Evolved Perspective of Composite Wrap Repairs

CRUG 2014 Quarterly Meeting
Overview

- BSEE and its Mission
- Pipeline Section Staffing
- GOM Pipeline Infrastructure
- Pipeline Application/Plan Statistics
- Pipeline Repair Regulations & Statistics
- Composite Repair Policy Evolution
- Path Forward
BSEE and its Mission

Reducing Risk Offshore
Department of the Interior’s Offshore Regulatory Structure

Bureau of Safety and Environmental Enforcement
(Brian Salerno)

Bureau of Ocean Energy Management
(Vacant)

Office of Natural Resources Revenue
(Greg Gould)
BSEE Gulf of Mexico OCS Region

Regional Director
Lars Herbst

Senior Advisor
Kevin Karl

Deputy Regional Director
Michael Prendergast

Technical Advisor
Cathy Moser
Headquarters’ Offices
GoM OCS Region Based

- Office of Public Affairs
- Oil Spill Response Division
- Environmental Enforcement Branch
- Information Technology Division
- National Offshore Training & Learning
Gulf of Mexico OCS Region
Regional Director Lars Herbst

Deputy Regional Director
  Michael Prendergast

Production and Development
Regional Supervisor
  Richie Baud

Regional Field Operations
Regional Supervisor
  Nick Wetzel

District Field Operations
Regional Supervisor
  Mike Saucier
Pipeline Section Staffing

Reducing Risk Offshore
Regional Field Operations
Regional Supervisor Nick Wetzel
Pipeline Section, Chief Angie D. Gobert

- Secretary
- Program Specialist
- Cartographer
- Junior Staff Engineers (2)
- Senior Staff Engineers (4)
- Staff Engineers (2)
- Petroleum Engineering Technicians (2)
- Summer Interns (Possibility of 2)
GOM Pipeline Infrastructure

- 22,687 Miles of active P/Ls
- 5,245 Active P/L Segments
- 2,597 Active Platforms
- 926 Proposed Decommissionings
- 1,554 OOS P/Ls
Pipeline Application/Plan
Statistics
Updated 5/2014
Reducing Risk Offshore
Applications/Plans Received
FY 2013

- Repairs
- Departure Requests
- New Pipeline Applications
- Pipeline Modifications
- Riser Verification Program
- ROW Assignments
- ROW Appurtenances
- ROW Relinquishments
- ROW Temporary Cessations
- Notifications
- Conversions and Reactivations
- Special Assignments
- Decommissioning
Pipeline Repair Regulations &
Repair Statistics

Updated 5/2014
Reducing Risk Offshore
Repair Regulations

• Repair Plan Requirements – 30 CFR 250.1008 (e)
  • Submitted prior to repair operations
  • Service fee
  • Description of repair process
  • Reporting requirements

• Testing Requirements – 30 CFR 250.1003 (b) and (c)
  • Pressure tested to 1.25 x MAOP for 2 hours
  • Water or processed gas
  • BSEE may require additional testing to verify integrity
Repair Plan Statistics Overview

- 2,994 Repair Plans have been received and approved since June 10, 2002

<table>
<thead>
<tr>
<th>Composite Wrap</th>
<th>Clamp</th>
<th>Replace Damaged Pipe</th>
<th>Replace Entire Riser</th>
<th>Other/Unknown</th>
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</thead>
<tbody>
<tr>
<td>110</td>
<td>409</td>
<td>1324</td>
<td>230</td>
<td>923</td>
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Repair Locations

<table>
<thead>
<tr>
<th>Departing Riser</th>
<th>Receiving Riser</th>
<th>Both Risers</th>
<th>Submerged Pipe</th>
<th>Subsea Tie-in</th>
<th>Pipeline Crossing</th>
<th>Unknown</th>
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</thead>
<tbody>
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<td>1121</td>
<td>739</td>
<td>81</td>
<td>921</td>
<td>94</td>
<td>1</td>
<td>37</td>
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</tbody>
</table>

- Departing Riser
- Receiving Riser
- Both Risers
- Submerged Pipe
- Subsea Tie-in
- Pipeline Crossing
- Unknown
### Riser Repair Locations

<table>
<thead>
<tr>
<th></th>
<th>Above Splash Zone</th>
<th>Splash Zone</th>
<th>Below Splash Zone</th>
<th>Tube Turn</th>
<th>Other</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above Splash Zone</td>
<td>470</td>
<td>930</td>
<td>207</td>
<td>98</td>
<td>248</td>
<td>1041</td>
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<tr>
<td>Splash Zone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below Splash Zone</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Tube Turn</td>
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<td></td>
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<tr>
<td>Other</td>
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</tr>
<tr>
<td>Unknown</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

- Above Splash Zone
- Splash Zone
- Below Splash Zone
- Tube Turn
- Other
- Unknown
Composite Repair Plan Statistics

• 110 Composite Wrap Repair Plans have been received and 5 were cancelled since June 10, 2002

<table>
<thead>
<tr>
<th>No Problems</th>
<th>Decommissioned</th>
<th>Cancelled or Not Approved</th>
<th>Replaced</th>
</tr>
</thead>
<tbody>
<tr>
<td>68</td>
<td>28</td>
<td>5/2</td>
<td>7</td>
</tr>
<tr>
<td>~61%</td>
<td>~25%</td>
<td>~6%</td>
<td>~6%</td>
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</table>
Composite Repair Policy
Evolution
Reducing Risk Offshore
Composite Repair Policy Evolution

• Final Project Report, June, 2007 entitled, “Composite Repair Methods for Steel Pipes” prepared for DOI MMS

• Task Order 39300, MMS Project Number 558

• Authored by: Dr. Ozden O. Ochoa, Texas A&M University
  Chris Alexander, Stress Engineering Services

• Highlighted Report Findings:
  • Concerns about strength of repaired areas
  • Gaps in knowledge about longevity of repairs
Composite Repair Policy Evolution

• December, 2012: Change in Chief of the Pipeline Section.

• Review of the Task Order 39300, MMS Project Number 558 conducted by the Senior Staff Pipeline Engineers resulted in the following:
  • Concern for:
    • the strength of the pipeline
    • the longevity of the repair [a noted consensus among the Staff Engineers and noted in the report]
  • Limited history of composite wrap repairs on the OCS
  • Guidelines unclear

• August, 2013: Change in composite wrap repair policy
37 Composite Wrap Repair Plans were approved between June 2002 and December 2004.

<table>
<thead>
<tr>
<th></th>
<th>No Problems</th>
<th>Decommissioned</th>
<th>Replaced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>18</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>Percentage</td>
<td>49%</td>
<td>38%</td>
<td>13%</td>
</tr>
</tbody>
</table>
Composite Repairs
10 Years or Older

• 18 of the pipelines repaired using composite wrap between June 10, 2002 and May 26, 2004 are still in use

• Composite wraps were used only to repair areas of corrosion

• Wall thickness was reduced by 20-80%

• Reduced wall thickness remained adequate for MAOP
Composite Wrap Repair Plans
Current BSEE Policy

• Composite wraps are only being approved for the purpose of inhibiting corrosion

• Leaks may not be repaired with composite wraps

• Approval of composite wraps for the purpose of adding material strength has been suspended

• Maximum Allowable Operating Pressure (MAOP) must be calculated using the reduced wall thickness

• Corrosion resulting in half-body (50%) loss or more and less than 0.01-inches of wall thickness will need the section of pipe replaced
Path Forward

Reducing risk offshore
Composite Repair Plans
Path Forward

• Initiate a proposal to study the long-term reliability of offshore composite repairs

• Develop new guidelines based on results
THANK YOU!

&

Remember our Mission
Reducing Risk Offshore

Angie.Gobert@BSEE.gov