WUTC and Pipeline Safety
Mission Statement

The UTC protects consumers by ensuring that utility and transportation services are fairly priced, available, reliable and safe.
WUTC priorities

- Consumer protection
- Safety
What are the WUTC’s pipeline Safety responsibilities

Ensure public health, safety and environmental quality by:

- Improving safety laws and regulations
- Conducting quality inspections
- Enforcing laws and regulations
- Providing technical assistance to pipeline operators, local governments and communities
- Educating local communities
Who are the Pipeline Companies?

- Who we regulate
  - Gas/Liquids
  - Distribution/ Transmission
  - Master Meters
  - Small Gas Systems
<table>
<thead>
<tr>
<th>Commodity</th>
<th>Type</th>
<th>Interstate</th>
<th>Intrastate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas</td>
<td>Distribution</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transmission</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Hydrogen</td>
<td></td>
<td>3</td>
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<td></td>
<td>Biogas</td>
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<tr>
<td>Liquids</td>
<td>Transmission</td>
<td>4</td>
<td>4</td>
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<td></td>
<td>Breakout tanks</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
Federal/State government

- PHMSA
- Interstate/intrastate
- Certification
- NTSB
What are operators required to Do?

- Comply with Federal, State and Company requirements
  - USC/ RCW
    - United States Code
    - Revised Code of Washington
  - CFR/WAC
    - Code of Federal Regulations
    - Washington Administrative Code
  - Company Standards
  - Industrial Standards
  - Manufacturers Recommendations
How do we Regulate

- Rulemaking
- Perform Inspections
  - Standard
  - Construction
  - Investigation
    - Accident
    - Near Miss
    - Complaints
  - Program
    - Integrity Management
    - Operator Qualifications
    - Public Awareness
    - Drug and Alcohol
- Reporting
  - Incident
  - Safety Related Conditions
- Compliance / Enforcement
Why is this Important

- Public/worker Safety
- Risk
- Swiss Cheese Theory
- Safety Pyramid
Significant Incident causes

Significant Incident Cause Breakdown
National, All Pipeline Systems, 1990-2009

- ALL OTHER CAUSES: 21.4%
- CORROSION: 18.2%
- EXCAVATION DAMAGE: 16.5%
- INCORRECT OPERATION: 6.2%
- MAT’L/WELD/EQUIP FAILURE: 4.8%
- NATURAL FORCE DAMAGE: 7.8%
- OTHER OUTSIDE FORCE DAMAGE: 6.2%

Source: PHMSA Significant Incidents Files November 30, 2010
## Third Party Damage from Distribution Annual Reports

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Third Party Incidents</th>
<th>Inaccurate locates</th>
<th>Failure to use reasonable care</th>
<th>Excavating prior to locating</th>
<th>Failure to call for locates</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>1462</td>
<td>149</td>
<td>651</td>
<td>66</td>
<td>473</td>
<td>123</td>
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<tr>
<td>2008</td>
<td>1830</td>
<td>213</td>
<td>677</td>
<td>64</td>
<td>630</td>
<td>146</td>
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<tr>
<td>2007</td>
<td>2483</td>
<td>199</td>
<td>1175</td>
<td>342</td>
<td>403</td>
<td>88</td>
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<tr>
<td>2006</td>
<td>2749</td>
<td>206</td>
<td>1031</td>
<td>418</td>
<td>1013</td>
<td>271</td>
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<tr>
<td>2005</td>
<td>2706</td>
<td>217</td>
<td>867</td>
<td>470</td>
<td>1151</td>
<td>283</td>
</tr>
</tbody>
</table>
Corrosion

Drop of moisture

Rust spot

Fe $\rightarrow$ Fe$^{2+}$

$\frac{1}{2}H_2(g)$

Cathode

Anode

Iron or Steel
Outside Force
Bathtub Curve

The Bathtub Curve
Hypothetical Failure Rate versus Time

- Infant Mortality
  Decreasing Failure Rate

- Normal Life (Useful Life)
  Low "Constant" Failure Rate

- End of Life Wear-Out
  Increasing Failure Rate

Increased Failure Rate
Time
Human Factors

- Inadequate training
- Mental/physical stress
- Lack of knowledge
- Lack of skill
- Improper motivation/Misuse
- Lack of Attention
- Perception failure
- Communication failure
- Slips, lapses
- Fatigue
Transmission vs Distribution

National, All Pipeline Systems, Serious Incidents 1990-2009

Source: PHMSA Significant Incidents Files November 30, 2010
Risk

- Probability x Consequence
Accident Pyramid

- Fatal accident: 1
- Serious accidents: 10
- Accidents: 30
- Incidents: 600
ConocoPhillips Marine pyramid

- 1 Fatality
- 30 Lost Workday Cases
- 300 Recordable Injuries
- 3,000 Near Misses (estimated)
- 300,000 At-Risk Behaviors (estimated)
## Washington Significant Incidents

<table>
<thead>
<tr>
<th>Date</th>
<th>Company</th>
<th>Location</th>
<th>Injuries</th>
<th>Fatalities</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/9/1987</td>
<td>PSE</td>
<td>Silver lake</td>
<td>2</td>
<td>0</td>
<td>Operator Error, static</td>
</tr>
<tr>
<td>8/30/1990</td>
<td>PSE</td>
<td>Auburn</td>
<td>1</td>
<td>0</td>
<td>Operator Error, Static</td>
</tr>
<tr>
<td>10/31/1991</td>
<td>PSE</td>
<td>Bellevue</td>
<td>1</td>
<td>0</td>
<td>Third Party Damage, Operator error</td>
</tr>
<tr>
<td>1/20/1993</td>
<td>PSE</td>
<td>Monroe</td>
<td>4</td>
<td>0</td>
<td>Wind, Electrical arc</td>
</tr>
<tr>
<td>6/10/1999</td>
<td>Olympic</td>
<td>Bellingham</td>
<td>10</td>
<td>3</td>
<td>Third Party Damage, operator &amp; design error</td>
</tr>
<tr>
<td>6/22/2004</td>
<td>PSE</td>
<td>Seattle</td>
<td>1</td>
<td>0</td>
<td>Operator error, static</td>
</tr>
<tr>
<td>8/28/2004</td>
<td>PSE</td>
<td>Bellevue</td>
<td>1</td>
<td>0</td>
<td>Operator error</td>
</tr>
<tr>
<td>9/2/2004</td>
<td>PSE</td>
<td>Bellevue</td>
<td>0</td>
<td>1</td>
<td>Corrosion, operator error</td>
</tr>
<tr>
<td>6/20/2007</td>
<td>Avista</td>
<td>Spokane</td>
<td>2</td>
<td>0</td>
<td>Operator error, static</td>
</tr>
<tr>
<td>12/26/2008</td>
<td>Avista</td>
<td>Odessa</td>
<td>1</td>
<td>0</td>
<td>Construction error, rock dent</td>
</tr>
</tbody>
</table>
Questions?

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