



Pipeline Safety:  
Looking Back and Looking Forward

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# Where We Were

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- In my words:
- 1999: “There is nowhere today the sense that [OPS] is in charge...or that its regulations, its inspections, its assets, its staffing, and its spirit are adequate to the task.”

# Is the Past Prologue?

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- June 9<sup>th</sup> will be the 10 year anniversary of Bellingham, WA
  - At the time, it was the largest ever monetary penalty against a pipeline operator due to RSPA and Congressional interest.
- 1999: Colonial line ruptures near Knoxville, TN
- 2000: NG pipeline ruptures near Carlsbad, NM
- Causes:
  - Third party excavation damage to the pipeline (Bellingham)
    - Detected but inaccurate evaluation of inline inspection results
  - Internal Corrosion (Carlsbad)
    - Inadequate pipeline inspection
  - Pipe coating failure (Knoxville)
    - Failure to recognize pipeline failure and thereby minimize release
  - Inaction in the face of warning signs.
- This period highlighted a time of OPS inaction and industry complacency.

# Improvements since Bellingham

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- Pipeline Safety Improvement Act (2002)
- Creation of PHMSA (2005)
- Pipeline Inspection, Protection, Enforcement and Safety Act (“PIPES Act,” 2006)
- Realization by industry of the need to address safety issues and to be proactive.

# Pipeline Safety Improvement Act

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- 2002
- Required the implementation of Integrity Management.
- Required the identification of High Consequence Areas.
- Other improvements included:
  - Participation in planned-excavation one-call notification programs.
  - Whistle-blower protection for pipeline system employees.
  - A required multi-agency program of research, development, demonstration and standardization to enhance the integrity of pipelines.
  - An interagency task force to expedite environmental reviews when necessary to expedite pipeline repairs.

# Creation of PHMSA (2005)

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- Created one modal administration focused solely on pipeline and hazardous materials transportation programs.
  - OPS had previously been lumped into RSPA, not getting necessary resources/attention.
- PHMSA took a more proactive approach to evaluate which safety standards need improvement and where new rulemakings are needed.
  - Created the position of Chief Safety Officer, an Assistant Administrator wholly dedicated to safety.
  - DOT/IG must make periodic reports to DOT and Congress about the progress PHMSA has or has not made on implementing outstanding statutory mandates and recommendations.

# PSIA Reauthorization: “PIPES Act”

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- Strengthened PHMSA’s control over excavators, not just pipeline operators.
- Required submission of an executive statement attesting to the accuracy of integrity management reports. (Very, very important to all of you)
- Provided for new federal oversight of previously unregulated low-stress (low-pressure) liquid pipelines.

# Looking Forward

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- Despite successes, still much to be done.
- Two broad areas for improvement:
  - “On-the-ground” Concerns:
    - SCADA system management
    - Human fatigue
  - Communication
    - Public - Increasing public awareness
    - Internal - Within a company: A “top-down” approach to safety culture

# Safety Concerns with SCADA Systems

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- 2005 NTSB study of SCADA Systems:
  - SCADA systems a contributing factor in 10 of last 13 accidents.
  - In some cases, 100 alarms per hour in nonemergency situations!
    - Often controller becomes complacent with such alarms.
  - Delay between recognition of pipeline release and action.
- Example of Proactive Action:
  - 1996 Marathon rupture exacerbated by controller's belief he was hearing false alarms.
  - Marathon reassessed its alarm system:
    - Eliminated some alarms and identified others that needed to be high profile.
    - Improved controller awareness and training for emergency and non-emergency conditions
- Solutions embraced by NTSB/PHMSA:
  - Revamp the selection and hierarchy of alarms
  - Improve graphic displays of information on computer screens
  - Require simulator training to better prepare controllers for emergency situations
- API guidance has been important in this area.

# Human Fatigue: A Constant Concern

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- Hazard across all modes of transportation.
- For pipelines, on NTSB Most Wanted List since 1999.
  - Objective: Establish scientifically based limits on work hours, provide predictable work and rest schedules, consider fatigue research, circadian rhythms, sleep and rest requirements.
- Given the publicity the issue has received, across all modes of transportation, liability in any accident could be enormous.
- Thus, while a potentially expensive issue to address, not addressing it could have catastrophic consequences.

# Communication: Increasing Public Awareness

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- The public needs to know where pipelines are and how to behave if there is a release
  - Pipeline companies need a quality public education program--
    - To Identify the location of nearby pipelines to neighbors
    - To Identify what is transported, and its hazards
    - To Identify how to recognize a release
    - To Identify what to do – what action to take if there is a release
  - Pipeline operators need good follow-up programs to determine the effectiveness of their public education programs
    - Did you reach your intended audience
    - Did they understand the message
    - Do they know what to do in the unlikely event of a release

# Communication: Public Relations

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- Increase the public's awareness of your successes.
- You've come a long way and deserve to be recognized.
  - In many cases, you are out ahead of regulations/requirements
- This could ameliorate the public perception of your industry and may lessen the P.R. pains of a future accident.

# Summary of Challenges and Solutions

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- SCADA system concerns
  - Address alarm hierarchy
  - Utilize simulator training for controllers.
  - Improved graphic display
- Human fatigue
  - Follow employee's hours closely, keeping in mind work/rest balance and circadian rhythms.
- Communication
  - Educate the public about the location of pipelines, what they carry, and actions they need to take if they suspect a release.
  - Communicate your successes through P.R.

# Solutions: The A, B, C's of Safety

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- Always put safety first.
- Build Safety into the system.
- Communicate safety down, communicate safety up, communicate safety outward!
  
- In short: Create and maintain a safety culture.

# Promoting a Safety Culture

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- “Top-down” approach
  - The commitment to Safety starts at the top.
  - This requires an investment of time in training/awareness regarding “safety first” approach.
- \$\$\$: your employees see where money goes and recognize your priorities.
  - Provide them with best tools/training possible.
  - Third party safety audits.
- Support of controller’s decisions by management
  - If conditions indicate a potential release, controllers must not be afraid to make the right decision.

# Beware of Complacency

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- In unsure economic times, it is hard to maintain a focus on safety.
- Compounding this is the fact that fatal accidents on the scale of Bellingham are not common (thanks to your successes).
- The improvements you've made are noteworthy, but we cannot let our recent successes lessen our commitment.

# Beware of Complacency (ctd)

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- Spreading population, industrial expansion, and an aging infrastructure all still exist, increasing the chances of a disaster despite our best efforts.
- I urge you to remember that, while the odds of such an event on any one pipeline may be not be great -- the consequences and costs to the surrounding community, environment and your industry can be extremely substantial. Our commitment to safety must reflect this.

# Thank you!

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Questions?