

ASME H₂ Pipeline Codes and Standards

INTERNATIONAL PIPELINE CONFERENCE
CALGARY, ALBERTA, CANADA

OCTOBER 5, 2004

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ASME



ASME Codes and Standards

- ASME's Codes and Standards organization publishes standards and accredits users of standards
 - First standard issued in 1884
 - Approx. 600 consensus standards
 - Over 100 ASME standards committees
 - Over 3,600 volunteer committee members
 - Address pressure technology, nuclear, safety, standardization, and performance test codes

ASME Codes and Standards

■ Voluntary Standards

- Standard: set of guidelines for voluntary use or invoked by contract
- Standards may be cited by Government authorities as a means of complying with regulations – one means is by direct adoption
- The voluntary consensus standards process in the US has been shown to be the best way to produce codes and standards that meet the needs of all stakeholders.
- When consensus is not achieved, the resulting standards may be rejected by key stakeholders, or may inappropriately advantage special interests.

National Technology Transfer And Advancement Act of 1995

- Signed into law on March 7, 1996 as PL 104-113
- Continues the policy changes initiated under OMB A-119
 - *Federal Participation in the Development and Use of Voluntary Standards*
- Relative to Standards:
 - Generally requires Federal agencies and departments to use technical standards developed or adopted by voluntary consensus standards bodies
 - Directs Federal agencies and departments to consult with and participate in voluntary consensus bodies developing technical standards

ASME Codes & Standards

■ ASME Consensus Standards

- Openness, balance of interest, due process, consensus

■ American National Standards Institute (ANSI) accredited procedures

■ Compliance with World Trade Organization (WTO) Technical Barriers to Trade (TBT) principles for international standards development

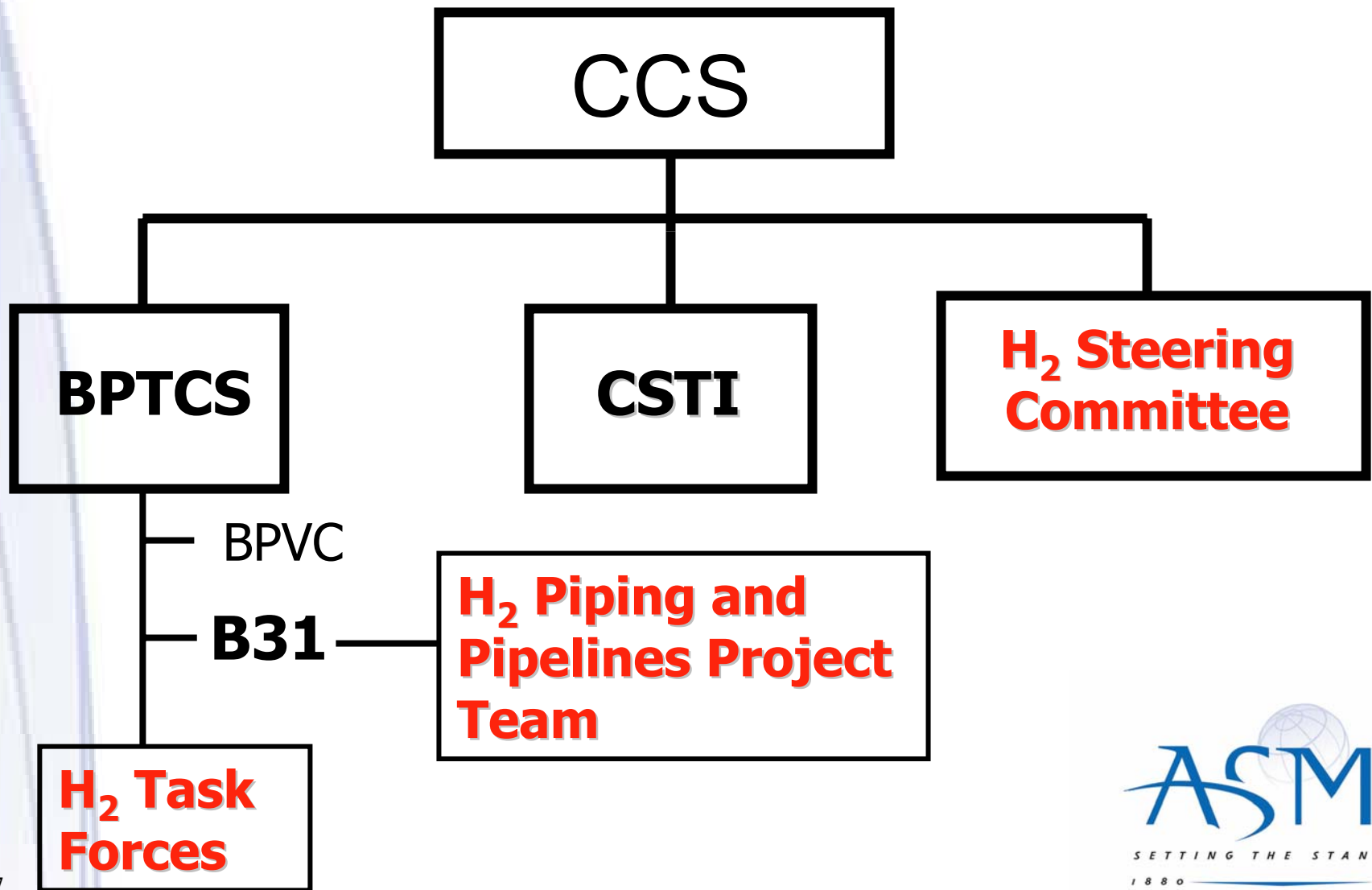
- Transparency, openness, impartiality and consensus, effectiveness and relevance, coherence, and development dimension.

ASME Codes & Standards

■ Standards development steps

- Initiate Standards Action
- Prerequisite technical work, R&D
- Draft standard – project team
- Distribute to cognizant groups for review and comment
- Standards Committee approval
- Public review
- Supervisory Board approval
- ANSI approval

ASME H₂ Standards Organization



Existing ASME Codes and Standards Applicable to H₂ Infrastructure

■ Tanks:

- Boiler & Pressure Vessel Code (BPVC) Section VIII
 - Division 1 – Pressure Vessels
 - Division 2 – Alternative Rules
 - Division 3 – High Pressure Vessels
- Code Case 2390
 - BPVC Section VIII, Div.3 - Composite Reinforced Pressure Vessels
- BPVC Section X
 - Fiber-Reinforced Plastic Pressure Vessels
- BPVC Section XII
 - Rules for Construction of Transport Tanks (1st edition July'04)

Existing ASME Codes and Standards Applicable to H₂ Infrastructure

■ Piping and Pipelines:

- B31.1 - Power piping
- B31.3 - Process piping
- B31.8 - Gas pipelines
- B31.8S - Managing gas pipeline integrity

■ Valves, Flanges, and Fittings:

- B16.34 - Valves
- B16.5 - Pipe flanges and fittings
- Many others

New Standards Actions

- Code for hydrogen piping and pipelines - B31 Hydrogen Section Committee formed to develop a new code.
- Portable, storage, and transport tanks in hydrogen service - BPVC project team formed to develop needed changes to existing codes or new standards.

Code for Hydrogen Piping and Pipelines

B31 Hydrogen Section Committee to develop a new code for H₂ piping and pipelines

- Include requirements specific to H₂ service for power, process, transportation, distribution, commercial, and residential applications
- Balance reference and incorporation of applicable sections of B31.1, B31.3 and B31.8
- Have separate parts for industrial, commercial/residential and pipelines
- Include new requirements for construction, operation, and maintenance

Portable, Storage and Transport Tanks in Hydrogen Service

B&PVC Project team to develop requirements for H₂ gas storage up to 100MPa (15,000 psi)

- Metallic Tanks
 - New requirements for BPVC Section VIII Division 1
 - New post-construction guidelines for inspection of cracking
 - New rules for periodic in-service inspection and testing
 - High strength steel and aluminum
- Composite Tanks
 - Develop new requirements for BPVC Section VIII Division 1
 - Include composite metal/FRP tanks, FRP, lined FRP tanks
- Nonmetallic Tanks
 - Develop a new performance-based standard for portable tanks.

H₂ Standards Development Project Schedule

- Task Force Recommendations: completed
- BPTCS Action: completed
- Technical Reports: JUL'04 - NOV'05
- Draft Standards Available: NOV'05
- Standards Committee: NOV'05 - NOV'06
- Finalize Standard : MAR'07
- Publish: 3rd Quarter '07

Invitation to Participate

- Anticipate standards needs and make them known to SDOs
 - Industry's needs drive standards development
 - Urgency impacts development schedule
- Participate on ASME H₂ project teams and standards committees
 - Volunteer standards committee membership
 - Industry support on standards committees essential
 - Quality of support impacts technical relevance
 - Level of support impacts development schedule

Invitation to Participate

- Visit ASME H₂ C&S Website:

<http://www.asme.org/cns/hydrogen>

- Staff Contacts:

- H₂ Piping and Pipelines

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Thank You

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