



# Status Report on ASME Task Group on Subsea Applications

**BSEE Workshop**

May 8, 2015

Daniel T. Peters  
Structural Integrity Associates, Inc.  
16339 Irish Road  
Edinboro, PA 16412  
814-440-8173

# Task Group Subsea Applications Charter

- The formation of a formal task group to handle HPHT issues is in process.
- **CHARTER**

Scope: This Task Group is responsible for reviewing and evaluating the need for modifications to the Section VIII, Division 3 Code for improved suitability to Subsea Applications and to address the concerns of the stakeholders in this area. Further, it will be responsible for making recommendations to ASME VIII-2 and other standards, as necessary, to maintain consistency within all of ASME Section VIII Divisions.

## Focus of the Task Group

- Group was formed to focus on clarification of ASME rules based on issues brought to light relative to designers referencing them for subsea applications
- It is recognized that the equipment is not intended to be ASME stamped equipment
- ASME is collaborating with API for clarification of the rules to allow for direct referencing for subsea equipment

# First Meeting

- 24 in attendance in person or teleconference

The Westin Galleria & Westin Oaks

5060 West Alabama

Houston, TX 77056

January 28, 2015 1:00-4:00PM

- Attendance is mix of regulators, operators and manufacturers

# Action Item Listing (1 of 3)

- 14-2396 - Review alternative criteria for life assessment and when fatigue vs. fracture mechanics should be used for “remote” equipment.
  - Leak-before-burst and fatigue screening criteria and their applicability
  - 17R8 primary barrier concepts discussed
- 14-2397 - Review definition of extreme / survival loading in Section VIII Division 3
  - “Extreme” and “survival” was compared to “occasional” and “abnormal” and discussed definitions
- 14-2398 - Review Load vs. Displacement criteria such as the double slope method or other alternative criteria for inclusion in VIII Division 3
  - Development work or clarification of the method is needed for this to proceed
- 14-2399 - Review stress allowables in bolting between API and ASME VIII Div 2 / 3
  - Unlikely significant change in ASME allowable, but better understanding of design basis may be developed

## Action Item Listing (2 of 3)

- 14-2400 - Review of VIII-3 regarding load shoulders and high bearing stress
  - Discussed issues briefly, but direction was needed by team
- 14-2401 - Review of all definitions of loads including misalignment, assembly loads, and use of normal operation, upset, etc in VIII Division 2 and 3
  - External pressure considerations were discussed. API 17TR12 was mentioned as defining external pressure. Pressure containing components focus of group, not pressure controlling.
- 14-2402 - Consideration of inclusion of reference or crack growth rate information in subsea applications, this would include both  $da/dN$  and  $K_{th}$  of HPHT equipment
  - Looking at reference data which may be included in ASME or referenced by ASME
- 14-2403 - Modifications to KD-10 or inclusion of similar section for development of similar information for sweet / sour environments. Consider current requirements in B31.8 and DNV
  - Discussed KD-10 for sour gas service. Also B31.8 Chapter 9 and DNV 112

# Action Item Listing (3 of 3)

- 14-2404 - Review QA/QC requirements for materials in ASME vs. API
  - Discussion of ductility requirements. Discussion that API is reviewing adequacy of testing for API materials. Potentially a gap analysis would be useful first step.
  - Discussed ability to include API materials in ASME approved material listings.
  - Materials currently established in Section II Part D (yield and tensile) would be simplest for inclusion in ASME Div 2 or Div 3, but other API materials could also be included upon request
- 14-2405 - Consider concerns regarding the local strain limits posed by API
  - NACE limitations as an alternative to current ASME strain limits were discussed
  - Use of alternative approaches, including ones using Lode parameter may be discussed if justifiable.
- Fatigue Approaches to Clad construction
  - Inclusion of clad layers in structural analysis was discussed.
  - Methods for quantification of clad stress state
  - Residual stresses, differential thermal expansion, fracture toughness, ductility and crack initiation point (surface or at fusion line)

## Next ASME Task Group on Subsea Applications Meeting

- Working issues in various teams.
  - The next meeting of the Task Group on Subsea Equipment will be at the  
ASME Pressure Vessels and Piping (PVP) Conference  
[www.asmeconferences.org/pvp2015/](http://www.asmeconferences.org/pvp2015/)  
Boston Park Plaza Hotel, Boston, Massachusetts  
July 22, 2015, 2-5 pm  
prior to next Subgroup High Pressure Vessels (SG-HPV)  
meeting
  - Next meeting SG-HPV (VIII-3) is also at PVP  
July 23, 2015, 8 am – 5 pm
- Each will be available by telecon and in person