

Office of Pipeline Safety

Pipeline and Hazardous Materials Safety Administration

Overview



RRT 2
November 8-9, 2023
Sayreville, NJ

Investigate – Analyze – Prevent

To Protect People and the Environment From the Risks of
Hazardous Materials Transportation



Objective



- Introduce PHMSA
- Introduce PHMSA's Accident Investigation Team
- Establish an understanding how PHMSA can be a resource
- Introduce PHMSA's Accident Investigation Team

National Pipeline Incident Coordinator (NPIC)

– NPIC toll-free: (888) 719-9033



Who is the U. S. Department of Transportation (DOT)

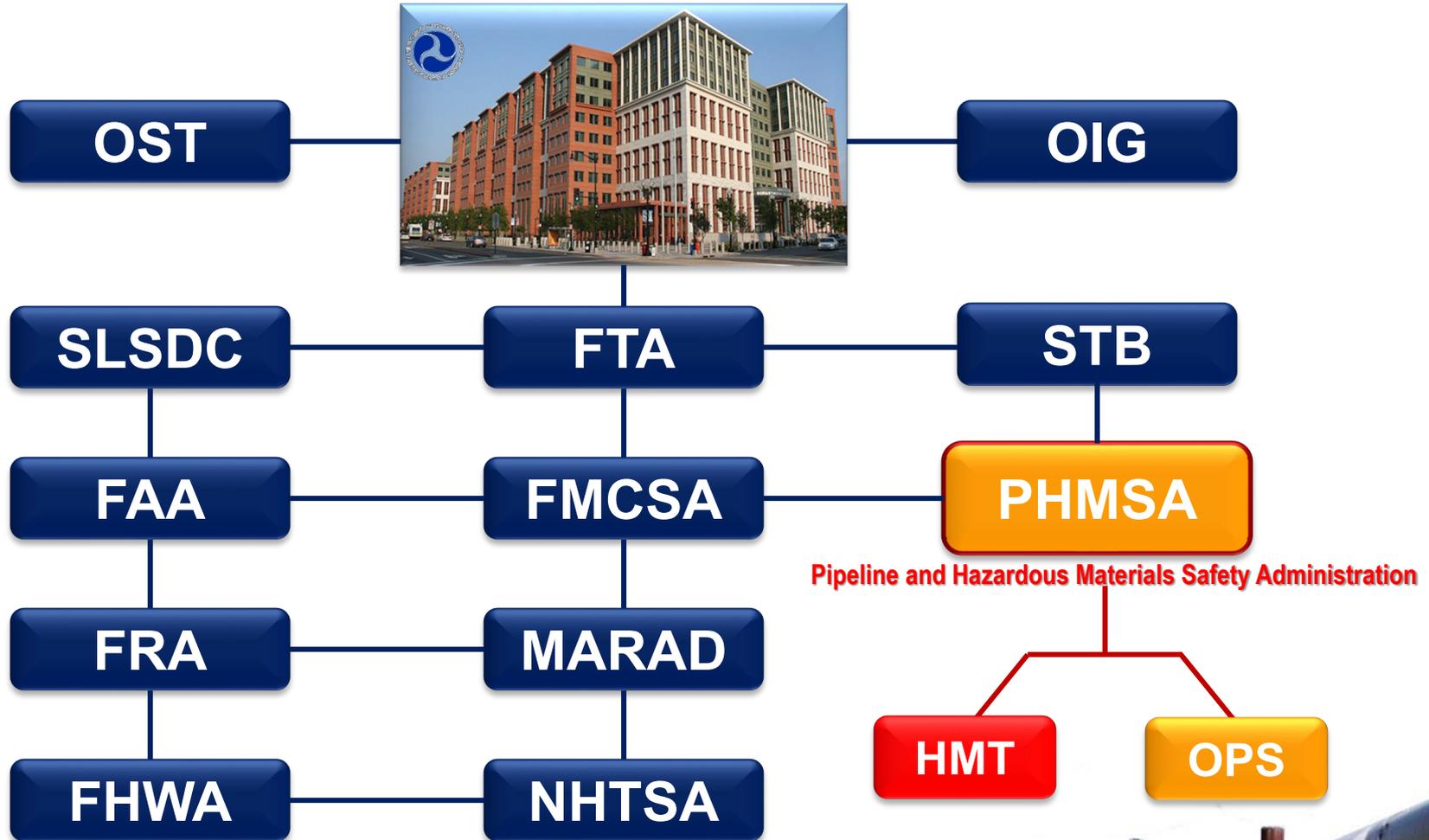
- National Highway Traffic Safety Administration (NHTSA)
- Federal Aviation Administration (FAA)
- Office of Inspector General (OIG)
- Federal Highway Administration (FHWA)
- Federal Motor Carrier Safety Administration (FMCSA)
- Federal Railroad Administration (FRA)
- Saint Lawrence Seaway Development Corporation (SLSDC)
- Federal Transit Administration (FTA)
- Maritime Administration (MARAD)

- Pipeline and Hazardous Materials Safety Administration (PHMSA)
 - Office of Hazardous Materials
 - **Office of Pipeline Safety** (about 300 of 60,000)



Who is PHMSA?

U. S. Department of Transportation (DOT)



PHMSA (OPS) Pipeline role

- PHMSA does not have response authority
- Regulates interstate pipelines
 - Natural Gas
 - Hydrocarbons
 - Ammonia
 - Carbon Dioxide
 - And more



PHMSA Reporting requirements

- PHMSA has NRC reporting requirements for pipeline systems
 - Initial (within earliest practical moment following discovery but no later than 1 hour
 - Gas
 - An event involving a release of gas
 - » A death, or personal injury necessitating in-patient hospitalization
 - » Greater than \$50,000 estimated property damage
 - » Unintentional estimated gas loss of 3 million cubic feet or more
 - An event that results in an emergency shutdown of an LNG facility or natural gas storage facility
 - An event that is characterized as significant by operator
 - Hazardous Liquids
 - An event involving the release of a liquid
 - » A death, or personal injury necessitating in-patient hospitalization
 - » Incident involved a fire or explosion
 - » Greater than \$50,000 property damage including the cost of the cleanup, value of product
 - » Resulted in pollution of any stream, river, lake, reservoir or similar body of water
 - » An event that is characterized as significant by operator
 - 48-hour
 - Must provide an update to confirm/revise initial information reported.



Available PHMSA OPS resources

- Have agreements and partnerships with States to implement rules
- PHMSA regulates pipeline operators readiness and response effectiveness
- PHMSA has FRP repository for pipelines
 - Often fixed facilities are also regulated by EPA and/or USCG
 - Available to OSCs by request
- Made up of primarily field staff
 - Highly technical
 - Engineers and Transportation Specialist



PHMSA Accident Investigation Division

- **PURPOSE**

- Evaluates all reports of incidents/accidents
 - Investigates all PHMSA regulated pipeline incidents
- Conducts Accident Investigations
- Conducts Root Cause Determinations to determine causal and contributing factors to pipeline and liquefied natural gas facility incidents
- Captures and actively shares lessons learned safety finding with internal and external stakeholders.
- Conducts education and outreach to help advance pipeline safety
- Evaluates and identify emerging safety trends
- Coordinates incidents with state and federal partners
- **What happened, why did it happen, and how can we prevent?**



National Pipeline Incident Coordinator (NPIC)

- NPIC toll-free: (888) 719-9033
- PHMSAAccidentInvestigationDivision@dot.gov



Deployment Criteria

A release of product and one or more of the following:

- ✓ Death
- ✓ Personal injury necessitating hospitalization
- ✓ Property damage exceeding \$500K
- ✓ Hazardous liquid spill of 500 or more barrels
- ✓ Fire or explosion
- ✓ Major spill into a body of water
- ✓ Pipeline systems with recent failure history
- ✓ Significant media attention
- ✓ Release impacted:
 - an HCA
 - High Population Area
 - Other Populated Areas
 - Commercially navigable waterway, or major waterbody
 - Unusually Sensitive Area (USA)



Opportunities to work together

- Pipeline FRPs
 - Preplanning
 - RRTs
 - PREP Drills
- Incident coordination
 - Situational awareness
 - Common Operating Picture
 - Leverage resources
 - Pipeline mapping
 - Operator Contacts and Coordination
 - Evidence collection



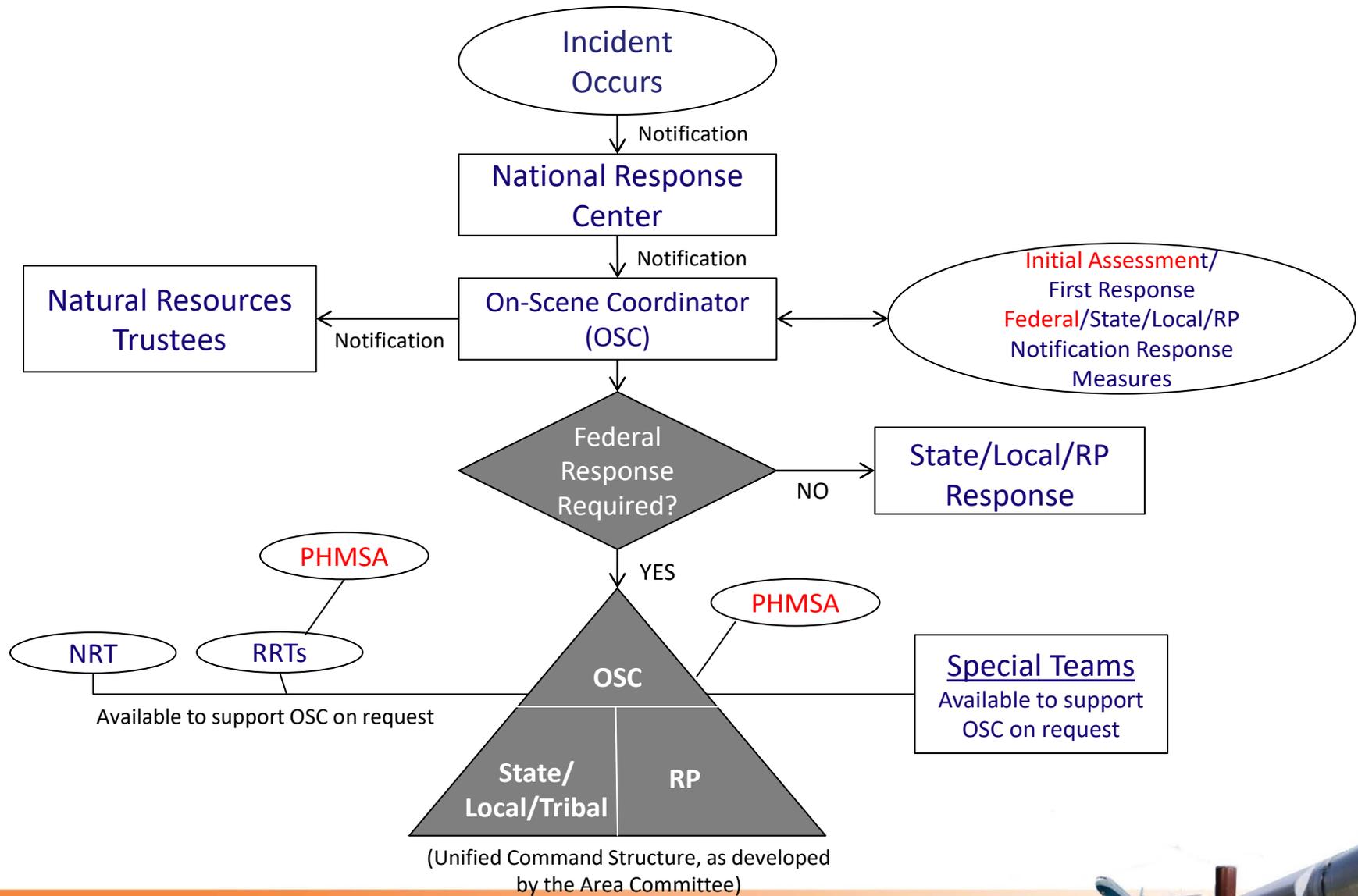
Opportunities to work together

- Investigation
 - Equipment
 - Process
 - RP response effectiveness
- Pipeline Operation
 - Training
 - Pipeline expertise
- NTSB Investigation liaison

Investigate – Analyze – Prevent



NRS NOTIFICATION & DECISION PROCESS

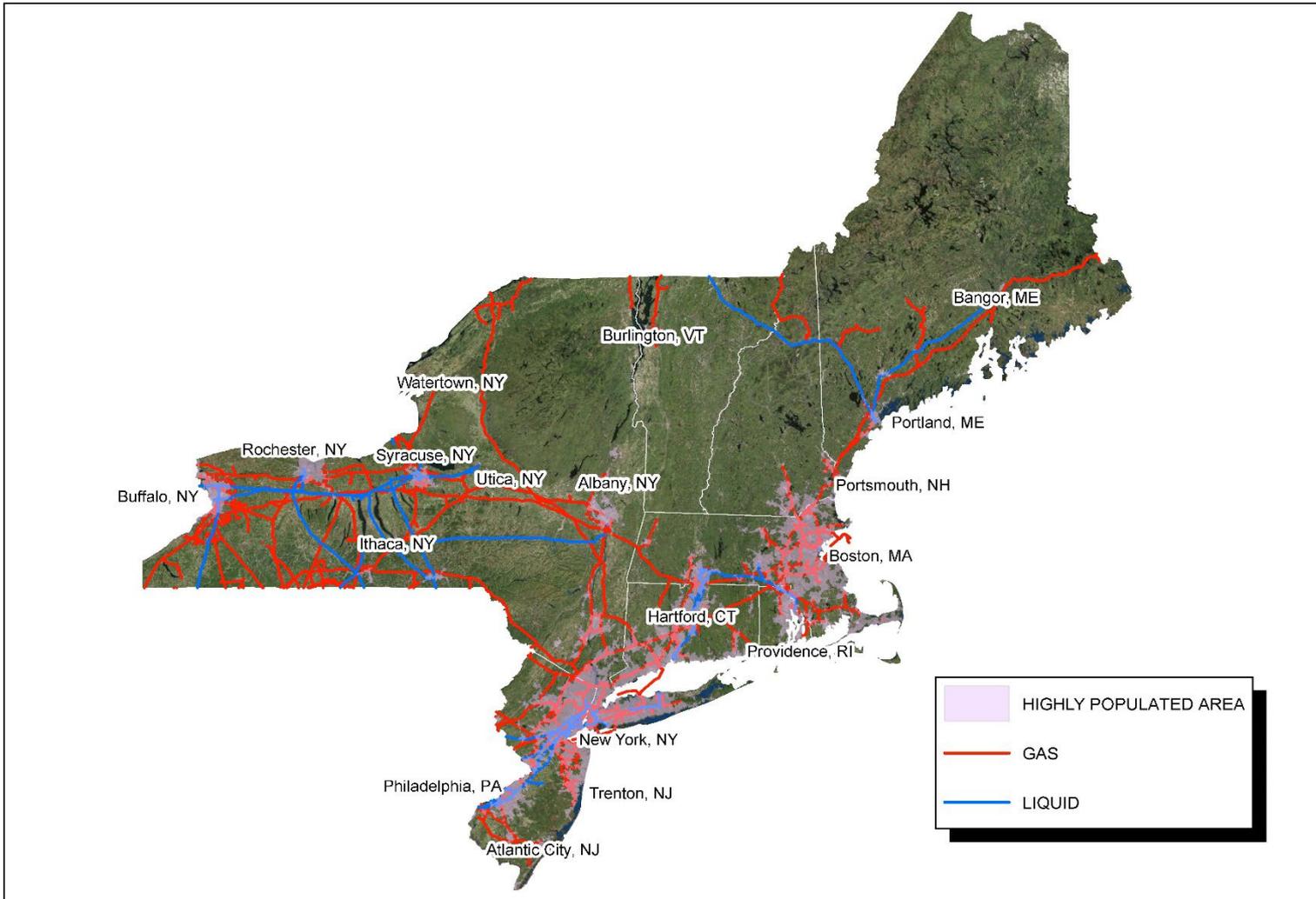


Where does PHMSA's role in ICS

- Agency Representative
 - Liaison Officer
- Operations
 - Investigation Unit
- Public Information Officer
- Technical Specialist
- Operates outside ICS
 - Accident Investigation



DOT Regulated Pipelines in RRT 1 & 2 Areas



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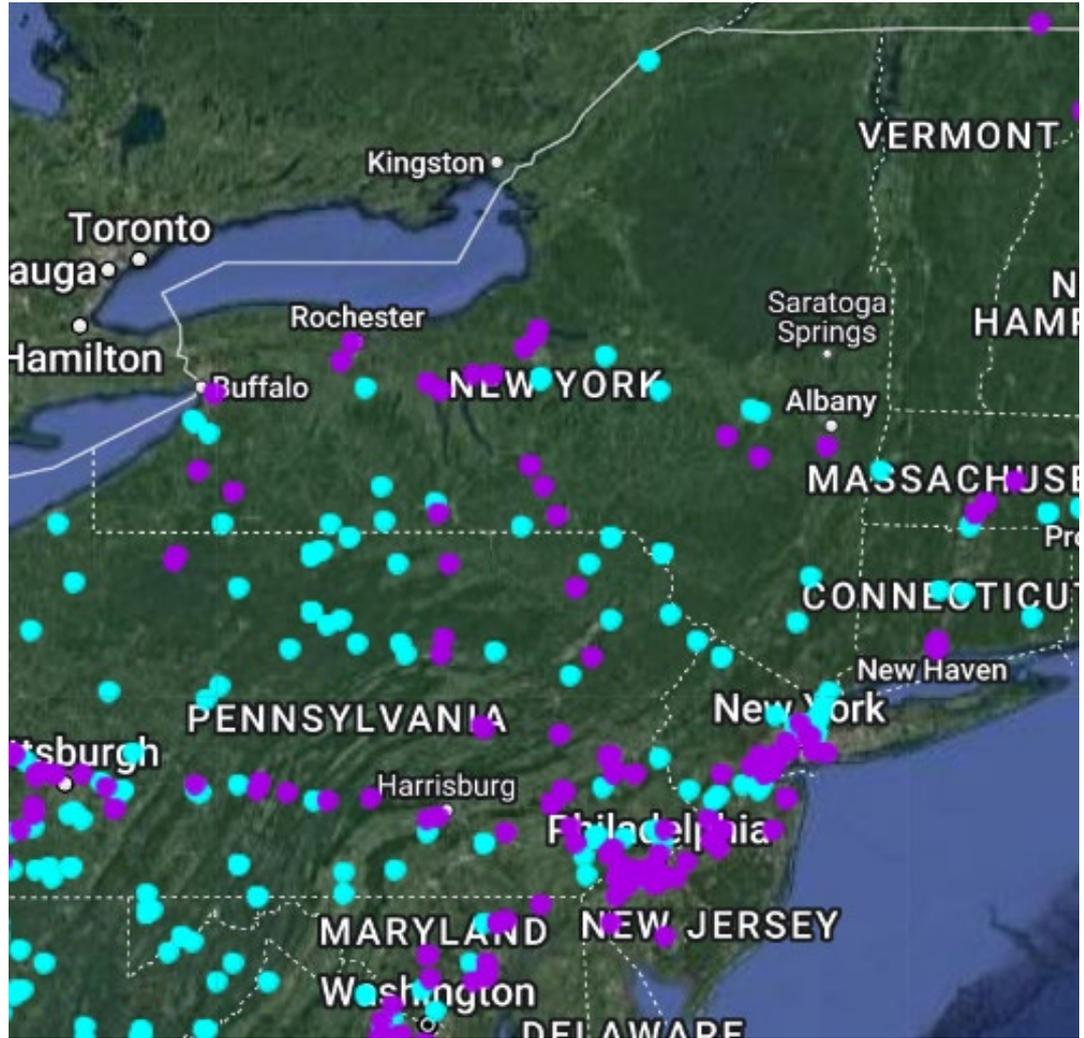
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RRT 2 Release Map

Teal = Gas Incidents

Purple = Liquid Accidents

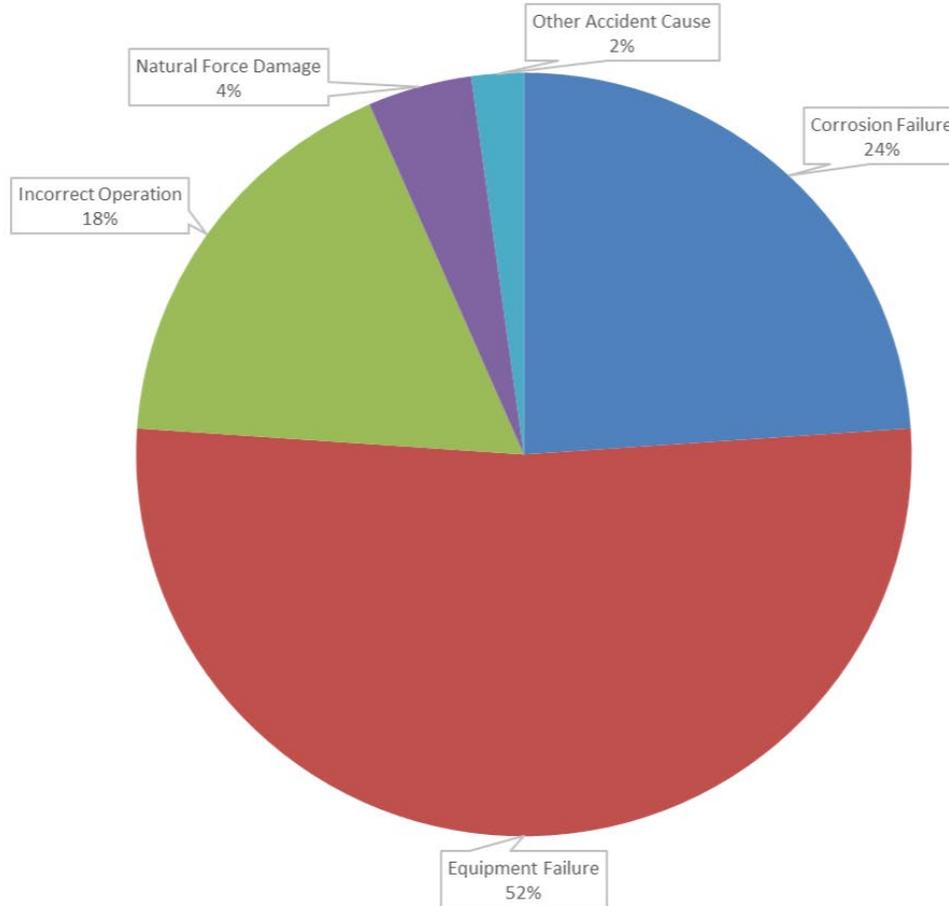


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Hazardous Liquid Accidents, 2018 - October 2023

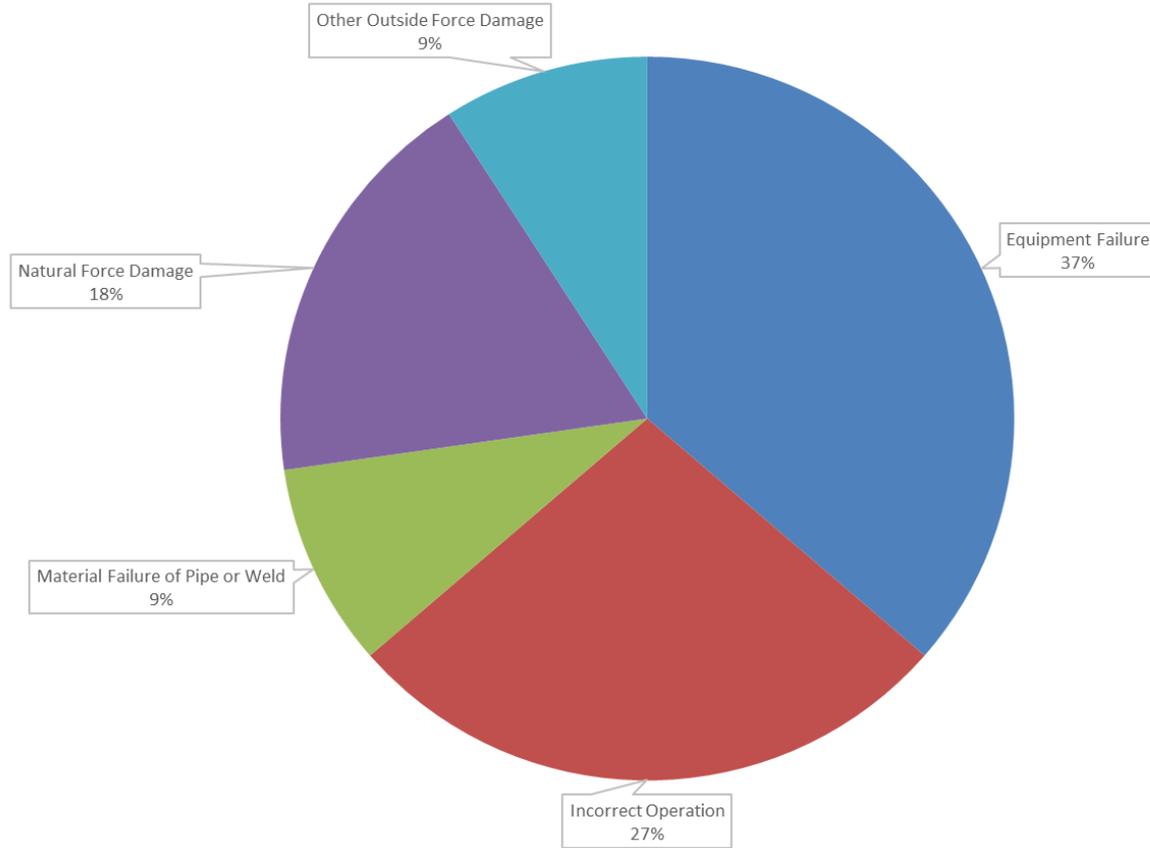


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Gas Transmission Incidents, 2018 - October 2023

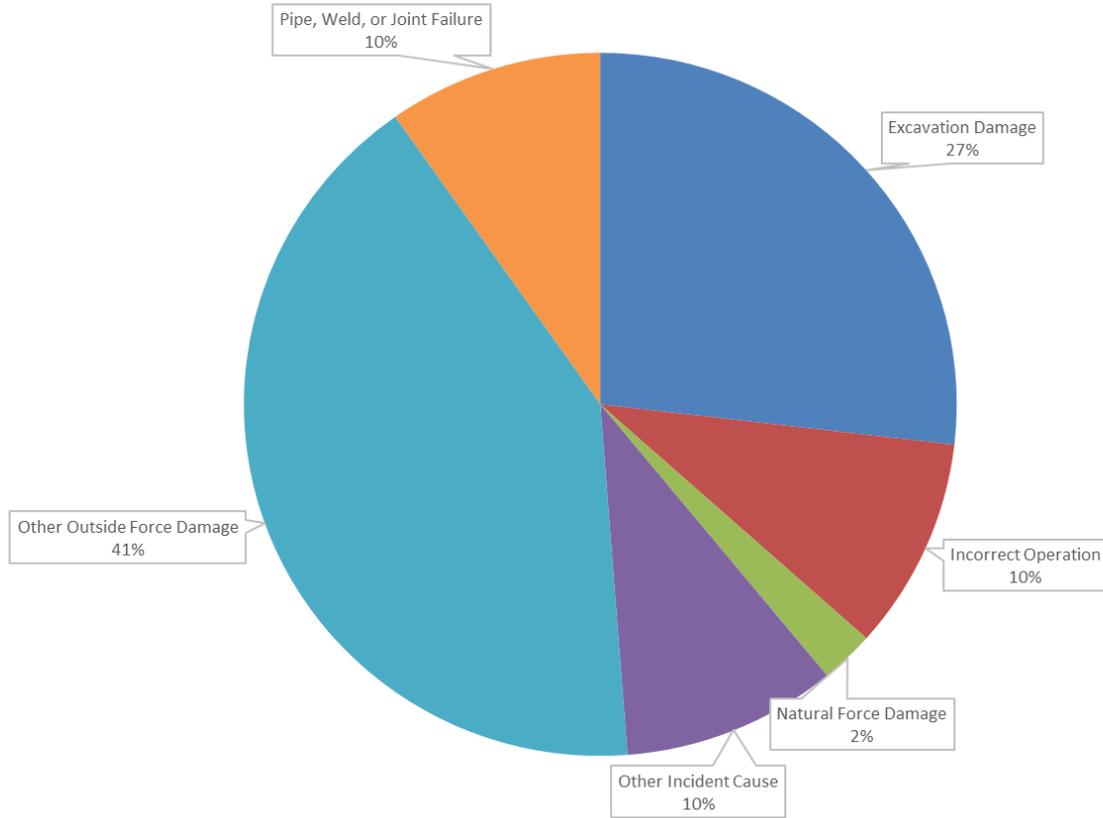


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Gas Distribution Incidents, 2018 - October 2023



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Investigation Findings

- Blow off stacks and 1-inch blowdown were relieving
- 10-inch isolation valve was leaking
- Pig signals were not functioning
- 10-inch East line has history of low flow, hydrates, and leaking interconnects
- Ice commonly forms in the line
- Technicians did not perform LOTO prior to this task
- No work permit had been issued to perform this task



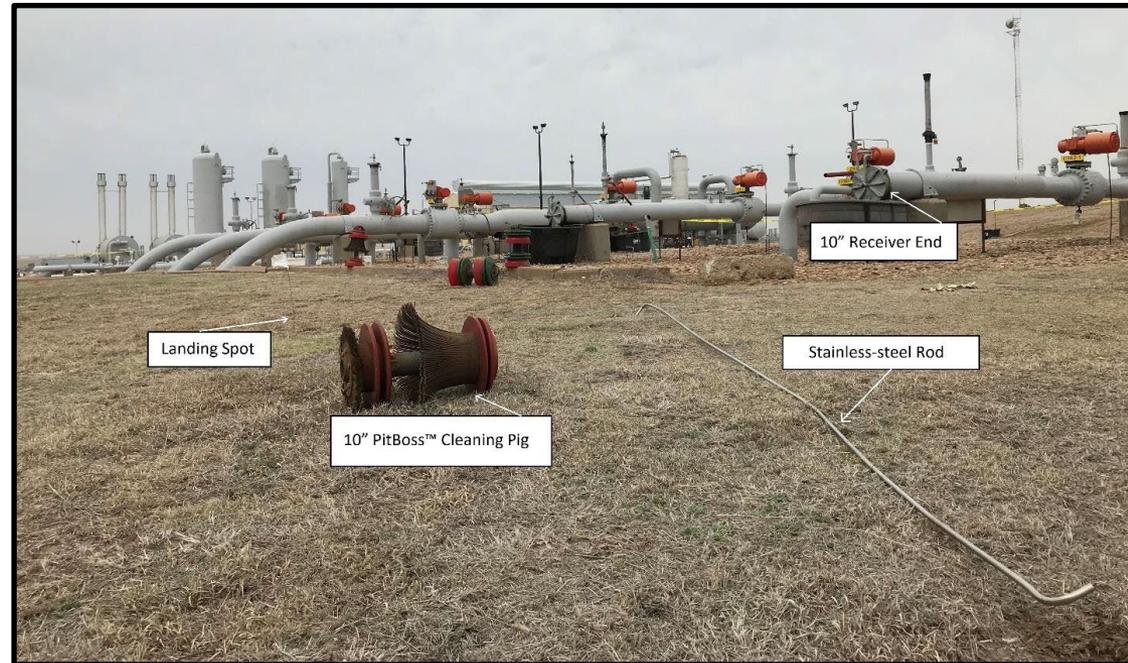
Root Cause & Lessons Learned

- Incorrect Operation - Failure to Follow

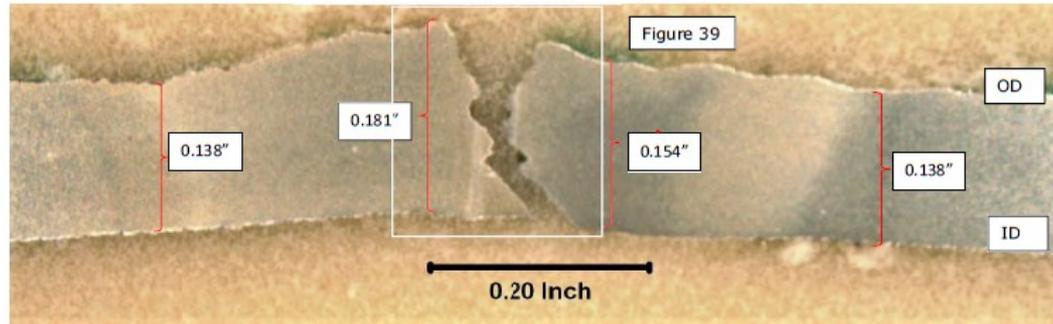
Procedures:

- Pressure not relieved, gauges not monitored, insufficient pressure gauges, LOTO not observed
- Did not notify supervisor when ice encountered
- Technician was positioned in front of the open pig trap

- Operator failed to address the leaks in the system allowing hydrates to form



Investigation Findings

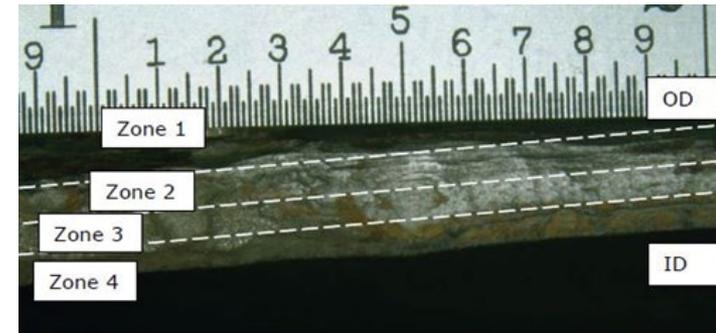


- Magellan ran two ILI's using a T.D. Williamson (TDW) tool.
 - 2015 run revealed three 10% metal loss features on the ruptured joint. One of these was at the same location as the SSWC rupture
 - Integrity Management regulations call for long seam corrosion to be investigated within 180 days of the ILI run. Magellan failed to investigate timely.
 - 2020 run data had not yet been compiled and was still under analysis by TDW at the time of the release. Magellan requested accelerated review of this section of the pipeline.



Investigation Findings

- Tape coatings are known to commonly dis-bond from the pipe and shield against cathodic protection
- Analysis of the pipe section by DNV indicated SSWC. Corrosion developed under the tape and accelerated the weakening of the pipe wall until it was compromised by the hoop stress caused by the pipeline's internal pressure
- Effects of welding the long seam include creating a different metallurgical structure around the weld than the pipe "plate" material. When under the influence of corrosion various structures may become anodic to the rest of the pipe and accelerate corrosion.



Root Cause & Lessons Learned

- SSWC, which ruptured the ERW long seam
- Spill exacerbated by SCADA operator, increasing volume
- Original coating damaged and repaired with a tape coating known to be prone to failure, accelerated corrosion
- 2020 ILI data demonstrated a defect, but the analysis of that data did not occur prior to the rupture



Investigation Findings – Tennessee Gas 6/2021

- West Bloomfield, NY
- Rupture in the body of the pipe (not in a seam)
- A.O. Smith pipe in the 1950's has history of failure
- ILI tool found no indications of hard spots
- Location was at the bottom of a hill (at a bend)
- Suspect hard spot in a wrinkle bend
- Land/seismic movement suspected



Root Cause & Lessons Learned

- LiDAR indicated no land movement
- ILI tool specifications were not sufficient to identify a wrinkle/buckle
- Unknown source of stress



PHMSA

Emergency Contact Information

NPIC toll-free: (888) 719-9033

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DOT Crisis Management Center (202) 366-1863

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