

# **BSEE Bolting Forum**

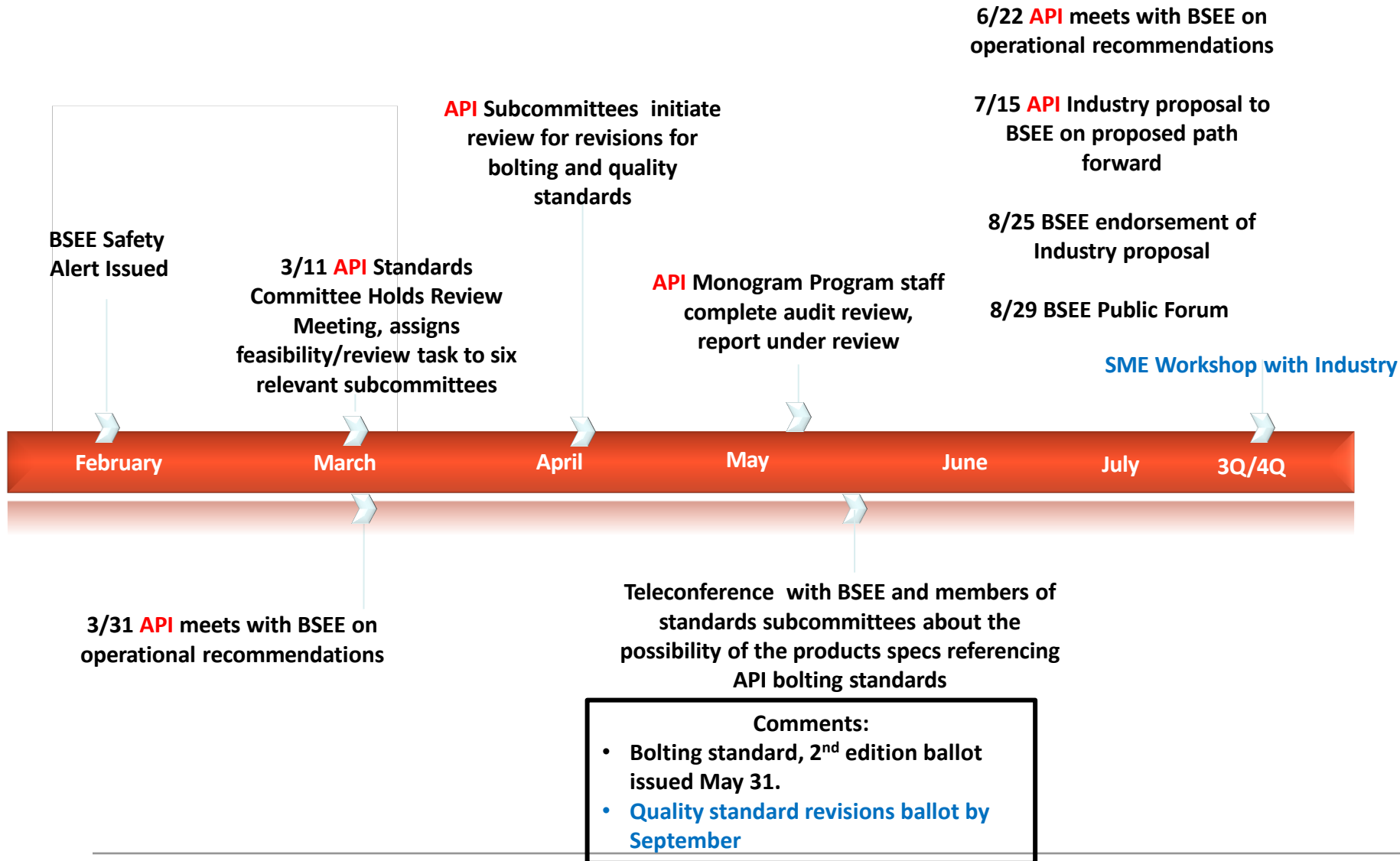
## **Update on API Bolt Activities**

**Monday  
August 29, 2016**

1. Industry is here to share work that has been undertaken to address Subsea Blowout Preventer (BOP) bolting issues
2. Work to date has benefited from ongoing collaboration between Operators, Rig Contractors and Original Equipment Owners (OEMs)
3. Industry has been engaged with BSEE on the issue since 2014
  - Specifically addressing Safety Alert 318
  - Committed to a collaborative working relationship moving forward
4. Industry looks forward to continued engagement with BSEE, the National Labs and other parties in efforts to address the issue



# Bolting Timeline 2016



## 1. Research

- a) Review existing research
- b) Work with BSEE on the terms of reference for upcoming research projects

## 2. Standards

- a) Enhance applicable bolting requirements in multiple API standards

## 3. Quality Assurance, Quality Control

- a) Review latest requirements to determine if additional updates are needed

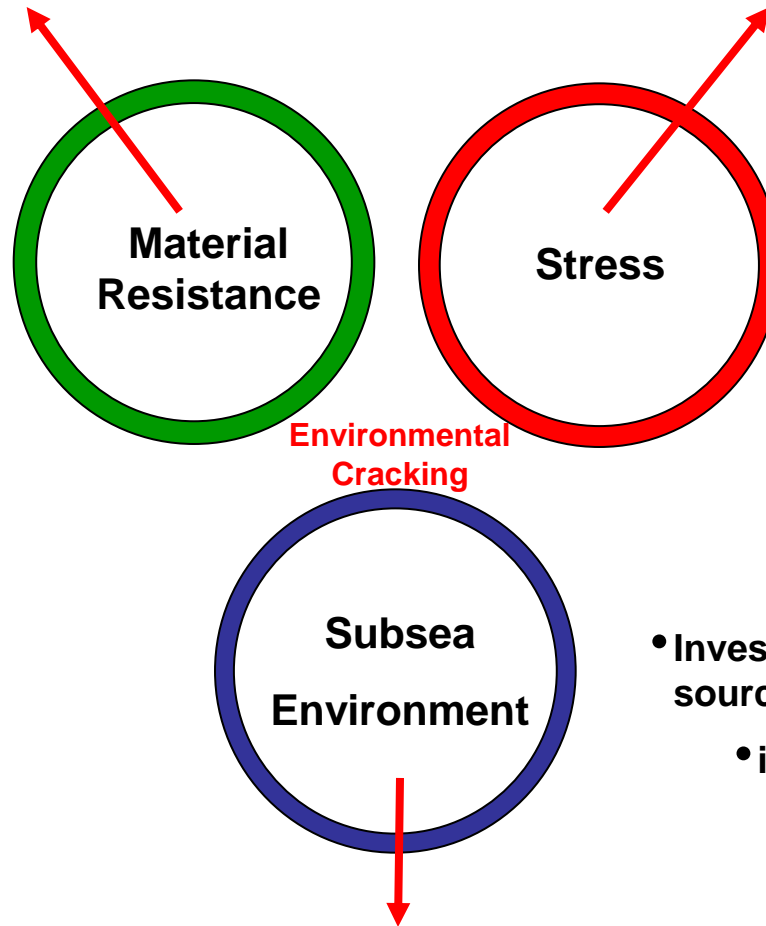
## 4. Multi-Segment Task Group and Bolting Workgroup

- a) Established diverse industry work groups composed of Operators, Drilling Contractors and Original Equipment Manufacturers (OEMs)
- b) Focused on short and long term standards and research related projects, and on near term operational activities

1. API specifications (standards) include requirements for the qualification, production and documentation of carbon, alloy steel and corrosion resistant alloy (CRA) bolting used in the petroleum and natural gas industries
2. Key topics covered
  - a) Raw Material requirements
  - b) Manufacturing controls (including forging, thread forming)
  - c) Heat treatment
  - d) Microstructure
  - e) Hardness
  - f) Testing
  - g) Traceability
  - h) Licensing requirements
3. Per specification, the definition of bolting – Section 3.1.1:
  - a) All-thread studs, tap-end studs, double-ended studs, headed bolts, cap screws, screws, and nuts

# Factors Proactively Addressed by Industry on Bolt Issue

- 20 E manufacturing and testing requirements



- Perform torque at rig per procedure with additional oversight

- Investigate and minimize probable sources for environmental cracking
  - i.e. Hydrogen sources

# Summary of actions taken by Industry

1. Engaged Operators, Rig Contractors and OEMs
2. Developed Multi-Segment Task Group Report with recommendations related to improvements in standards/technical programs to address bolt issue (Feb. 2016)
3. Established Workgroup to provide recommended path forward for operations (and respond to safety alert):
  - a) Defined “critical bolting” as bolting that the failure of which could result in loss of containment of wellbore fluids to the environment; focus of recommendations
  - b) Increased adoption of API bolting specifications
  - c) Upgrade of critical bolting at higher risk (i.e. potential hardness issue)
  - d) Enhanced quality assurance/quality control
  - e) Updated make-up procedures, with additional engineering rigor and oversight
  - f) Elimination of electroplated zinc coatings
  - g) Enhanced failure reporting with wider distribution



# Industry Commitment to Safety as a Core Value

Industry stands committed to continuous improvement in:

- System reliability
- System integrity
- The total system of safety

Industry stands committed to effectively addressing bolt issue through:

- Research
- Standards and technical programs
- Quality assurance/quality control
- Collaboration with BSEE and stakeholders