

Distribution Date:
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Minutes
American Petroleum Institute
COMMITTEE ON REFINERY EQUIPMENT
RISK-BASED INSPECTION USER GROUP
August 18-19, 2004
Marriott at Intercontinental Airport, Houston, TX

ATTENDEES:

J. T. Reynolds, CHAIRMAN – Shell	R. A. Goodman – API
G. C. Alvarado – Equity Engineering	P. A. Henry – Equity Engineering
B. Benson – Motiva	L. C. Kaley – Equity Engineering
J. Britton – DNV	P. McAndrew – Sunoco
B. D. Busch – BP	H. E. Mead – Shell
R. Sanches Costa – ISQ	C. Roberts – Atofina
A. Correia da Cruz – ISQ	A. Russell – Dow
R. L. Downie – Lyondell-CITGO	E. Sanchez – Berwanger
C. B. Eckstein – PETROBRAS	R. Sitton – Berwanger
R. Goderie – Dow	K. L. Van Loon – ConocoPhillips
D. Godfrey – BP	H. D. S. Werneck – PETROBRAS
M. Geisenhoff – Flint Hills Resource Group	T. Wylie – Shell

1. OPENING AND INTRODUCTIONS

John Reynolds called the meeting to order at 1:00 p.m. The meeting attendance sheet is attached as Appendix I.

2. APPROVAL OF AGENDA

The following modifications to the meeting agenda were requested: (1) Hearl Mead requested the agenda be modified by moving the discussion on the technical modules (Item 6) ahead of software issues (Item 7); (2) Ryan Sitton requested a discussion on injury cost be added under new business; and (3) Mark Geisenhoff provided an update on the activities of the API Terminal Risk Assessment Group under new business. The meeting agenda (Appendix II) was approved as amended.

3. APPROVAL OF MINUTES FROM PREVIOUS MEETING

The committee approved the minutes from the January 19-20, 2004, meeting as distributed. These minutes can be found on the API RBI website at:

<http://committees.api.org/standards/cre/scrbi/mtginfo/mtghm.html>.

4. PROJECT TIMELINE REVIEW

Lynne Kaley presented a schedule to reflect the current project status. The updated timeline is attached as Appendix III.

5. TECHNICAL WORKING GROUP

Hearl Mead presented the status of the damage and equipment modules currently under revision or development (Appendix IV). The minutes from the August 11, 2004, TWG meeting can be found in Appendix V.

- A. AST – The module write-up is being significantly revised in order to be consistent with the module as it is being programmed and integrated into the Version 5.0 software. The module document will be available for balloting in late 2004.
- B. Heat Exchanger Bundles – The module write-up is being significantly revised to change it from a software user document for Version 3.3.3 to language that is appropriate for the Base Resource Document (Publ. 581) that will be consistent with the Version 5.0 program. The module document will be available for balloting in late 2004.
- C. External Corrosion/CUI Module – This module is being updated to broaden the temperature range with calculated corrosion rate guidance. Guidance on handling equipment in intermittent service was added. In addition, the revised module will consider insulation type and add an assessment of coating condition for inspection history.
- D. PRD – The module write-up is 95% complete, pending a final review of some tables and factor adjustments by the API PRD group.
- E. HTHA – A write-up from MPC is expected for TWG review at the start of 2005.

ACTION: Lynne Kaley will follow up with Dave Osage to see if the release of the HTHA module can be expedited.

- F. Furnace Module – E²G will prepare a document for TWG review at the start of 2005.
- G. Cooling Water – All negative comments from the previous ballot have been resolved and the document is being prepared for ballot. This module will be released in V6.0 in late 2004.
- H. Boilers – The previous ballot of this module did not receive enough responses to pass. Work is being lead by the TWG to have an outside review from more experienced boiler industry feedback. The TWG will review and make future recommendations based on this feedback.
- I. Creep – E²G will prepare a document for TWG review at the start of 2005.

- J. Thermal Fatigue – E²G will prepare a document for TWG review at the start of 2005.
- K. Linings – The TWG is developing an Inspection Effectiveness table for Linings to be incorporated into the inspection planning module approach at a later date.
- L. Acid Sour Water – All negative comments from the previous ballot have been resolved and the document is being prepared for ballot. This module will be released in V6.0 in late 2004.
- M. Soil/Underground Corrosion – All negative comments from the previous ballot have been resolved and the document is being prepared for ballot. This module will be released in V6.0 in late 2004.
- N. CO₂ Corrosion – All negative comments from the previous ballot have been resolved and the document is being prepared for ballot in the first Qtr of 2005. This module will be released in V6.0 in late 2004.
- O. Others – Various other existing modules and supplements are scheduled for review and possible updates in 2005 based recent updates of NACE and API standards as well as other industry information and activities.

The TWG will meet on November 15, 2004 from 8:30 am to 4:00 pm.

6. SOFTWARE ISSUES

- A. Software Working Group Update – Mark Geisenhoff provided an update on the activities of the SWG. The most pressing issue centered on concerns expressed by some members of the user group to Equity at the May API Refining meeting in Atlanta. Of note were specific concerns about the performance and usability of Version 5.0 which are documented in the minutes from the June 9th SWG meeting (Appendix VI).

Mark was pleased to report that Equity responded admirably to the feedback and has corrected all of the major problems highlighted by the group. The resolution of these issues is also documented in Appendix VI.

The SWG recommended V5.01.0035 as released to the User Group as a production worthy version of the software with the only warning to users that comparison testing has not been completed by the group. There are significant differences between V5.0 and earlier versions of the API RBI software that the SWG will attempt to better quantify in comparison studies to be conducted between August and the late 2004 or early 2005. Findings will be presented at the next User Group meeting in February 2005.

The SWG will meet on November 16, 2004 from 8:30 am to 4:00 pm.

- B. Version 5.0 Software Guidance – Lynne Kaley reviewed the structure, basic functionality, and enhancements of the new software. The slides from Lynne's presentation can be found in Appendix VII. The guidance document helps new users

follow the new software navigation and highlights technology changes from earlier versions of API RBI software.

A CD with V5.01.0035 and associated documents and tools were distributed to each User Group company. All software and documents from the release are also available on the website at <http://equityeng.com/distribution/>. Registration is required access to the download site at <http://equityeng.com/logon/>.

7. CONSEQUENCE MODELER UPDATE

Phil Henry presented information on the update to the consequence model. The details of this effort are provided in Appendix VIII. The new consequence modeler will have the added capabilities of:

- Additional events such as BLEVE's, and VCE's
- Replaces look-up tables and curve fitting with actual area calculations
- Fluid property solver has over 200 pure component fluids for a broader handling of representative fluids
- Handles Liquid/Gas mixtures
- Handles actual material balance mixtures from the 200 pure component fluids in the solver
- Simplifies the process of adding representative fluids

Documentation of the approach will be completed for TWG review in October. The new consequence module approach will be released in the November 2005 release with the ability to continue using the current look-up table approach or upgrade to the new module.

8. PUBLICATION 581 (BRD) UPDATE

The Base Resource Document is being completely revised to update it to reflect the current technology, be consistent with Version 5.0 software, and incorporate newly developed modules. It is expected that the revised document will be complete by the end of 2004 and will be balloted in multiple ballots in 2005.

9. NEW BUSINESS

- A. Injury Cost – Ryan Sitton of Berwanger propose using the National Safety Council data to express injury cost in dollars instead of area. The user group agreed that this consequence input should remain as is because of liability concerns. The user has the option of customizing the consequence model to suit their company approach and the user group does not want to give the impression we are setting an industry standard for injury cost.
- B. API Terminal Risk Assessment Update – Mark Geisenhoff provided an update on the activities of the Terminal Risk Assessment Task Group. The goal of this project is to develop a risk model for storage terminals that can be presented to regulators that addresses not only the tank, but also all equipment in the facility. Mark is serving as a

liaison to this group to help ensure that the risk approaches for RBI and terminals are consistent with regards to storage tanks. One of the contractors hired to validate the terminal risk approach had several questions about the assumptions used to develop the ar/t approach, which is also used in the API RBI tank module. Since Mike Conley of Equity developed this approach, he has agreed to respond the contractor's questions.

- C. Comparison Study Funding – Mark Geisenhoff raised the issue of funding a study to compare the results of Version 5.0 with those obtained in 3.3.3 in order to give users information on the differences. Flint Hills has agreed to offer its North Pole Refinery as a site to have Equity perform the study. ConocoPhillips has also decided independently to have Berwanger conduct their internal comparison. There was much discussion about whether the user group should fund one or both studies, but it was generally agreed that having the results from both would be beneficial.

ACTION: Lynne Kaley and Ryan Sitton will develop a joint list of objectives for both studies to ensure consistency. Equity and Berwanger will submit proposals to the Steering Committee for a decision on funding.

- D. Inspection Database Links – Brian Busch of BP proposed that Equity contact representatives at PCMS to discuss a database link between API RBI and PCMS's inspection database software. Because PCMS's user group has agreed to seek this link with the API RBI software, the RBI user group agreed that such discussions should take place as soon as possible, however, a prioritized list of all relevant software packages must be developed to formalize this activity.

ACTION: Equity will contact PCMS to discuss linking the two software products and report the results at the next Steering Committee meeting. Equity also will survey the user group members to determine which other software packages should be included on the prioritized list.

10. NEXT MEETING

The RBI Steering Committee will meet on January 13, 2005 at the TIEC Training Center in Houston TX. The next meeting of the RBI user group will be held on February 23-24, 2005, in Houston, TX. The location of this meeting will be determined at a future date.

11. ADJOURNMENT

Having no additional business, the meeting was adjourned at 3:10 p.m.

Respectfully submitted,



Roland A. Goodman
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