Northern Michigan Pipeline Safety Symposium
Tip of the Mitt Watershed Council

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Role of Pipelines

- 2.6 million miles of energy pipelines transport 2/3 of the primary energy consumption in the U.S.

- Support our basic human needs, economic mobility, and security
  - Direct: gasoline, natural gas, propane
  - Indirect: electric generation, telecommunications, water supply

- Interdependencies between pipelines and other vital services are not well understood
Infrastructure Interdependencies

- Oil
  - Fuel Transport, Shipping
  - Fuel for Generators, Lubricants
  - Fuels, Lubricants
  - Power for Pumping Stations, Storage, Control Systems

- Electric Power
  - Power for Signaling, Switches
  - Fuel for Generators
  - Fuel Transport, Shipping
  - Power for Compressors, Storage, Control Systems

- Natural Gas
  - Fuel for Generators
  - Fuel Transport, Shipping
  - Power for Compressors, Storage, Control Systems

- Water
  - Water for Production, Cooling, Emissions Reduction
  - Power for Cooling
  - SCADA, Communications

- Telecom
  - Fuel for Generators
  - SCADA, Communications
  - Shipping
Our Mission

To protect people and the environment from the risks of transporting hazardous materials by pipeline.
## Pipeline Miles by System Types — as-of 3/7/2014

<table>
<thead>
<tr>
<th>System Type</th>
<th>Miles</th>
<th>% Total</th>
<th># Operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous Liquid</td>
<td>185,629</td>
<td>7%</td>
<td>410</td>
</tr>
<tr>
<td>Gas Transmission</td>
<td>303,308</td>
<td>11%</td>
<td>953</td>
</tr>
<tr>
<td>Gas Gathering</td>
<td>16,728</td>
<td>1%</td>
<td>342</td>
</tr>
<tr>
<td>Gas Distribution (Mains &amp; Services)</td>
<td>2,138,676</td>
<td>81%</td>
<td>1,356</td>
</tr>
<tr>
<td>Total</td>
<td>2,644,341</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Some Operators have multiple System Types

| Liquefied Natural Gas          | 130 Plants | 203 Tanks | 82          |
Context and Background

• Hazardous Liquid Pipelines
  – 185,629 miles operated by 410 operators
    • 70% engaged in interstate commerce
    • Alternative modes present higher risks
  – 93% of U.S. transportation fueled by oil
  – 17% of U.S. freight at 2% of total freight bill

(Interstate Highway System is ~48,000 miles)
- 9,000 gallons (215 bbls)
- 33,000 gallons (785 bbls)
For Perspective

Line 5 capacity of 540,000 bbls/day:

• 688 Railcars

• 2512 Tanker Trucks
Pipeline System 2008-2012

• 9,259,157,795,428 bbl-miles crude
  ✓ 11.8 billion railcar miles
    (112 million unit trains)
  ✓ 43.1 billion tanker truck miles

• 8,082,039,488,453 bbl-miles products
  ✓ 10.3 billion railcar miles
    (98 million unit trains)
  ✓ 37.6 billion tanker truck miles

• 2,801,484,098,111 bbl-miles HVLs
Context and Background

- **Natural Gas Pipelines**
  - Deliver 25% of energy consumed in U.S.
  - No viable alternative mode of transportation
  - Transport natural gas to 70 million residential and commercial customers
  - Significant growth projected to meet demand
Michigan

Transmission Pipeline Mileage:

- 503 miles HVLs
- 1268 miles crude oil
- 1415 miles refined products
- 8741 miles natural gas
What We Do

Our Base Programs

- Data Analysis and Trending
- Regulatory Development and Coordination
- Inspection, Enforcement and Emergency Response
  - Integrity Management
  - Emergency Response
- State Pipeline Safety Grant Programs
- Damage Prevention and Public Education
- Research and Development
Strategic Focus

- **Safety**
  - *Reduce the risk of harm to people due to the transportation of hazardous materials by pipelines*

- **Reduce Congestion**
  - *Pipeline system capacity lost due to incidents, corrective action orders and other issues*

- **Global Connectivity**
  - *Standardize the requirements for pipeline transportation internationally*

- **Environmental Stewardship**
  - *Reduce the risk to the environment due to the transportation of hazardous liquids by pipeline*

- **Preparedness and Response**
  - *Mitigate the consequences after a pipeline failure has occurred*
Program Focus: Safety

- Performance measurement
  - data-driven, risk informed strategies
- Long-term focus on Integrity Management
- Inspection Integration
- Special inspections/emphasis on poor performing pipeline operators
- Focus on damage prevention and mitigation of high consequence accidents
- Cooperative efforts with stakeholders
  - including enhanced communications (S.C.)
- Support for state partners
Serious Incidents

All System Types downward trend continues in 2013

84% Gas Distribution, 12% Hazardous Liquid, 4% Gas Transmission
Hazardous Liquid

National, Hazardous Liquid, Significant Incidents: Count 1994-2013

Source: PHMSA Significant Incidents Files, March 04, 2014

National, Hazardous Liquid, Serious Incidents: Count 1994-2013

Source: PHMSA Significant Incidents Files, March 04, 2014
Hazardous Liquid
Significant Incidents by Cause

- Corrosion Failure
- Equipment Failure
- Excavation Damage
- Incorrect Operation
- Material Failure of Pipe or Weld
- Natural Force Damage
- Other Incident Cause
- Other Outside Force Damage

Data as of 3-3-2104
Michigan

3-yr Average (all Pipeline Systems):
- 7 significant incidents
- 1 serious incident w/ 1 fatality

3-yr Average (Hazardous Liquids):
- 2 significant incidents
- 792 net bbls lost
- 0 fatalities or injuries
ALWAYS CALL BEFORE YOU DIG

One free, easy call gets your utility lines marked AND helps protect you from injury and expense.

Safe Digging Is No Accident: Always Call 811 Before You Dig

What PHMSA Doesn’t Do:

- Authorize or Approve Pipelines
- Oversee Pipeline Siting or Routing
- Grant Emminent Domain Authority
- Monitor or Track Commodity Shipments
- Enforce Right-of-way Contract Provisions or Resolve Disputes
- Environmental Remediation
What PHMSA Does Do:

- **49 CFR Part 195**
  Transportation of Hazardous Liquids by Pipeline

- **49 CFR Part 194**
  Response Plans for Onshore Oil Pipelines
What PHMSA Does Do:

![Pie Chart: OPS Inspector Effort Allocation 2013, All Regions]

- Inspections: 47%
- Construction Oversight: 10%
- Training: 9%
- Teamwork: 11%
- Stakeholder Outreach: 17%
- Failure Investigation: 6%
49 CFR Part 195

Transportation of Hazardous Liquids by Pipeline
Hazardous Liquids?

- Refined Petroleum Products – gasoline, diesel fuel, jet fuel, condensate, etc.
- Crude Oil – including diluted bitumen.
- Highly Volatile Liquids – ethane, propane, ethylene, natural gas liquids, etc.
- Anhydrous Ammonia
- Carbon Dioxide
- Ethanol
49 CFR Part 195

- Reporting
- Design, Materials, and Construction
- Pressure Testing
- Operations
  - Maximum Operating Pressure
- Maintenance
- Corrosion Control
- Integrity Management
- Operator Qualification
- Public Awareness
  - Establish and Maintain Liaison with Emergency Responders
- Damage Prevention
Enbridge Line 5

Capacity Expansion Project

- Notification in May 2012
- Project Briefing
- Special Inspection

✓ December 2012
Enbridge Line 5

Straits of Mackinac Crossing

- Pipeline Inspections and Mitigation Measures
- Construction Records and Pressure Testing
- Integrity Assessments

April 25, 2014 Response to Senate Inquiry Summarizes Efforts
Response Plans for Onshore Oil Pipelines
Oil?

- Refined Petroleum Products – gasoline, diesel fuel, jet fuel, condensate, etc.
- Crude Oil – including diluted bitumen.
- Petroleum distillate or oil that is produced by natural gas wells and stored at atmospheric pressure and temperature (condensate).
Not Oil?

- Natural gas is not considered an oil.
- Highly volatile liquids (ethane, propane, ethylene, liquid petroleum gas, natural gas liquids, etc.) are not considered to be oil.
- Anhydrous Ammonia
- Carbon Dioxide
- Ethanol
OPA 90 Plans

- Plans must be submitted to PHMSA for review and approval.
- Plans must be resubmitted every 5 years or if substantial information changes.
Enbridge Line 5

Enbridge Superior Region Response Zone Plan

- Submitted
- Reviewed and Approved
- Public Version Posted
- ✔ FOIA Electronic Reading Room
Emergency Response
PHMSA Role

- Not an emergency response Agency.
- Don’t conduct environmental monitoring.
- Don’t direct remediation activities, but can assist with coordination.
Emergency Response
PHMSA Role

• Investigate the cause of the release.
• Verify future integrity of the pipeline.
  ✓ Monitor repairs
  ✓ Pressure reduction
  ✓ Corrective Action Order
  ✓ Apply findings
• Provide assistance and advice on pipeline matters to Incident Command.
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