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ExxonMobil Pipeline Company Perspective - Automatic and Remote-Controlled Shutoff Valves for Existing Hazardous Liquid Pipelines

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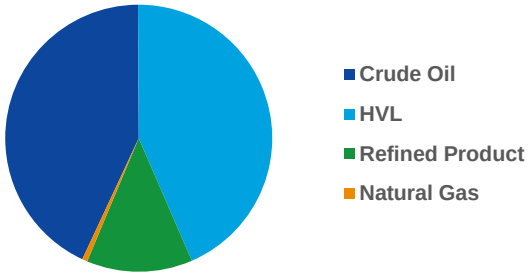
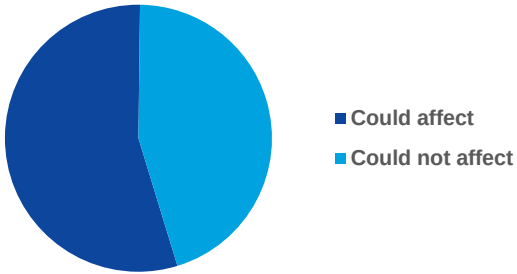
Matthew Young
Senior Pipeline Integrity Advisor

ExxonMobil Pipeline Company

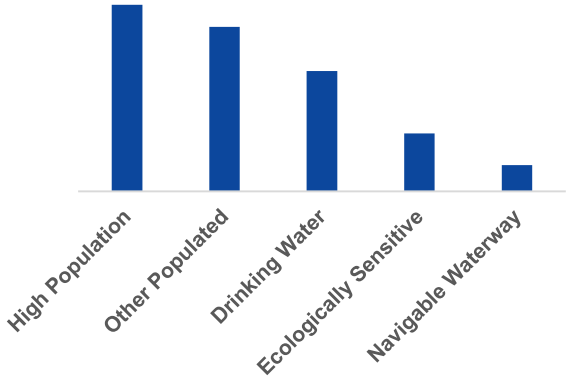
Active Mileage by Commodity Type



Liquids Mileage by Potential HCA Impact



Liquids Could Affect Mileage by HCA Type



- Committed to the safe, efficient and environmentally responsible transportation of energy
- Pipeline operations in Illinois, Louisiana, Montana, Texas, and New Mexico
- ~3000 active miles, primarily in liquids service (crude oil, highly volatile liquids, and refined products)
- ~55% of active liquids mileage could affect an HCA
- Sum of could affect mileage by individual HCA type is ~1.6 times greater than total could affect mileage indicating overlap

2011 Silvertip-Billings Crude Oil Pipeline Release

Yellowstone River Crossing in Laurel, Montana

- 1500 barrel crude oil release into Yellowstone River; resulted in ~$160M cleanup
- Identified via SCADA-based leak detection system
- Isolated via Remote controlled valves (RCVs); immediately upstream / 0.5 mile downstream
  - RCVs were installed by ExxonMobil prior to hazardous liquids integrity management rule
- Flooding conditions resulted in pipeline exposure followed by girth weld failure
- Horizontal Directional Drilling (HDD) used to install replacement crossing
  - Existing RCVs provide adequate consequence mitigation; did not add additional RCVs

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2021 Baytown-Irving Products Pipeline Release

Greens Bayou Crossing in Houston, Texas

- 640 barrel gasoline release at disused golf course; resulted in ~$5M cleanup
- Identified via SCADA-based leak detection system
- Isolated via Remote controlled valves (RCVs); 10 miles upstream / 2 miles downstream
  - RCVs were installed by ExxonMobil prior to hazardous liquids integrity management rule
- Earth movement at a bayou crossing resulted in pipe strain followed by girth weld failure
- Horizontal Directional Drilling (HDD) used to install replacement crossing
  - Existing RCVs provide adequate consequence mitigation; did not add additional RCVs

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Preventive and Mitigative (P&M) Measures Program

- Systematic risk evaluation using ExxonMobil Corporate Risk Matrix
- Processes in place to ensure that decisions associated with risk mitigation and acceptance are made at the right level within the organization
- $1B+ of preventive measures taken during last decade including:
  - ~100 water crossing mitigations including 20+ HDD replacements
  - Extensive campaign of in-line inspection, hydrostatic testing, and repairs targeted at LF ERW pipe
  - ~300 miles of replacement pipe installed to modernize network and reduce risk
- EFRD evaluation process
  - Risk analysis based on corporate risk matrix and criteria listed in 49 CFR §195.452(i)(2)
  - Typically find that EFRDs are already in place where they provide significant risk reduction
- Ongoing focus areas for P&M include:
  - Water crossings and geohazards
  - Crack management in seamed pipe
  - Leak detection and response

ExxonMobil Perspective on Adding Automatic and Remote Controlled Valves to Existing Hazardous Liquids Pipeline

ExxonMobil Pipeline Company shares the perspective of the American Petroleum Institute (API) and the Liquids Energy Pipeline Association (LEPA):

- Existing risk-based process in 49 CFR §195.452 is a mature program (API)
  - EFRDs typically already placed in the locations where they provide significant risk reduction
  - Diminishing returns on risk reduction for adding more valves
- Replacing existing valves or installing new valves is challenging and costly (API and LEPA)
  - Space limitations in populated areas
  - Downtime to install creates safety risk and product supply challenges
  - Cyber and physical security challenges associated with new valves
  - Estimated costs range from $1-10M per valve
- PHMSA has already taken multiple actions based on NTSB recommendations and Congressional mandates to improve pipeline safety with existing valves (LEPA)
  - Control room management rulemaking
  - Hazardous liquids rulemaking
  - Rupture detection and response rulemaking