NGA Pre-Winter Briefing on System Reliability

November 2, 2017
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U.S. Marketing
Enbridge U.S. Transmission Map

Miles of Pipe: 14,129
Compressor Stations: 137
Total Horsepower: 2,391,488
TETCO System Utilization

## 2017 Integrity Summary

**Assessments**

<table>
<thead>
<tr>
<th>Assessments</th>
<th>AGT</th>
<th>TETLP NE Region</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILI runs</td>
<td>18</td>
<td>34</td>
<td>52</td>
</tr>
<tr>
<td>Anomalies from 2017 ILI</td>
<td>24</td>
<td>97</td>
<td>121</td>
</tr>
<tr>
<td>Scheduled Anomalies</td>
<td>41</td>
<td>76</td>
<td>117</td>
</tr>
</tbody>
</table>

**Anomaly Repair Breakdown**

<table>
<thead>
<tr>
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<th>AGT</th>
<th>TETLP NE Region</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Recoat</td>
<td>21</td>
<td>91</td>
<td>112</td>
</tr>
<tr>
<td>ClockSpring (composite sleeve)</td>
<td>10</td>
<td>62</td>
<td>72</td>
</tr>
<tr>
<td>Pipe Replacement</td>
<td>17</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>Type B Sleeve</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
Maintenance Programs

- Turbine overhauls and inspections
  - Completed at intervals established with the OEM’s
- Solar fuel systems and unit bore scope inspections
  - Based on a fired hour interval
- Recip Units
  - Engine Analysis completed on an operating hour internal.
- Periodic, annual, and hour based mechanical and electrical system inspections and testing.
  - Turbines
  - Recips
  - Electric Motor Drives
Continuous Improvement

- Completed review of Maintenance Standards in (5 to 7 year frequency)
- Annual ad hoc review of Maintenance Standards
- Formalized Winter and Storm Preparation procedures
- Review and update annually program/plan
- SOP Effectiveness Reviews (1 to 3 year frequency)
Texas Eastern in Pennsylvania

Incident location
Penn-Jersey Evaluations (Post Delmont)

- Excavation and Evaluation of pipe with tape coating throughout four Compressor Stations on PJ System. No significant integrity concerns found.
- Excavation and Evaluation of pipe with tape coating at three (3) crossover headers on PJ System. No significant integrity concerns found.
- Completed Close Interval Survey (CIS) Delmont to Armagh.
- Performed twenty-four (24) Stress Corrosion Cracking Direct Assessments (SCCDA). No indications of SCC observed.
Improving New England’s future energy reliability, cost volatility and competitiveness

**Atlantic Bridge**

*Project Scope:*
- ~135 MMcf/d expansion of the Algonquin and Maritimes & Northeast Pipelines

*Project Status:*
- Filed FERC application Oct 2015
- FERC certificate received Jan 2017
- In-service 2H17 – 2H18

**Access Northeast**

*Project Need:*
- Joint development with Eversource & National Grid

*Project Scope:*
- Natural gas generation has increased from 15% to 50% market share since 2000
- Additional natural gas infrastructure is needed to serve growing gas generation

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**Northeast Expansions on Algonquin**

**Access Northeast & Atlantic Bridge**

Algonquin and Maritimes systems directly connect to 60% of ISO-NE’s gas-fired generators

New gas-fired generators totaling ~2,570 MW attaching to Algonquin by 2019

Image of a map showing the regional supplies and pipelines connecting to various cities in New England.