

Task Group on Drilling and Well Servicing Structures  
SC8/TG1  
(Spec 4F, RP 4G)

Minutes of Meeting  
June 2010 Standardization Conference

Mark Trevithick, Chair

- Meeting was called to order at 9:30 am.
- Attendance roster was circulated and passed on to API staff
  - A motion to accept the minutes of the 2009 conference meeting without reading was made, seconded (made: Ken Kondo, second: Mark Sibille) and passed unanimously.
- Old Business
  - Item 6102: Implementation of AISC 2005 Specification
    - API 4F references AISC 1989 (9th edition WSD) that is still available, but no longer published. The earliest change to an updated AISC document will be after the 2010 release (which was available on the AISC website for review earlier this year). Anthony Mannering, Rich Soucek and Mark Trevithick met with the SC2 task group, who is working on the same issues. The predominant finding is that the SC2 group has identified the need for calibration to the current industry's practice.
    - At the 2010 meeting:
      - TG1 will need to perform benchmarking of current structures to the new standard to ensure a comparable level of reliability
      - A proposal by Stress Engineering (requested from them by Mark Trevithick) was presented and discussed
      - Proposal is for modelling four different types of structures and comparing results based on current specification with the new specification using load combinations per ASCE 7 (default loadings per AISC), with and without the 1/3 allowable increase in stresses and reporting results
      - Group agreed that a Well Servicing Masts should be included in SES work scope as a fifth structure, and that as a lower priority, a substructure model would be desirable, either now or in a future year
      - Group agreed that scope should be modified to add a literature survey to investigate experiences of other industries in use of new AISC spec
      - Perhaps it would be best to develop a multi-year plan where the workscope is prioritized
      - Proposal requires model donation for use by SES
      - Paul Meade-Clift willing to donate model of 750 k mast with substructure and Well Servicing Structure
      - Bob Donnally to check if NOV can contribute models
      - Confidentiality agreements would be needed for IP

- The option to do additional work with extra runs with other codes should be kept in mind
  - Motion to recommend to SC8 that moving ahead with SES' proposal (as modified) made by Ward Turner and seconded by Anthony Mannering passed.
  - Chair will work with Stress to get a modified proposal
  - A SR3 form was previously submitted based on original SES proposal; **chair will pursue with API staff to modify SR3 to address increase in scope.**
- Item 8101: API RP 4G 4<sup>th</sup> Edition Draft
    - Presentation and discussion of draft led by task group chair Chris Ponzi who provided explanation of work process to-date.
    - Group agreed to consult TG4 regarding wire rope inspection criteria as there was disagreement over broken wire allowances for raising lines.
    - Guidance required from API staff regarding reaffirmation \ letter ballot timeline
    - A motion was made (by Robert Urbanowski and seconded by Bide Alford) and passed to send current 4G draft, revised per meeting comments and recommendations from TG4 to **letter ballot.** *(At the TG4 meeting the next morning, a new work item was established to address development of wire rope replacement criteria, and that TG4 recommended that TG1 issue the 4G draft for letter ballot with the existing criteria in place until TG4 could complete its work on this item. SC8 concurred with this recommendation.)*
  - Item 8102: Special Processes Identification
    - At the 2009 conference the group motioned, seconded and passed a proposal to add a section 11.9 defining special processes and send same to letter ballot, provided a letter was also issued to SC18 clarifying that when material certifications such as MTR's provide validation of material properties, no special process validation is required; the letter was to be drafted and circulated for comments before submitting spec item for letter ballot.
    - The letter of clarification was drafted by Mark Sibille, but was not circulated and the item never went to letter ballot.
    - At the 2010 Meeting:
      - A workgroup meeting of TG2 and TG3 modified the proposed wording of TG1 to incorporate the text of the letter to SC18 directly in the specification wording. They further limited Bolt Pretensioning as a special process to those instances where a specified preload is specified by design.
      - The TG1 workgroup adopted the TG2/TG3 wording and further modified Bolt Pretensioning to state that process validation using the Turn-of-the-nut method in accordance with AISC is acceptable where appropriate.
      - Motion made (by Robert Urbanowski, seconded by Mark Sibille) to accept the wording below passed and item is to be **sent to letter ballot.**

*Add new section 11.9 to 4F 3rd edition as follows:*

## **11.9 Processes Requiring Validation**

The following processes shall require validation when the specified properties of the final product cannot be verified after the process completion:

- NDE
- Welding
- Heat treating

Where the properties required are specified in the design, and production material qualification (e.g. Material Test Reports, testing of Qualification Test Coupons, etc.) is performed to verify that the required properties are achieved in each production heat/heat treatment lot, no further validation is required. Where a heat treatment process is specified, but the results are not verified by testing of each production heat/heat treatment lot of material subjected to the process(es), the process(es) shall be validated by testing of samples, which demonstrate that the process will consistently produce the properties required by the design. Validation method and results shall be documented.

- Bolt pretensioning

When a specific preload value is required by the design.

Process validation in accordance with the turn-of-nut method per AISC's Research Council on Structural Connections document "Specification for Structural Joints Using ASTM A325 or A490 Bolts" is acceptable.

- Item 8103: Ice Loading
  - At the 2009 Conference, a proposed wording was accepted and sent out to letter ballot. This item passed letter ballot with no comments.
  - **The letter ballot item (item 1843) is awaiting publication.**
  - The item will now be dropped from the agenda.
- Item 8104: Addendum to API 4F 3<sup>rd</sup> edition
  - At the 2009 Conference, a group of Editorial corrections to the specification which were presumed to not require letter balloting were presented and discussed. A

motion was made and seconded to accept editorial corrections and to send them onto API staff for publication. Motion passed unanimously.

- Also at the 2009 conference, the TG1 workgroup voted to send to letter ballot a proposal to add ratings specifically for service rigs to include one for single string operations (i.e. hook load only with no simultaneous setback) as well as additional ratings for operations with setback and/or rods. The proposal (ballot item 1845) passed letter ballot with one comment deemed to be non-persuasive.
  - **Both the Editorial corrections and the letter ballot item (ballot item 1845) are awaiting publication.**
  - This item will be dropped from agenda once published which the group assumes can occur within the next few months.
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- Item 8105: Revise 3<sup>rd</sup> edition for addition of Crown Mounted Compensators
    - Currently CMC's are covered in spec 8C, but the group believes most manufacturers design all or most of the structures of this equipment per 4F.
    - Reuel Lataquin and Chris Ponzi will liaise with Ken Kondo on TG3 to draft new text to be included in 4G new revision and 4F addendum explaining the split between these standards for CMCs.
    - This likely will require a change to spec 8C mirroring this split.
  - Item 9101: Revise API 4F Purchasing Guideline
    - No work was done in the last year. Mark Trevithick agreed to draft a proposed wording to be circulated within a short time for discussion.
  - Item 9102: Revise specification covered equipment list to ensure matching with the API online composite list.
    - The proposed specification change (below) identifies product names that match the online composite list. The group discussed recommending changing the composite list product categories versus changing the 4F scope. The current specification scope lists "guyed masts" in addition to the composite list categories, but the group agreed that this is not a required category and could be included under "masts" as a category. Thus the change in the 4F scope statement did not materially affect the scope, and it was felt that this change would avoid any possibility of new requirements for additional quality surveys of manufacturers for a new product category.
    - A motion was made to **send the text to letter ballot** (by Anthony Mannering, second by Reuel Lataquin) and passed unanimously.

*Revise 4F 3rd edition Scope section as follows:*

## **Scope**

This specification states requirements and gives recommendations for suitable steel structures for drilling and well-servicing operations in the petroleum industry, provides a uniform method of rating the structures, and provides two PSLs.

This specification is applicable to all new designs of all steel *Derricks, Masts (including masts with guylines and service rig masts), Substructures, and Crown Block Assemblies.*

Annex A provides a number of standard Supplementary Requirements (SRs) which apply only if specified by the purchaser.

- New Business
  - A discussion of where racking boards and racking board mounted equipment such as pipe handlers are or should be covered (4F \ 8C \ 7K) was made; the board is included in 4F as “racking platform”, but no conclusions on equipment coverage were made.
  - A discussion of missing coverage of hydraulic systems \ components was made. A motion made (by Richard Ackerman, second by Bob Donnally ) to create a work group and to **submit a new work item** to formalize wording for hydraulic cylinder applications relative to API 4F and RP 4G scope of work. Richard Ackerman and Norm Dyer volunteered to help.
  - The group discussed a perceived need for a change to the specification to add buckling requirements for hydraulic cylinders used to erect mast and substructures. A motion was made (by Robert Urbanowski, seconded by Eric Deutsch) to **send the wording below to letter ballot** and the item passed unanimously.

*Add new section 8.5.1 to 4F 3rd edition as follows:*

### **8.5.1 Hydraulic Cylinders for Mast and Substructure Erection**

Hydraulic cylinders for mast and substructure erection shall be designed to have factor of safety to combined buckling and bending per AISC for the expected raising loads over the entire raising envelope. This analysis should account for cylinder mounting conditions and initial imperfections due to cylinder bearing tolerances.

- New text for 4F Section 8.8 was drafted as a result of a recommendation of the workgroup meeting on Monday, for discussion at the main meeting. This text was

intended to clarify and limit the use of special requirements for “tie-down clamps” as defined in this spec section to those structural components used for preventing free-body movement of skiddable structures, as this was the original intent of the task group. The text was further modified through discussions, and a motion was made (by Bob Donnally, second by Anthony Mannering) to **send this to letter ballot**; the item passed unanimously.

*Replace paragraphs 5 and 6 of 8.8 with the following:*

Structures which are unable to meet the requirements for freestanding structures shall incorporate suitable structural components to prevent such movements.

1. Such components, when used on skiddable drilling structures shall be termed *tie-down clamps* and shall be rated to resist overturning and sliding loads in all load combinations calculated using overhanging vertical live loads, design lateral wind, seismic and dynamic forces due to vessel motion factored by a value of 1.25, at AISC allowable stress levels without the  $\frac{1}{3}$  increase for wind or dynamic loading.
2. Structural components other than tie-down clamps shall be rated in accordance with Section 8.1.

Some structural connections provide two methods or paths for carrying loads. An example of such a dual-load path connection is a derrick leg splice or derrick base plate connection with flange connections, where compression is carried by the bearing of one flange plate on the other and tension is carried by bolts in tension. Mast legs designed to carry compression loads by contact bearing and tension loads thru pin connections are another example.

- The third edition does not explicitly include “Pipe Lean” in the load tables of section 7. The group agreed that it is implicitly required as a component of “Setback” loads, but agreed to add a note to Table 7.1 for clarity. A motion was made (by Robert Urbanowski, seconded by Reuel Lataquin) to **send the wording below to letter ballot**; the motion passed unanimously.

*Add a new note number to the setback column in each table of section 7 and the following note to the Notes section of all:*

“Pipe lean is a component of setback loading that must be considered.”

- The meeting was adjourned at approximately 12:10 pm.



# RECORD OF MEETING ATTENDANCE

Group: SC8/TG 1

Chairperson(s): Mark Trevithick

Meeting: Drilling and Well Servicing Structures

Time: 9:30am-12:00pm

Date: 06/29/2010

Committee members should make changes to their contact information on the roster provided. Visitors adding names to the roster will not automatically become members of the committee.

Indicate in the first column (  ) if you are:

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(R) Representing a Committee Member (if so, state the member's name),

(V) Visitor – ONLY voting members or their representatives may vote, or

(S) Staff.

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