identification of current gaps in technology and/or analytics that need to be closed
        - Sharing occurs between technology providers and operators
    - Sharing of enhanced processes and practices i.e. solutions to known problems including experience with new data/information technology
    - Training and education of lessons learned with respect to execution of the various integrity management and O&M processes
        - Individual contributor (SME) observations, near miss, safety moment
        - Improved analytics
        - Near misses
        - Unexpected outcomes/observations
- Post incident related RCFA's and subsequent company/regulator learning
    - Systemic or acute process improvements
    - Cultural improvements
    - Technology/Technology deployment improvements
- Mechanism to share information amongst certain parties if common issues identified? (May be more of a governance issue.)
- For development, provide benchmark information based on best practices reviewed

BP-6 (may or may not be specific recommendation… may be more suitable for intro material to report): VIS should allow for deliberate (peer to peer) sharing of data, information or knowledge as the case may dictate. The sharing process is via active engagement between one or more parties and is a pitch/catch relationship; at a minimum at least one party is learning/gaining knowledge or wisdom from another or they are engaged in a collaborative process improvement.

- The sharing opportunity is characterized by the following (this is more aspirational language and may be more suitable for intro language to report vs. tied to recommendation):

- **High Value** – the opportunity results in an increase in knowledge, process improvement or best practice at a company level.   To this end the sharing should target the right side of the value chain (data, information, **knowledge, understanding, wisdom**).

- **Deliberate** - The sharing process is via active engagement between one or more parties and is a pitch/catch relationship; at a minimum at least one party is learning/gaining knowledge or wisdom from another or they are engaged in process improvement.

- **Actionable** – The result of the engagement generates action by one or more parties and processes or practices change within that entity (industry or service providers).

- **Measurable** – The sharing process as well as the results of the improvements/actions are measurable.

BP-7 (may or may not be specific recommendation): The result of the VIS engagement generates action by one or more parties and processes or practices change within that entity (industry or service providers). Consider ways to make it measurable. (may not be measurable, or at least all aspects)

[Comment] Aspirational language…. If this all happens would be a best practice, but not sure if a best practice in place today

The following attempts to describe high level the outcomes (targeted improvements). The data and/or information required to facilitate the improvement opportunity is different (quantitative versus qualitative) depending on the outcome or elements of the outcome. For each of the contexts below we need to define what data/information is required and how is it gathered, processed and analyzed from a process and technology perspective.

1. Improve (industry consistent/best in class) application and deployment of existing technology whether it be ILI tools, DA, hydrotesting, etc. Operators deploy a comprehensive, systematic and integrated process relative to integrity assessments:
   a. Identify the right technology(ies) for the threat (can be NDE and assessment technologies)
   b. Specify data and analytics appropriate for the threat(s)
   c. Service provider sensor technology, delivery to the pipe, data analysis and reporting
   d. Operator data integration and direct assessment decision making process
   e. In-the-ditch measurement accuracy, precision and competency
   f. Integration and feedback of field data to assessment service providers and Operator knowledge base (PDCA) (refer to new RP 1178 on data integration)
2. Improve existing technology capabilities via Operator/Industry gap analysis
   a. How to improve existing tool and process technology for unique circumstances such as a certain morphology or interacting threats
3. Drive development of new and/or improved technology(ies) (sensors, analytical techniques) via Operator/Industry gap analysis
4. Identify unique (low probability, high consequence) integrity threats and approaches to assess susceptibility and threats (Operator transparency relative to emerging/found threats – "I was not expecting to find this but we did, you might consider that")

The following table summarizes the above:

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Context	Data/Information	Participants	Value of Outcome	Measures
Bolster deployment of best practices and technology	As-found defect data, ILI as-called data, relevant physical, environmental and operational data	Operators, Service Providers	Assure consistent performance from best available technology and processes	Improved characterization and response, lower incident rates
Perfect existing technology and analytical techniques deployment	As-found defect data, ILI as-called data, relevant environmental and operational data, lessons learned	Operators, Service Providers	Improve performance from best available technology and processes	Improved characterization and response, lower incident rates
Improve state of the art	Physical samples and data for unique or rare defects/interaction	Operators, Regulators, Service Providers	New or significant improvement in technology including sensors and analytics	Success rate for identification, characterization and mitigation of problematic threats, lower incident rates
Identity and transparency of false negatives, low probability high consequence threats	Lessons learned, Case Studies, RCA Recommendations	Operators, Regulators, Service Providers	Realization and mitigation of unique threats	
Stakeholder Communications	Industry integrity assurance capability, process and performance metrics, VIS outcomes	Operators, Regulators, Public and Advocacy groups	Industry credibility and stakeholder confidence	**TBD**

BP-8 (previously part of recommendation above, but may worth being its own recommendation):
Improve transparency/communication of industry capabilities and confidence level with existing technology(ies) and pursuits of gap filling technology(ies)

- define data, information and messaging for the industry and public communications
- describe/define the state of the state not just in terms of what industry is capable of but how well we actually deploy that capability.
- Provide more details… similar to process sharing PS-12)

BP-9 (more of an outcome statement than recommendation?): Future refinement and/or maturity of the energy pipeline VIS could lead to increased value beyond the previously mentioned contexts:

- Offer enhancement of PHMSA data used for analysis, evaluation, inspection prioritization and NPMS. Position PHMSA in sharing of lessons learned of accident/ incidents and operator responses; could also improve consistency in enforcement

- Create an opportunity for industry to increase cooperation and share engineering standards, specifications, procedures, including welding procedures, coating procedures, line pipe specifications, among others. (could be its own recommendation)

- PRCI/Industry Collaboration based operating procedures and integrity management practices – common approaches and practices for like assets/situations. (could be together with 3)