

**Spring 2006 Minutes of Meeting  
American Petroleum Institute**

**Subcommittee on Pressure Relieving Systems  
Task Force on RP-520**

Hyatt Regency; Dallas, TX

**Monday May 01, 2006, 1:00 P.M. – 6:00 P.M.**

**Tuesday May 02, 2006, 1:00 P.M. – 3:00 P.M.**

Phil Henry – Chairman

- I. Registration was taken – there were 29 attendees. Handouts consisted of the agenda, previous meeting minutes, technical interpretations, RP 520 Part 1 ballot summary with comments, the ballot itself, and additional ballot comments from Shell and Berwanger that were submitted separately.
- II. Aubry Shackelford was appointed secretary.
- III. Minutes to Fall 2005 meeting were approved.
- IV. One inquiry / interpretation was reviewed

- a. 520-I-01/05

Similar discussion regarding the response to the inquiry as in Fall 2005. All of the piping between the source of pressure, the relief device, and the protected equipment should be considered. Dynamic analysis of the system is recommended as it may show “cycling” of the relief valve. API RP 520 Part 2 Section 4.2.2 was specifically addressing the case for process lines attached to pressure vessels with a relatively large reservoir of high pressure fluid. Supplementary questions 1 and 2 were agreed to be consulting, and would not be done. Additional discussion on the second day centered on the specific wording with respect to the term “pressure source”. The use of a remote sensing pilot operated valve was discussed as potential solution to this.

Aubry Shackelford drafted the language of the response and the response was discussed on the second day. The attendees voted on the response language – two abstained and the remaining attendees approved.

Response: API RP 520 Part 2 Section 4.2.2 intends that all of the piping between the pressure source and the pressure relief valve should be considered for the inlet pressure drop calculations. API RP 520 Part 2 Section 4.2.2 specifically addresses the case for a process line attached to a pressure vessel with a relatively large reservoir of fluid. The user is cautioned that additional dynamic analysis may be required for the instance of a pressure relief valve downstream of the pressure reducing valve. We have not provided answers to your supplemental questions since the Task Force considers these to be consulting in nature.

- V. The ballot results and comments were reviewed. Phil Henry went through the comments and applied those that were simply editorial in nature. The specific

resolutions proposed for each comment were tracked by Phil in the comment document, with those items that were agreed to be technical changes highlighted for inclusion in the next ballot. Additional items of note during the ballot comment review process follow.

- a. Item 4 – the phrase “any significant” is not well defined and can be misconstrued; however, it was originally added because there was no specific quantitative guidance on what significant is. The phrasing was changed to “appropriate”.
- b. Item 18 – the description of the discharge coefficient to use based on whether or not the fluid was choking was intended as written.
- c. Item 28 – Saturated liquid can be handled with either methodology for subcooled liquids (D.2.3) or two-phase fluids (D.2.2), as both equations reduce to the same calculations at a saturation pressure ratio of 1. Modifications were made to Table D.1 and paragraph D.2.2 to make this clear. The document was reviewed to ensure the same discharge coefficient was recommended for both calculations, and it is (0.85 used).
- d. Figure D-2 was removed entirely since it was felt that it needed a considerable amount of work and did not offer much more than what was already presented elsewhere in the document.
- e. Update made to Table 7 to clarify that properties are for the ideal gas was provided by Chester Brooke.
- f. Equation for the ‘C’ factor in vapor sizing equation was provided by Ed Zamejc and briefly reviewed on the second day; Ed Zamejc will send units to Phil Henry.

The updates to ballot discussed on the first day were passed out on the second day – four technical changes are to be formally rebaloted.

## VI. Old business

- a. Phil Henry will ask Robert D’Alessandro to present information on thrust forces at the next meeting in San Francisco.

## VII. New business

- a. Comments from COWI were discussed. The initial comments regarding Section 3.3.3.1.3 were reviewed and it was decided that the task force did not agree with the proposal; therefore, no modifications were proposed for the incorporation of the “total variable back pressure”. Regarding Section 3.3.3.1.3, first bullet, the task force decided the modification was not needed as any consistent evaluation between the two was acceptable. Regarding Section 3.3.3.1.3, second bullet, the task force has already removed the phrase in question as part of the revision being balloted. The proposed modification to Section 3.6.3.2.2 was accepted. The proposed modification to Figure 35 was accepted. The formula to calculate the curves in Figure 35 was added to the future action item list for the next

edition of Part 1. The proposed modification to Section 3.9.2 was accepted.

- b. The working items for the update to RP520 Part 2 were discussed. Each item was reviewed to determine whether or not it was still outstanding, whether or not it should be addressed for the next edition, and who would take responsibility for the action item. Phil Henry tracked any modifications to these working items and will send this list to the task force for further review, along with the request for volunteers for the 'unassigned' action items.

VIII. The task force adjourned the meeting at approximately 3:00 on Tuesday, May 02, 2006.

### **Specific Action Item Summary**

- a. Phil Henry to apply all editorial changes to ballot and submit to API for rebalot.
- b. Ed Zamejc to provide units for 'C' factor in SI units.
- c. Chester Brooke to submit inquiry regarding difference between 1998 guidance by Leung to flash near critical temperature to 70% of the relief pressure isenthalpically as opposed to the current guidance to flash to 90% of the relief pressure isentropically. Aubry Shackelford to draft the response to this inquiry.
- d. Phil to send out RP520 working item list and request members to take ownership of unassigned items. Specific responsibilities for action items for Part 2 are tracked in this working item list.