NGA Collaborative Approach to PSMS RP 1173 Implementation

NGA Virtual Gas Operations School, June 3, 2020

Bob Wilson
bwilson@northeastgas.org

Agenda

1.	**What is a Pipeline Safety Management System - API RP 1173?**
2.	**Why We Need to Adopt to API RP 1173**
3.	**How to Leverage Our Existing Programs**
4.	**Proposed Strategic Approach**
5.	**Program Status Update Lessons Learned**

A Little History…….

- Following a series of pipeline related incidents, the NTSB recommended that American Petroleum Institute (API) develop Pipeline Safety Management Standard (SMS) in 2012.

- API worked with the NTSB, PHMSA, States, and industry to develop a proposed pipeline SMS Industry Recommended Practice API RP 1173 which was released in 2015.

- The general intent behind a pipeline SMS is to 'provide a systematic way to identify hazards and control risks while maintaining assurance that these risk controls are effective'.

- A Pipeline SMS is intended to provide a framework to help improve performance, regardless of the specific goals established by the operator.

- A Pipeline SMS should ideally be tailored to an operator's assets and the environment in which they operate – *Not a one size fits all solutions*

Why ?

Managing the safety of a complex process requires coordinated actions to address multiple, dynamic activities and circumstances. Simple management oversight focused on a single activity or process may not be enough to account for all the variables contributing to safe operations.

API RP 1173 ....

- API RP 1173 provides a framework to pipeline operators developing and maintaining a Pipeline SMS.

- The elements of API RP 1173 are intended for use by operators to structure their own system(s) and programs.

- The framework builds upon an operator's existing practices by drawing upon industry experiences, lessons learned, and existing standards.

It's All About Leadership and The Role We ALL Play……….

- Traditional Leadership Techniques
- Non-Traditional Leadership Essentials
- Building Successful Transformational Organizations – *Thinking Beyond The Word "Compliance"*
- The PSMS "*Umbrella*" , *Operationalizing Strategy*

RP-1173

# Let's Look at Safety Culture

Safety culture is a combination of:

- Values – what the organization believes

- Attitudes – an-open minded approach to always allow asking 'is it safe?'

- Practices – established methods that are consistently applied across the organization

- Behaviors – how employees should perform their duties and what leaders should both do and reward

Reacting vs Learning
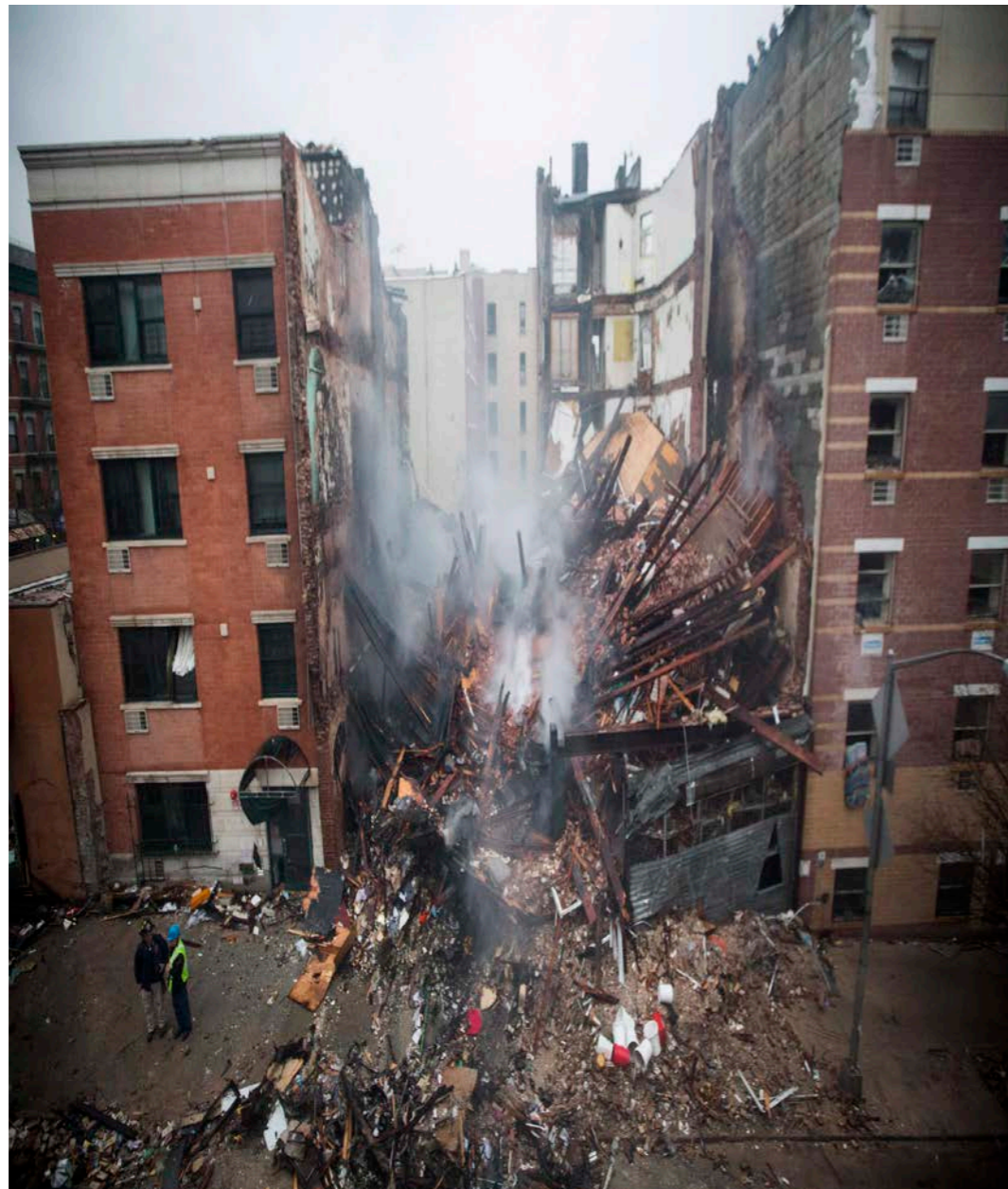

San Bruno 2010

Reacting vs Learning
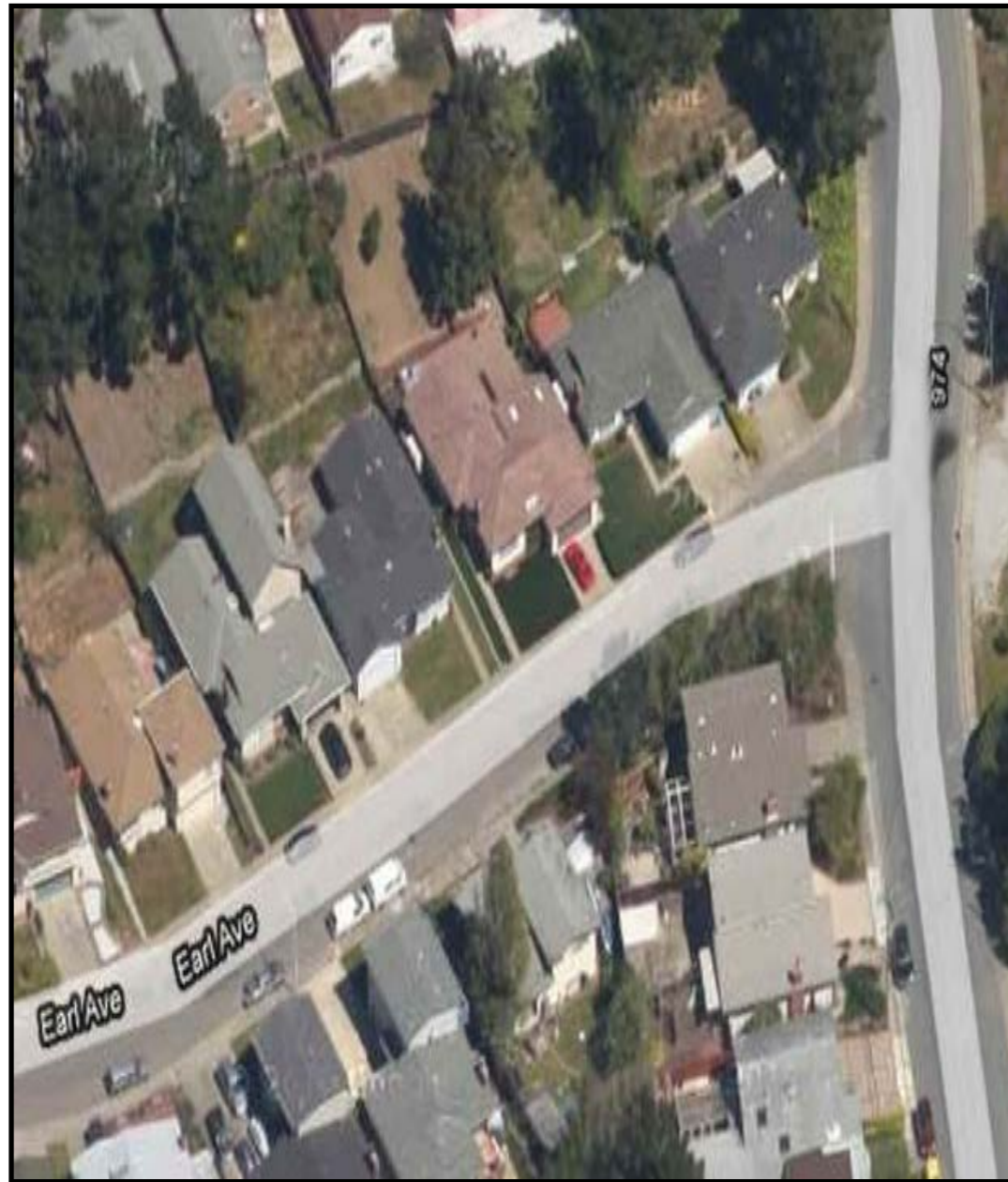
San Bruno 2010

Reacting vs Learning

San Bruno 2010

Reacting vs Learning

Harlem 2014

East Village NYC 2015

Reacting vs Learning

Merrimack Valley 2018

# Essential Elements of RP 1173

1. Leadership and Management Commitment
2. Stakeholder Engagement
3. Risk Management
4. Operational Controls
5. Incident Investigation, Evaluation and Lessons Learned
6. Safety Assurance
7. Management Review and Continuous Improvement
8. Emergency Preparedness and Response
9. Competence, Awareness and Training
10. Documentation and Record Keeping
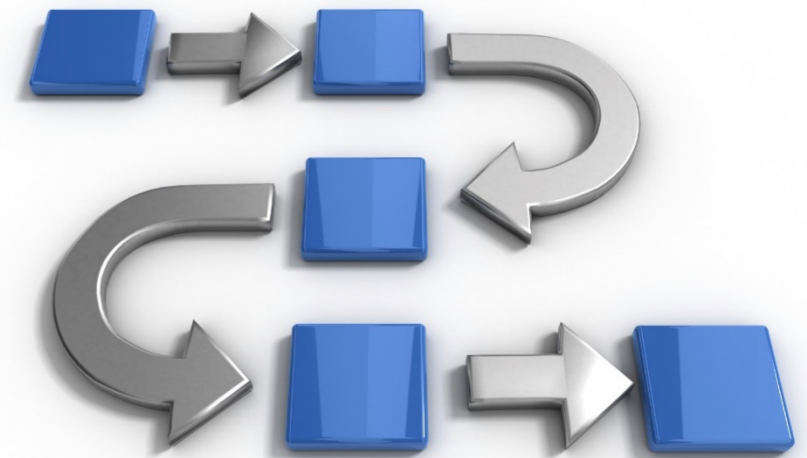
Pipeline Safety Management System Roadmap

Year 4
Work To Mature

1. Benchmark Maturity Assessment Methods – CFATS, API Tools, Peer Operators
2. Continue Routine Management Reviews and Define Improvements
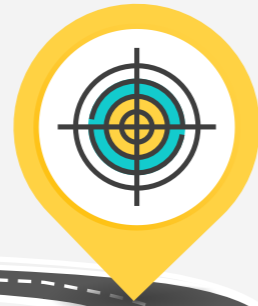
Year 3
Assess Implementation

1. Conduct Routine Management Reviews and Define Improvements
2. Undertake Coalition Building for Supervisors
3. Continue to Address Opportunities Within Programs and Elements
4. Benchmark Elements
5. Assess Implementation

Year 2
Project Close Out
Begin Implementation

1. Conduct Routine Management Reviews and Define Improvements
2. Undertake Coalition Building for Managers
3. Continue to Address Opportunities Within Programs and Through Elements
4. Evaluate and Improve Stakeholder Engagement
5. Refine PSMS Metrics

Second Six Months
Project Phase

1. Define Opportunities to be Addressed Within Existing Programs
2. Define Element Owners to Address Short Term Opportunities
3. Undertake Coalition Building at Executive and Director Levels
4. Develop Routine Communication About PSMS
5. Formalize Management of Change
6. Capture Learnings from EMS and NERC Compliance Journey

First Six Months
Project Phase

1. Establish a PSMS Steering Committee
2. Define PSMS Governance Structure
3. Develop a PSMS Description Document

4. Deploy Initial Project Team
5. Combine Existing Selected Management Reviews Making PSMS Management Reviews Routine
6. Develop a Compliance Assurance Process

Copyright Blacksmith Group

Pipeline Safety Management System "Build-Ons"

Stakeholder Engagement
- › Corporate Communications
- › Public Awareness
- › Town Hall Meetings

Leadership and Management Commitment
- › Mission
- › Corporate Values
- › Corporate Priorities

Risk Management
- › Distribution Integrity Management
- › Transmission Integrity Management
- › Enterprise Risk Management
- › Incorporating Lessons Learned Into Risk Assessment

Management Reviews & Continuous Improvement
- › Safety Performance
- › DIMP, TIMP & SIMP
- › Corrective Action

Incident Investigation & Lessons Learned
- › Investigations – Root Cause Analysis
- › Re-Visiting Internal Lessons Learned
- › External Lessons Learned

Culture
Periodic Culture Surveys
Safety Councils
Safety Observations
Ethics Hotline

Documentation And Record Keeping
- › Document
- › Records
- › Documentation & Records Process

Operational Controls
- › Operations & Maintenance Procedures
- › TIMP, DIMP, SIMP & LNG
- › TIMP Management of Change
- › Control Room Management of Change

Emergency Preparedness & Response
- › Emergency Preparedness and Response Plan
- › Emergency Response Field Drills
- › Table-Top Exercises

Competence, Awareness & Training
- › Initial Training
- › Annual Refresher
- › Qualification

Safety Assurance
- › Quality Control
- › Quality Assurance
- › Internal Audit & Evaluations
- › External Audit & Evaluations
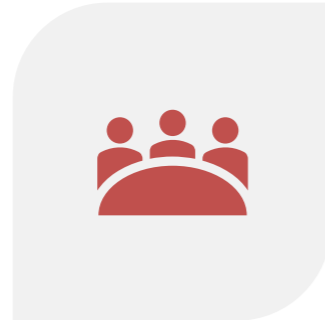- › AGA Peer Reviews

15

NGA Membership Approach

Take a collaborative membership driven approach to practical implementation of API RP 1173 essential elements; learning from each other, transforming safety culture of a region
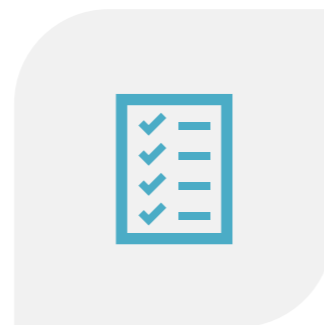
NGA Collaborative Implementation Tasks.......
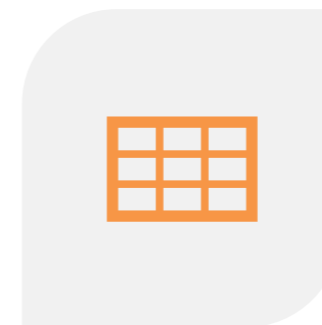
TASK 1 – INITIAL MEETINGS WITH MEMBERS

TASK 2 – RP 1173 GAP ANALYSIS / BUILD ON

TASK 3 – RP 1173 ROAD MAP

TASK 4 – TACTICAL GUIDELINES

TASK 5 – METRICS / INFORMATION SHARING

Key First Steps…………

✓ How to get started – Executive recognition of value

✓ How to do it - Recognition that a PSMS is not a project, it is a journey

✓ How to maintain progress - Assignment of dedicated resources

✓ How to maintain success – Balance Pace and Organizational Capacity

✓ How does this work for small operators - Scalability

Three Key Success Factors Constancy of Purpose

- Establish Management Commitment and the Role of Leaders
  - Top Management
  - Management
  - Recognized Leaders
- Establish Management Reviews
- Develop a policy statement that makes clear connections to Mission and Values

Task I – Initial Meetings with Members

Half-Day Meeting at Massachusetts or Corporate Headquarters (priority on Massachusetts operators)

- Discussion with Top Management

- Review of work done to conform with RP 1173

- Key First Steps

- Preparation for Gap Analysis

- Collateral Opportunities to Address Mass DPU and Practices

- Deliverable – Leading Practices and Key Sharing Opportunities
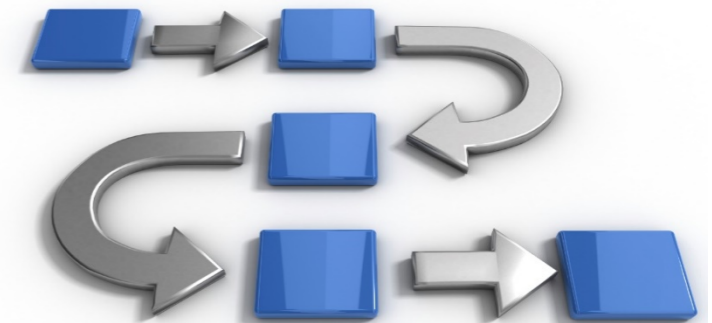
Initial meeting with each applicable state Commission

Task 2 – Gap Analysis/ Evaluation

- Work with each member to develop a gap analysis compared to the requirements of RP 1173

- Evaluate completed gap analyses

- Conduct interviews with personnel in functional areas to define where RP 1173 requirements are met

- Define gaps and produce a draft for member review

Task 3 – Roadmap Development

- Work with each member to develop a road map to address gaps

- Produce a draft for member review

- Review road map with top management and personnel in functional areas to define gap closure

Sharing Leading Practices…….
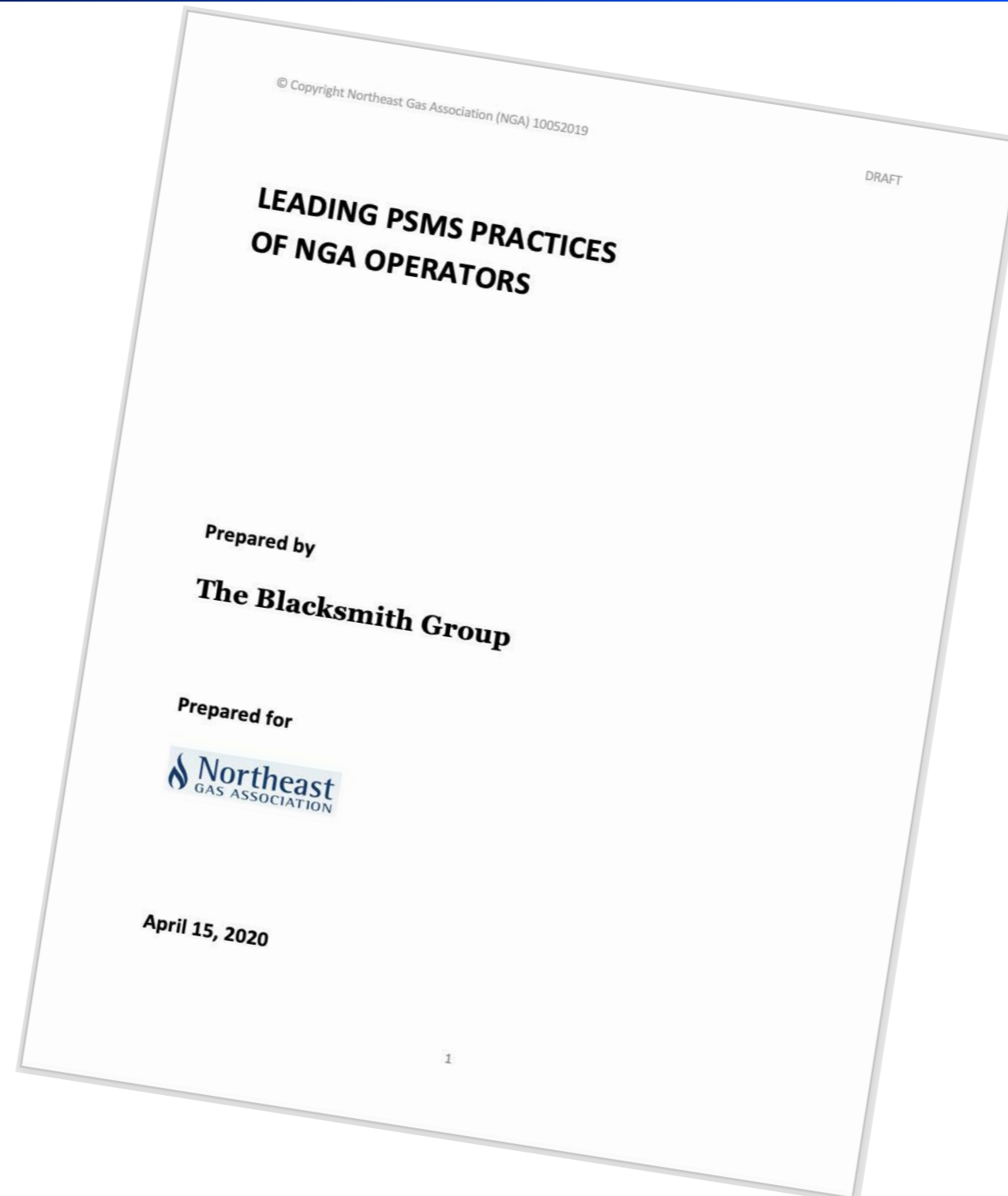
Task 4 – "Operationalization"

- Develop draft process for construction & commissioning of new mains and services installations
- Assemble a cross functional team with:
  - supervisors, foreman,
  - gas mechanics/ technicians,
  - contractors,
  - engineering personnel who routinely develop mains and distribution designs (including work packages),
  - operations, including pressure management and control.
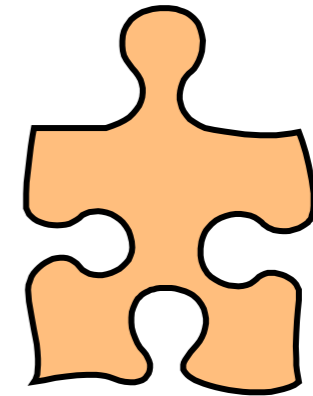
Task 4 – "Operationalization"

- Review draft processes in advance and during facilitated discussions adding connections to SMS.

- Anticipate three work sessions

- Work product – common processes with connections/ integration of SMS
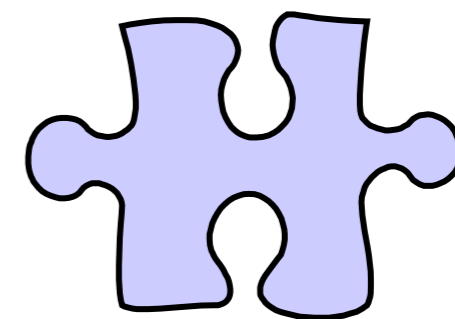
Task 4 – "Operationalization"

- Enable personnel at all levels to help identify risk and actively seek their input on mitigation
- Discuss lessons learned and mature to a documented process
- Reinforce non-punitive reporting
- Enable Managers and Supervisors to spend time reinforcing
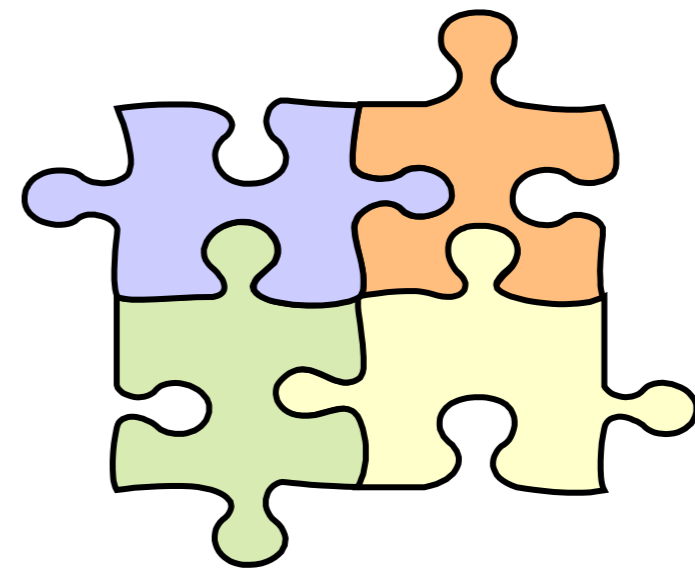
Task 5 – Performance Benchmarking & Development of NGA PSMS Resource Center

Structured Process

- Provide objective evidence of progress towards achieving desired results
- Inform better decision making
- Offer a comparison that gauges the degree of performance change over time
- Track effectiveness, quality, compliance, behaviors, and resource utilization, among others
- Balanced between leading and lagging indicators
  - Process measures
  - Outcome measures

Work Product – Initial set of metrics – Stewardship, Leading and Lagging and Voluntary Sharing of Information Platform "Resource Center"

Practical Implementation & Operational Ownership

- ✓ Pre-job briefs with an AOC / O&M work method focus

- ✓ Pre-startup safety reviews (PSSR)

- ✓ System Operating Procedures – Clearance to work

- ✓ Use every experience as a learning opportunity documented OTJ coaching sessions

- ✓ Encourage a "see something say something" environment & learning from near misses

- ✓ Anyone can STOP a job…..

- ✓ Weekly recap with crews, focus on the good, the bad, the ugly

- ✓ *PSMS "Tactical Guides"*
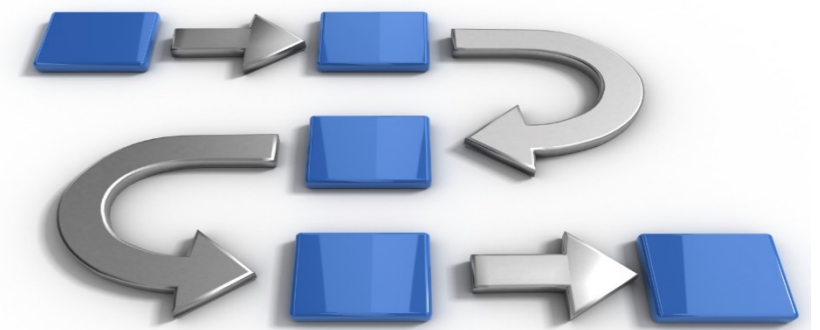
What The Industry is Missing …… The Practical Side of Implementation

Operationalize Concepts………………

- ✓ Provide Front Line Supervision with practical *behavior influencing* tools to use in engaging their teams (talking points directly related to their business)

- ✓ Getting back to fundamentals of our business, PDCA

- ✓ Walk the PSMS talk, living the values, discuss how trusted to work responsibly means doing the right thing, with every action and decision

- ✓ Use practical examples relating back to PSMS elements whenever possible

What The Industry is Missing …… The Practical Side of Implementation

PSMS - *Guiding Principles for Field Workers*

✓ "See Something, Say Something, Do Something" - Everyone has the Authority to **Stop** a job

✓ Perform Pre-Job Briefs (PJB)
- ➢ Understand "What, Why, How & Who"
- ➢ Consider What Could Go Wrong - "What Ifs"
- ➢ Consider Potential Job Specific Abnormal Operating Conditions (AOCs) & Mitigation Actions

✓ Learn From Past & Present Events - Discuss During PJB & Feedback During Post Job Reviews (PJR)

✓ Perform Pre-Startup Safety Reviews (PSSR), When Applicable

✓ Adhere to Company Specific Procedures & Processes - Identify and Correct "Work Arounds"

✓ Consider the Need for Management of Change (MOC) - Identify, Report, and Document Any Approved Field Changes

✓ Always Use Organization Approved Materials & Equipment (Where Applicable)

✓ Communicate Throughout the Job with Applicable Stakeholders - Always Maintain a Questioning Attitude

✓ Be Prepared to Respond to Job-Specific Abnormal Operating Conditions (AOCs) and Emergencies

✓ Always Be Thinking **Personal Safety, Public Safety & Pipeline Safety**

✓ Always Maintain Focus & Minimize/Eliminate Distractions (Situational Awareness)

NGA Collaborative Filling
an Industry Gap….. *Field Tactical Guides*

PSMS
Tactical Guide

Pressure Regulation,
Control & Odorization

Northeast
GAS ASSOCIATION

Blacksmith
Group

© October 2019 The Northeast Gas Association and The Blacksmith Group All Rights Reserved

NGA Collaborative Filling
an Industry Gap….. *Field Tactical Guides*

Mains and Services Construction

Job Work Package

Work package developed using NGA
Engineering Design Review Guidelines
including impacts of project delays

Pre-Mobilization Review

- Procedures   - Nearby regulators
- Materials   - Equipment and Tools
- Role of regulators   - Nearby work
- Work history   - Emergency plan
- Location of sensing lines   - Work history
-    Back feeds   - Required qualifications

Pre-Job Brief

- Site walk down   - Possible AOCs
- Procedures   - Equipment and Tools -
Materials.   - Nearby work
- One-call ticket   - Crew qualifications
- Emergency Plan.   - Work history/ records

On-Site Review

- Work package reflects as found work site
- Assets to be out of service - Nearby work
- Role of regulators - Back feeds available
- Location of sensing lines

Work Preparation

- Authorization from gas control   - Required permits
- Review of prior days work   - Install test holes
- Confirm installation methods

Installation/ Abandonment

- Communicate procedure changes/ field
adjustments
- Commence installation/ abandon
- Communicate status of work
- Monitor system pressures
-    Isolated and purged
-    Facilities left as intended

**Quality Control
Quality Assurance**

Conduct quality control checks
Check of as-built input
Confirm quality control findings
Check completed as-built drawings
Check and verify adequacy of test pressures
Check and verify facilities left as intended

Post Job Review

- Learnings from work impacting procedures
- Learnings impacting materials and equipment
- Near misses, work stoppages and good catches

Continuous Improvement

Input for Procedure Improvements
Input for Specification Improvements
Input for Design Improvements

PSMS Management Review

Daily, Weekly, End of Job Improvements

Plan

Do

Check

Act

EDR Guideline

Copyright Blacksmith Group

Gas Control

System Impact Review
- Planned or Unplanned Work
- Use of O&M Procedures
- Use of Site-Specific Procedure, including Valve Positions
- Work Package – Including Drawings

Pre-Mobilization Review
- Approved Work, including across shifts
- Assets Impacted
- Other Pipelines Impacted/ Curtailment Plan
- Project Schedule
- Required Training
- Primary Field Contacts
- Clearances and Hold Points

Pre-Job Brief (Field Crews)
- Review of Planned Work - Shift change/ MOCs
- Established MAOPs.   - Weather
- Procedures/ Work Plan - Emergency Plan
- Nearby work   - Possible AOCs
- Gate Station Pressures

On-Site Review
- Work package reflects as found work site
- Assets to be out of service - Nearby work
- Role of regulators - Back feeds available
- Location of sensing lines

Work Preparation
- Authorization to field crew(s)
- Required permits
- Review of prior shifts work.
- Confirm details in procedure
- Confirm Instrument Configuration
   Consistent With SCADA

Operation
- Communicate procedure changes/ field adjustments
- Commence installation/ abandon
- Communicate status of work
- Monitor system pressures
- Pre-Start Up Safety Review
- Isolated and purged
- Facilities left as intended

Quality Control Quality Assurance
- Evaluate Impact of Alarm Settings
- Evaluate Impacts OFOs
- Evaluate Impacts of Set Point or Alarm Changes
- Evaluate Interruptible Customers Compliance with Directives

Post Job Review
- Learnings From Work Impacting Procedures
- Learnings Impacting Materials and Equipment
- Near Misses, Work Stoppages and Good Catches
- Learnings from AOCs

Continuous Improvement
- Evaluate nuisance alarms, and define mitigation
- Authorized to alarm settings
- Communications of changes to alarm settings
- Set point changes implemented

PSMS Management Review

Daily, Weekly, End of Job Improvements

EDR Guideline

Plan

Do

Check

Act

Mains & Services Construction

PLAN

Off-Site/ Office (Did you conduct Pre-Mobilization Review?)

- Did you review the Engineering Design Review work product and recommendations?
- Have you reviewed the Work Package before going on site? (In advance of on-site work) – e.g., Designer, Inspector, Installer (Project Lead/ Superintendent/ Work-Flow Coordinator), Field Supervisor – *using bullets below:*

Deliverable: Final Work Package as per NGA EDR (refer to EDR Guide, P.x))

On-Site (Did you conduct Pre-Job Review?) Conducted by each crew/ function doing work - to ensure smooth hand-offs.

Have you reviewed the Final Work Package upon arrival including walking down the job site including Pre-Mobilization Review)? Inspector (Superintendent/ Crew Lead), Field Supervisor), I&R, as required, **using bullets below:**

- Procedure
- Equipment
- Tools
- Materials – Verify materials match work package
- Crew qualifications, including fusers
- Records for existing mains and facilities
- Nearby regulator stations
- Role of district regulators in this work; awareness of role sensing lines
- Gate Stations/regulators/automatic valves/ OPP/ critical facilities be taken out of service? Methods of isolation? Back-feeds available? Stopple and bypass? Considered in design?
- Risks/ gas facilities not identified in work package?
- Work History Nearby
- Planned work nearby – facility information interdependency with overall project; project delays; system configuration changes
- Emergency Preparedness Plan as applicable to work package
- Do you have an agreed upon escalation process for pipeline safety related issues that arise between the operator and contractor during construction?

Do you have the valid one-call ticket, including recently installed gas assets?

DO

Has there been an extended delay that necessitates a review of the planning activities and update of the Work Package?

Does your team understand they have the ability/ responsibility to stop work for an unsafe, unknown or changed condition? If stopped, did you make required communications? Do you know who to call based on the situation?

If a conflict occurred, was the agreed upon escalation process for pipeline safety related issues followed to successful resolution?

Did you review information from prior work, including prior day especially with personnel or approved scope changes?

Have you followed your permission to work/ clearance procedure and obtained permission to work (e.g., start of new installation, tie-in)?

Is someone monitoring system pressures locally in accordance with procedures and work package? If applicable

Did you perform test holes as needed for facility verification? Did you share information so possible impacts on the project can be evaluated? Did you consider impacts?

Did you confirm installation methods? Did you review/ meet all installation criteria per procedures (i.e., quality control, field activities and records)?

If changes to Final Work Package are required, did you contact Engineering /responsible authority to get approval?

Did you communicate and document any approved procedure/equipment/system configuration/work practice changes that occurred during the job?

Are you communicating status of work as required (e.g., end of day, prior to tie-in or abandonment, as per company procedures and work practices)?

If required, was a Pre-Start Safety Review (PSSR) performed (e.g., activating a new a segment of pipe and new district regulator(s))?

Have facilities been completed per Work Package and documented prior to decommissioning/ abandonment? (i.e., Abandonment Review) Has the plan been reviewed recognizing prior work completed?

Have you isolated the system as per procedures prior to pressure testing and/or purging?

Has system pressure been verified and labeled as per procedures (e.g., pressure tags, valves per company requirements)?

Have you installed the appropriate materials/equipment required according to the system pressure (MAOP)? (e.g. meter bars, curb valves, EFVs, pressure regulators, etc.)

CHECK

Was a post job assessment performed? (e.g., daily debrief, prior to planned or unplanned extended project delay, lessons learned, safety stop, near misses, situational awareness)

Did we learn anything today that may have impacted the Work Package, Project or Process and was it communicated to necessary personnel?

Are we ready for tomorrow's work? (e.g., extra fittings, specialized training/ personnel or equipment)

Have you verified all facilities (system components) have been left in or returned to its intended/ normal operating position?

Were any approved scope changes completed and documented?

Did the required Quality Assurance take place and feedback provided to appropriate personnel (e.g., field activities and records)?

ACT

Were changes and need for improvements identified during project/job/delays and the need for improvements (e.g., mitigations) evaluated?

- Lessons learned
- Corrective actions
- Safety-related conflict resolutions
- Facility records
- Procedures
- Materials (failures, quality)
- Equipment
- Training
- Communication
- New work practices/ methods
- Others

Was a plan for approved improvements/ changes developed and monitored?

Were these changes communicated to appropriate personnel (internal/ external/ industry)?

Being "Consistently Persistent"

✓ Personalize it …….encourage operational ownership of every decision and action

✓ *Listen Listen Listen……*

✓ Resist being "reactionary"……. Stick to the plan & stay the course

✓ Agility, be willing to listen and put others ideas into action

Thank You !!!

- Questions / Discussion