Pipeline Research Council International

Winter 2021 TC Plenary

15 March 2021 @ 10:00 AM Eastern | Virtual
Virtual Meetings Best Practices

- This session is being recorded

- Please submit comments or questions via the chat function in Teams to ask a question
  - Prepend your question with "Q"

- Use the "raise your hand" function to be unmuted to ask a question verbally

- If a question is for someone specific, please identify the person

- Please keep chat focused on the subject matter

- Please DO NOT use your webcam unless you are the person speaking
Current List of Topics

- Safety Moment
- 2020 Content Delivery Summary
- 2021 Content Delivery Goals
- Research Portfolio Updates
- April Executive Assembly Meeting Overview
- VREX2021 Highlights
- Recognition of Member Representatives
- Recognition of Award Winners
Our Mission

To collaboratively deliver relevant and innovative applied research to continually improve the global energy pipeline systems.
Safety Moment
Daylights Savings Time

- Many parts of the world we observe daylight savings. In the US, we return to daylight savings time March 14
- Fatigue – for many people it takes several days to adjust their body clocks
- Accidents – evidence suggests that there are more accidents, both at work and at home, after a shift in daylight savings time
  - Don’t build up a ‘sleep debt’ when shifting time
- A good reminder – a good time to perform annual safety checks
  - Batteries in smoke alarms/age
  - Fire extinguisher pressures/age
2020 Content Delivery Summary

Compendia (Goal: 4, Actual: 12) ([https://www.prci.org/Research/All_Final_Reports.aspx?q=compendium](https://www.prci.org/Research/All_Final_Reports.aspx?q=compendium))

- PR-000-20COMP-R06 Pipeline Mechanical Damage Compendium
- PR-000-20COMP-R05 Pressure Testing of Pipelines Compendium
- PR-000-20COMP-R19 Why Pipe with Cracks Fail Compendium
- PR-000-20COMP-R01 Fitness for Service Compendium
- PR-000-20COMP-R02 High Strength Pipe Compendium
- PR-000-20COMP-R03 Leak Detection Compendium
- PR-000-20COMP-R04 Turbocharger Compendium
- PR-000-20COMP-R13 Hydrogen Embrittlement and Cracking
- PR-000-20COMP-R10 Pipe Material Properties Compendium
- PR-000-20COMP-R09 ERW Pipe Compendium
- PR-000-20COMP-R07 Stress Corrosion Cracking Compendium
- PR-000-20COMP-R08 Pipeline Cracking Compendium

Project Deliverables

<table>
<thead>
<tr>
<th>Committee</th>
<th>2020 Goal</th>
<th>2020 Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPSTC</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Corrosion</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>DMC</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>I &amp; I</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Measurement</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>SOM</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>UG Storage</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Subsea</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Webinars

- Goal: 20
- Completed: 28

2021 Goals

Pipeline Research Council International
LEADING PIPELINE RESEARCH
Content Delivery Plans for 2021

- Project Deliverables
  - 45 Planned (Already @ 13 YTD)

- Compendia
  - 6 Planned (including Burst Pressure)
  - Refresh Existing
  - Compendia Now Available from Past ASME IPC
    (https://www.prci.org/Research/All_Final_Reports.aspx?q=compendium)

- PRCI Research Catalog
  - www.prci.org/Research/ProgramsProjects/Doc-1/99946/196284.aspx

- Webinars
  - 22 Planned (2 Completed YTD)

- Workshops
  - 2 Planned (Virtual v. Face to Face)

- Software Deployment
  - Development & Testing for Cloud Deployment
  - Queue for Publicly Available: Fillet End Weld, Hot Tap Update, Lifting & Lowering, Meter Station Design Tool, RiverX, Water Wetting Tool
Research Portfolio Updates
PIRS Scorecard

- **Good start for 2021**
  - Focus on new work under contract
- **Delays due to Covid-19**
- **Several ‘old’ projects**
  - 2011
  - 2014-2019
## Committee Scorecards

<table>
<thead>
<tr>
<th>Committee</th>
<th>Old Un-contracted $</th>
<th>Un-contracted Projects</th>
<th>Delayed Projects</th>
<th>Deliverables Received</th>
<th>Deliverable Approvals Needed</th>
<th>Closeouts</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>CORR</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>A</td>
<td>B+</td>
</tr>
<tr>
<td>CPS</td>
<td>C+</td>
<td>C</td>
<td>C</td>
<td>A+</td>
<td>A</td>
<td>B</td>
<td>B+</td>
</tr>
<tr>
<td>DMC</td>
<td>A+</td>
<td>B</td>
<td>C+</td>
<td>C</td>
<td>A</td>
<td>B+</td>
<td>B+</td>
</tr>
<tr>
<td>I&amp;I</td>
<td>A</td>
<td>B+</td>
<td>B</td>
<td>A+</td>
<td>A</td>
<td>C+</td>
<td>B+</td>
</tr>
<tr>
<td>MEAS</td>
<td>B+</td>
<td>C</td>
<td>B</td>
<td>A+</td>
<td>A</td>
<td>C+</td>
<td>B+</td>
</tr>
<tr>
<td>SBS</td>
<td>A+</td>
<td>B</td>
<td>A</td>
<td>A+</td>
<td>A</td>
<td>D+</td>
<td>B+</td>
</tr>
<tr>
<td>SOM</td>
<td>C+</td>
<td>C+</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>D+</td>
<td>C+</td>
</tr>
<tr>
<td>US</td>
<td>A+</td>
<td>A</td>
<td>A</td>
<td>A+</td>
<td>A</td>
<td>C</td>
<td>A</td>
</tr>
<tr>
<td>Overall</td>
<td>A</td>
<td>B</td>
<td>C+</td>
<td>A+</td>
<td>A</td>
<td>C</td>
<td>B+</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Committee</th>
<th>Projects</th>
<th>Old Uncontracted $</th>
<th>Un-contracted Projects</th>
<th>Delayed Projects</th>
<th>Deliverables Received</th>
<th>Deliverable Approvals Needed</th>
<th>Closeouts</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>CORR</td>
<td>18</td>
<td>18.00</td>
<td>9</td>
<td>2.00</td>
<td>11</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CPS</td>
<td>27</td>
<td>18.00</td>
<td>15</td>
<td>1.80</td>
<td>12</td>
<td>4</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>DMC</td>
<td>32</td>
<td>2.29</td>
<td>14</td>
<td>2.29</td>
<td>12</td>
<td>4</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>I&amp;I</td>
<td>36</td>
<td>1.89</td>
<td>19</td>
<td>1.89</td>
<td>23</td>
<td>4</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>MEAS</td>
<td>20</td>
<td>1.93</td>
<td>14</td>
<td>1.93</td>
<td>12</td>
<td>4</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>SBS</td>
<td>11</td>
<td>2.20</td>
<td>5</td>
<td>2.20</td>
<td>4</td>
<td>1</td>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>SOM</td>
<td>18</td>
<td>1.80</td>
<td>10</td>
<td>1.80</td>
<td>10</td>
<td>3</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>US</td>
<td>4</td>
<td>1.00</td>
<td>4</td>
<td>1.00</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Overall</td>
<td>166</td>
<td>1.84</td>
<td>90</td>
<td>1.84</td>
<td>88</td>
<td>20</td>
<td>35</td>
<td>88</td>
</tr>
</tbody>
</table>
# 2021 Deliverables

<table>
<thead>
<tr>
<th>Committee</th>
<th>Expected in 2021</th>
<th>2021 YTD</th>
<th>% of Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPSTC</td>
<td>10</td>
<td>3</td>
<td>30%</td>
</tr>
<tr>
<td>Corrosion</td>
<td>3</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>DMC</td>
<td>7</td>
<td>2</td>
<td>29%</td>
</tr>
<tr>
<td>I &amp; I</td>
<td>8</td>
<td>3</td>
<td>38%</td>
</tr>
<tr>
<td>Measurement</td>
<td>5</td>
<td>3</td>
<td>60%</td>
</tr>
<tr>
<td>SOM</td>
<td>8</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Storage</td>
<td>2</td>
<td>1</td>
<td>50%</td>
</tr>
<tr>
<td>Subsea</td>
<td>2</td>
<td>1</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>45</strong></td>
<td><strong>13</strong></td>
<td><strong>29%</strong></td>
</tr>
</tbody>
</table>

![2021 Deliverables](image)
SRP Update – Optimize the Detection and Mitigation of Mechanical Damage

- **Available Funding**
  
  ![Bar chart showing available funding](chart)

- **2021 PIRS**
  
  ![Bar chart showing 2021 PIRS](chart)

- **2021 Deliverables Expected:** 2, Received: 1

SRP Update – Pipeline Crack Management

- Available Funding

<table>
<thead>
<tr>
<th>SRP Funds</th>
<th>$1,400,000</th>
<th>$1,200,000</th>
<th>$1,000,000</th>
<th>$800,000</th>
<th>$600,000</th>
<th>$400,000</th>
<th>$200,000</th>
<th>$-</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAT-8-3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NDE-4-12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 2021 PIRS

<table>
<thead>
<tr>
<th>SRP: Pipeline Crack Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposal and Contracting</td>
</tr>
</tbody>
</table>

- 2021 Deliverables Expected: 0, Received: 0

SRP Update – Greenhouse Gas Reductions

- **Available Funding**

- **2021 PIRS**

- **2021 Deliverables Expected: 6, Received: 0**

PRCi has developed a semi-automated method to develop and publish research roadmaps.

The roadmap has already provided value in identifying possible synergies, duplication of efforts, and compendium generation.

Funding portal is flexible, so how do we ensure consideration of new ideas that are put forward for funding that aren’t on the roadmap?

- Require justification to be on the funding portal
  - E.g., new priority issue, proposed regulations, etc.
  - Advanced commitments of all in-kind contributions
  - Pledges for a significant portion of the funds
On Demand Funding

Funding Portal: [https://www.prci.org/fundingportal](https://www.prci.org/fundingportal)

- No scheduled funding opportunities
- To date, four ideas on the portal
  - Two in I&I, $480k
  - Two in CORR, $278k
- Funding Highlights:
  - 6 weeks to hit 75% funding
  - RSC review available at 75%
  - 10 weeks to get 100% funding
  - Members cannot vote funds until their 2021 subscriptions paid
  - If not funded, cannot be reconsidered for 6 months unless RSC approved
- $4.5M available in Member’s Research Bank
  - Real-time balances available
Based on direction from the Executive Board, PRCI is refining its research procurement policies

- Competitive bid of all projects over $375,000
- Sole source of research to a single contractor over the life of a project >$375,000 requires justification, review, and approval
- Overall procurement policy enhancement
  - Strengthen the Conflict of Interest Policy as it relates to contracting with PRCI
  - Procurement where members that intend to compete as a research contractor is performed at ‘arms length’
  - Confidentiality of information
  - Contractor selection process
Research Data NDA

- **Member Research Data Non-Disclosure Agreements**
  - Base agreement has all terms and conditions
    - *Confidentiality*
    - *Contractor access*
  - Exhibit for Each Project
    - *Contact information*
    - *Data description*
    - *Restrictions (if any) on the use of the data*

- **Status**
  - 20 Sent (Pipeline Operator Members Prioritized First)
    - *Remaining Pipeline Operator members to be sent by the end of March*
  - 4 Executed
EA Meeting Agenda Items

- **2022-2024 Strategic Plan Development**
  - Strengths, Weaknesses, Opportunities, Threats Analysis

- **Emerging Fuels Efforts**
  - Hydrogen + Renewable Natural Gas

- **SRP Updates**
  - Funded SRP Performance
  - 2021-2023 Roadmapping of Funding
  - Refinement of Processes for Maturing SRPs from Potential -> Candidate -> Funded

- **Strategic Partnerships Updates**
  - Department of Transportation
  - Department of Energy
VREX2021 Technical Content

- Over 1350 Attendees
- 42 Hours of Recorded Content
- 50 Technical Sessions
- 8 “Deep Dive” Sessions
  - Crack Management
  - Emerging Fuels
  - Geotechnical Management
  - Girth Welds in New Construction
  - Hydrogen
  - Mechanical Damage
  - Mechanical Integrity
  - Renewable Natural Gas

- Content Available On Demand for Registered Attendees
Thank You to our VREX2021 Planning Committee!

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husain Al-Muslim</td>
<td>Saudi Aramco</td>
</tr>
<tr>
<td>Ajay Arakere</td>
<td>Kinder Morgan</td>
</tr>
<tr>
<td>Adrian Belanger</td>
<td>TD Williamson</td>
</tr>
<tr>
<td>Bryce Brown</td>
<td>ROSEN</td>
</tr>
<tr>
<td>Saskia Frowijn</td>
<td>ROSEN</td>
</tr>
<tr>
<td>Mirela Hiti</td>
<td>TC Energy</td>
</tr>
<tr>
<td>David Horsley</td>
<td>TC Energy</td>
</tr>
<tr>
<td>Kalen Jensen</td>
<td>ATCO</td>
</tr>
<tr>
<td>Justin Johns</td>
<td>TC Energy</td>
</tr>
<tr>
<td>Saad Khan</td>
<td>Enbridge</td>
</tr>
<tr>
<td>Gobind Khiani</td>
<td>Enbridge</td>
</tr>
<tr>
<td>Jason Moral</td>
<td>Kinder Morgan</td>
</tr>
<tr>
<td>Mark Piazza</td>
<td>Colonial Pipeline Company</td>
</tr>
<tr>
<td>Aymen Rashid</td>
<td>TC Energy</td>
</tr>
<tr>
<td>Julia Regan</td>
<td>ROSEN</td>
</tr>
<tr>
<td>Matt Romney</td>
<td>TD Williamson</td>
</tr>
<tr>
<td>Muhammad Saleem</td>
<td>TC Energy</td>
</tr>
<tr>
<td>Ramani Teegala</td>
<td>Enterprise Products</td>
</tr>
<tr>
<td>Vitaly Vorontsov</td>
<td>Enbridge</td>
</tr>
<tr>
<td>Deli Yu</td>
<td>TC Energy</td>
</tr>
<tr>
<td>Shenwei Zhang</td>
<td>TC Energy</td>
</tr>
</tbody>
</table>
Committee Member Recognition
Committee Member Recognition

- **Compressor & Pump Station**
  - Hemanth Satish, TC Energy

- **Corrosion**
  - Ivan Mathew (1964-2019), Kinder Morgan

- **Design, Materials & Construction**
  - David Futch, ExxonMobil

- **Measurement**
  - Danielle Mark, PG&E
  - Amélie Louvat, GRTgaz

- **Research Steering Committee**
  - Mark Piazza, Colonial
  - Mures Zarea, ENGIE/GRTgaz
  - Chris Nowak, Kinder Morgan
Congratulations to our Award Recipients!

Distinguished Service Award

- Michael Cook
- Steve Koetting
- Walter Kresic
- Donald Drake

Distinguished Researcher Award

- Mark Stephens
Member Engagement

- **PRCI Mission:** *To collaboratively deliver relevant and innovative applied research to continually improve the global energy pipeline systems.*

- **Winter Technical Committee Meetings Schedule (All Virtual)**
  - I&I | March 8-10
  - Compressor & Pump Station | March 16-18
    - [https://www.prci.org/Research/CompressorPumpStation/CPSEvents/188193.aspx](https://www.prci.org/Research/CompressorPumpStation/CPSEvents/188193.aspx)
  - Subsea | March 17-18
  - Corrosion | March 22-24
  - Design, Materials, & Construction | March 23-25
  - Measurement | March 23-25
    - [https://www.prci.org/Research/Measurement/MTCEvents/188255.aspx](https://www.prci.org/Research/Measurement/MTCEvents/188255.aspx)
  - Surveillance, Operations, & Monitoring | March 23-25
  - Underground Storage | May 5-6