

**API RBI Technical Working Group Meeting Minutes**  
**August 11, 2004**  
**Hampton Inn, Clear Lake, Texas**

**TWG meeting – Wednesday, August 11**  
**8:30 am – 4:00 pm**

1. Reviewed and approved minutes from June 9, 2004 meeting at Lyondell/Equistar Complex, Channelview, Texas
2. Reviewed and updated the status of each outstanding technical module. The notes from this discussion are included in the **Technical Module Status Table, Attachment.**
3. The TWG then divided into two groups. The results of these discussions are also included in the **Technical Module Status Table, Attachment.**

Brian Busch, Renee Downie, Clyde VanLoon, John Britton and Hearl Mead reviewed the latest comments for the CUI module. It was agreed that Hearl would incorporate the latest comments and submit to API/Roland Goodman for balloting.

Tom Wylie, Mike Conley, Lynne Kaley, Bart Aupperle, Mark Geisenhoff and Ken Gottselig reviewed the Heat Exchanger Bundle and AST technical modules. Mike Conley has programmed the AST module into MS Excel, which allowed him to rewrite the module in the form of a step-by-step procedure. Other revisions included and ar/t table and changing the release rate look-up table to an equation. Tom noted that some variables that are hard coded into the software, e.g. days down due to a leak, need to be changed to user input variables.

E<sup>2</sup>G's recent review of the HE Bundle module had surfaced many questions due to lack of documentation. The program as used for version 3.3.3 has many more variables than is included in the BRD documentation. In addition, the write-up was largely based on a proprietary software developed for Flint Hills Resources and not included in API RBI V3.3.3. The group spent time reviewing the variables and answering Mike's questions. Mike Conley will develop the next draft of the module and send to the TWG for review.

**Attachment:**  
Status of Technical Module (Equipment & Damage Modules)

ITEM	TECHNICAL MODULE	ACTION	WHO / OWNER	DATE
1.	AST	<ul style="list-style-type: none"> <li>• ar/t table to be updated to give credit for similar inspections and multiple inspections</li> <li>• Correct the equations that are incorrect and/or not predicting effectively</li> <li>• Incorporate suggestions into document and review changes from MAP ballot comments in revised AST document. (All comments from ballot have been addressed, but work is on-hold until E<sup>2</sup>G completes rewrite of document.)</li> <li>• June 1<sup>st</sup> target for programming document and prototype completion</li> <li>• Meet the week of June 28 with John Britton and Mike Conley to compare DNV AST module results with E<sup>2</sup>G prototype.</li> <li>• Meet/Conference in August to discuss necessary changes and programming recommendations into 6.0</li> <li>• Revise ar/t table so multiple B, C and D effective inspections do NOT give more credit than an A effective inspection.</li> <li>• Issue Revised module to TWG</li> <li>• TWG provide comments to Mike Conley</li> </ul>	<ul style="list-style-type: none"> <li>• E<sup>2</sup>G</li> <li>• E<sup>2</sup>G</li> <li>• E<sup>2</sup>G</li> <li>• E<sup>2</sup>G</li> <li>• E<sup>2</sup>G/DNV</li> <li>• E<sup>2</sup>G / FHR</li> <li>• E<sup>2</sup>G</li> <li>• E<sup>2</sup>G</li> <li>• TWG</li> </ul>	<ul style="list-style-type: none"> <li>• Completed</li> <li>• Completed</li> <li>• Completed</li> <li>• Completed</li> <li>• Canceled</li> <li>• Completed</li> <li>• Completed</li> <li>• AUG 2004</li> <li>• SEP 2004</li> </ul>
2.	Heat Exchanger Bundle	<ul style="list-style-type: none"> <li>• Module to be rewritten as a BRD section with technical documentation of the approach</li> <li>• Issue new module to TWG/SWG for review</li> </ul>	<ul style="list-style-type: none"> <li>• E<sup>2</sup>G – in progress</li> <li>• E<sup>2</sup>G</li> </ul>	<ul style="list-style-type: none"> <li>• AUG 2004</li> <li>• SEP 2004</li> </ul>
3.	CUI	<ul style="list-style-type: none"> <li>• Latest revision was sent for review. Comments from the TWG present at the August 11 meeting plus Mike Carter were reviewed and incorporated.</li> </ul>	<ul style="list-style-type: none"> <li>• Hearl Mead to incorporate current set of comments per the TWG discussion on 8/11 and issue to API for balloting</li> </ul>	<ul style="list-style-type: none"> <li>• AUG 2004</li> </ul>
4.	PRD	<p>Final draft has been written. The work group led by Phil Henry is resolving detail values in a few tables. The document has been sent to E2G for programming</p> <ul style="list-style-type: none"> <li>• Send to API for balloting</li> </ul>	<ul style="list-style-type: none"> <li>• Hearl Mead</li> </ul>	<ul style="list-style-type: none"> <li>• AUG 2004</li> </ul>
5.	HTHA	<ul style="list-style-type: none"> <li>• Provide Draft to TWG <ul style="list-style-type: none"> <li>▪ To be based in recent API/MPC Technical Basis Document</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• E<sup>2</sup>G in progress</li> </ul>	<ul style="list-style-type: none"> <li>• Q1 2005</li> </ul>
6.	Furnace	<ul style="list-style-type: none"> <li>• Provide Draft to TWG <ul style="list-style-type: none"> <li>▪ To incorporate results of Oct-03 PVRC workshop</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• E<sup>2</sup>G</li> </ul>	<ul style="list-style-type: none"> <li>• Q1 2005</li> </ul>

**Attachment:**  
Status of Technical Module (Equipment & Damage Modules)

ITEM	TECHNICAL MODULE	ACTION	WHO / OWNER	DATE
7.	Cooling Water	<ul style="list-style-type: none"> <li>• Shell's comments for resolving the negative ballot have been submitted to the TWG. These will be incorporated and submitted to TWG for one last review</li> <li>• TWG submit final comments to Brian Busch</li> <li>• Submit to API for reballoting</li> <li>• Reballot</li> </ul>	<ul style="list-style-type: none"> <li>• Brian Busch</li> <li>• TWG – All</li> <li>• Hearl Mead</li> <li>• API</li> </ul>	<ul style="list-style-type: none"> <li>• SEP 10, 2004</li> <li>• SEP 22, 2004</li> <li>• OCT 1, 2004</li> <li>• OCT 2004</li> </ul>
8.	Boilers	<ul style="list-style-type: none"> <li>• Final draft issued to TWG</li> <li>• TWG submit final comments to Brian Busch</li> <li>• Submit to API for reballoting</li> <li>• Reballot</li> </ul>	<ul style="list-style-type: none"> <li>• Brian Busch</li> <li>• TWG – All</li> <li>• Hearl Mead</li> <li>• API</li> </ul>	<ul style="list-style-type: none"> <li>• AUG 2004</li> <li>• SEP 22, 2004</li> <li>• OCT 1, 2004</li> <li>• OCT 2004</li> </ul>
9.	Creep	<ul style="list-style-type: none"> <li>• Provide Draft to TWG <ul style="list-style-type: none"> <li>▪ To be revised as part of Furnace module rewrite</li> <li>▪ To incorporate results of Oct-03 PVRC workshop</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• E<sup>2</sup>G</li> </ul>	<ul style="list-style-type: none"> <li>• JAN 2005</li> </ul>
10.	Thermal Fatigue	<ul style="list-style-type: none"> <li>• Provide Draft to TWG <ul style="list-style-type: none"> <li>▪ Current version tries to cover ASME Div 2 TF &amp; coke drum issues</li> <li>▪ New version to try and separate these in two modules or two parts of the module?</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• E<sup>2</sup>G</li> </ul>	<ul style="list-style-type: none"> <li>• JAN 2005</li> </ul>
11.	Lining	<p>A LinerTask Group was established to lead the revision of this module: Tom Wylie (Task Group Leader), Ken Gottselig, John Britton, Dave Hampton, Hearl Mead and Renee Downie</p> <ul style="list-style-type: none"> <li>• Issue current version of module with weld overlay and cladding content removed</li> <li>• Issue Strawman of Inspection Effectiveness tables to Liner Task Group</li> <li>• Liner Task Group to submit comments to Tom</li> </ul>	<ul style="list-style-type: none"> <li>• Lynne Kaley</li> <li>• Tom Wylie</li> <li>• LinerTask Group</li> </ul>	<ul style="list-style-type: none"> <li>• AUG 2004</li> <li>• NOV 1, 2004</li> <li>• DEC 1, 2004</li> </ul>

**Attachment:**  
Status of Technical Module (Equipment & Damage Modules)

ITEM	TECHNICAL MODULE	ACTION	WHO / OWNER	DATE
12.	HIC/SOHIC & SSC	<p>A HIC/SOHIC Task Group was established to lead the revision of this module: Renee Downie (Task Group Leader), Hearl Mead, Mark Geisenhoff and Bart Aupperle</p> <ul style="list-style-type: none"> <li>• Issue electronic copy of current module to Renee Downie</li> <li>• Issue strawman of revisions needed to HIC/SOHIC module to HIC/SOHIC Task group</li> </ul> <p>Module needs:</p> <ul style="list-style-type: none"> <li>▪ Considerations for liners, coatings or overlays</li> <li>▪ Considerations for HIC resistant steels / shape controlled steels</li> <li>▪ Discussion on controversy (+/-) of use of HIC resistant steels</li> <li>▪ Split of inspection effectiveness to a/b with b not giving credit for straight beam techniques</li> </ul> <ul style="list-style-type: none"> <li>• Review and Submit comments to Renee</li> </ul>	<ul style="list-style-type: none"> <li>• Hearl Mead</li> <li>• Renee Downie</li> </ul> <ul style="list-style-type: none"> <li>• HIC/SOHIC Task Group</li> </ul>	<ul style="list-style-type: none"> <li>• AUG 2004</li> <li>• OCT 1, 2004</li> </ul> <ul style="list-style-type: none"> <li>• NOV 1, 2004</li> </ul>
13.	Amine Corrosion/Cracking	<ul style="list-style-type: none"> <li>• Task group from TWG to review and make recommendations for modifications <ul style="list-style-type: none"> <li>▪ needs to be compared to API 945</li> <li>▪ document and report to TWG differences between current module and API 945</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• TWG – Assign task group</li> </ul>	<ul style="list-style-type: none"> <li>• HOLD</li> </ul>
14.	Acid Sour Water	<ul style="list-style-type: none"> <li>• Resolve Shell's negative ballot</li> <li>• Send revised version to API for balloting</li> <li>• Reballot modification to upstream focus group</li> </ul>	<ul style="list-style-type: none"> <li>• Hearl Mead</li> <li>• Hearl Mead</li> <li>• API</li> </ul>	<ul style="list-style-type: none"> <li>• Completed</li> <li>• SEP 2004</li> <li>• OCT 2004</li> </ul>
15.	CO <sub>2</sub>	<ul style="list-style-type: none"> <li>• Resolve Shell's negative ballot</li> <li>• Reballot modification to upstream focus group</li> </ul>	<ul style="list-style-type: none"> <li>• Hearl Mead</li> </ul>	<ul style="list-style-type: none"> <li>• Fall 2004</li> </ul>
16.	Naphthenic Acid / Sulfidation	<ul style="list-style-type: none"> <li>• Review and update module <ul style="list-style-type: none"> <li>▪ Review ConocoPhillip comments and questions, and recommend changes</li> <li>▪ provide updated draft for ballot</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• E<sup>2</sup>G</li> </ul>	<ul style="list-style-type: none"> <li>• Fall 2004</li> </ul>
17.	Sour Water Corrosion	<ul style="list-style-type: none"> <li>• Investigate whether results or part of results from JIP work will be available to use in update of this module <ul style="list-style-type: none"> <li>▪ Current Kp values are very conservative</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• E<sup>2</sup>G / Hearl Mead</li> </ul>	<ul style="list-style-type: none"> <li>• Fall 2004</li> </ul>
18.	Sulfuric Acid Corrosion	<ul style="list-style-type: none"> <li>• Outstanding recommendations for inconsistent sulfuric acid velocities in tables TM 1.5 (G-5) and TM 1.9 (G-6) were discussed and needed changes identified – next version of API 581 to have these updates</li> </ul>	<ul style="list-style-type: none"> <li>• E<sup>2</sup>G</li> </ul>	<ul style="list-style-type: none"> <li>• Completed</li> </ul>