Updating API Standards for Low Temperature and Cryogenic Storage Tanks

Task Group Report

Doug Miller Presentation
Refrigerated Tank Task Group Mission Statement

… a new API standard on … tank systems …

…will reference rather than replace the detailed requirements in API 620 (existing) and ACI 376 (in preparation).

provisions for single, double and full containment storage tanks.

…expand coverage … such as insulation and post-construction activities.
Powerpoint Overview

• 1st SCAST ballot results

• Review issues raised

• Plans to resolve issues
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Affirmative Votes: 30, 24, 25, 24, 25, 24, 22, 24, 23, 21, 22, 23, 23, 22, 24, 25

Negative Votes: 2, 2, 1, 2, 1, 2, 3, 1, 2, 2, 2, 1, 2, 2, 1

Total Ballots: 54, 44, 44, 44, 44, 44, 44, 44, 44, 44, 45, 44, 44, 44, 44, 44

Affirm / Total Ballots: 56%, 55%, 57%, 55%, 57%, 55%, 50%, 55%, 52%, 48%, 49%, 52%, 52%, 50%, 55%, 57%

Affirm / Votes Cast: 94%, 92%, 96%, 92%, 96%, 92%, 88%, 96%, 92%, 91%, 92%, 92%, 96%, 92%, 92%, 96%
Four Types of Ballot Comments

• Content
• Scope
• Non-Mandatory Language
• Inter-Standard Relationships
Comments on Content

- Many affirmative comments, most editorial
- One negative comment (accepted) on volume of secondary liquid container
- Overall very good results!
Comments on Scope

- RTTG proposed
  - scope down to -320°F.
  - Remove “Hydrocarbon” from API 620 title

- Chevron and BP emails:
  - “Behavior and requirements… are different”

- RTTG is contacting CGA to discuss what is different. Then will discuss again with Chevron
Comments on **Non-Mandatory Language**

• “NFPA59A (std on LNG facilities) always relies on mandatory codes and stds… API 620 has been a mandatory code and ACI 376 is being written as-such”

• “API 625 contains mix-match of mandatory and non-mandatory”
Replies on Non-Mandatory Language

- RTTG is editing to fix a number of “should”s to “shall”s.
- API tank standards have always had some “should”s.
- Forwards of API 620, 650, and 653 explain:

"Shall: As used in a standard, “shall” denotes a minimum requirement in order to conform to the specification.
Should: As used in a standard, “should” denotes a recommendation or that which is advised but not required in order to conform to the specification."
Comments on Inter-standard Relationships

• Background

• Objections and Replies
Current Variety of Containment Concepts
**Background** on Inter-standard Relationships

- In 2003 ACI began working on ACI 376 for concrete containers for refrigerated, liquefied gases (LNG was the big focus).

- In 2006 API CRE authorized the RTTG, updating of API 620Q/R and preparation of API 625.
Ballot comments on API 625
Inter-Standard Relationships

- What is Purpose of API 625?
- NFPA59A already decided …
- Mandates for standards
- Overarching structure of API 625
- Precedents for such inter-std relationships
- Conflicts between the rules
1. To coordinate the complete “tank as a system”
   - Define Containment Types
   - Seismic Ground Motion
   - Capacity and freeboard definitions

2. To “fill gaps” not belonging in steel or concrete standards
   - Insulation, Instrumentation, Fire Protection, Foundation Heating, Relief Valves, Commissioning, etc
NFPA59A already decided ....

"Discussions with NFPA 59A indicate NFPA 59A will not refer to API 625 as the primary document for LNG tank design, but will instead direct users to ACI 376 for concrete tanks and API 620 for steel tanks. ...review 625 ...if any changes... because of the manner this document will be referenced."

NFPA59A staff confirms that this was the view expressed by one member in an Aug 2008 teleconference but that no NFPA meeting has yet begun discussion of this topic

At Dec 4 NFPA meeting such discussion expected to begin
Mandates, or lack thereof

“NFPA specifically requested that ACI produce 376; they have not requested that API produce a document to augment or modify it.”

Replies:

• Coordination with NFPA59A is important, but …

• NFPA request is not a prerequisite for an API standard
Overarching structure of API 625

“There is no need for the API 625 umbrella document, since this role is already filled by NFPA 59A.”

Replies:

- NFPA59A is an LNG facilities standard. Makes more sense to put tank requirements in a tank std.
- NFPA59A only covers LNG. Only API 625 ties together “tank as a system” for LPG, Ethylene, Ammonia, etc.
Potential Conflicts

Replies:

• Agreed that content overlap should be minimized.
• Agreed that documents should be checked for harmony and eliminate overlap.
• Only question is when to do this? Now that API and ACI drafts are basically complete, I think, the sooner the better.
Conclusions

- Need to promote communication and coordination
- Need to arrange a setting to do this (NFPA committee probably a good place)
- Allow committee-due-process to work
- Need to keep all products (not just LNG) in view.
Next Steps

• Process the comments on content
• Promote a forum for standards coordination.
  – RTTG chair to make formal request to NFPA.
• Educate and communicate about API 625
  – (it will not supersede or modify ACI 376)
Thank You for Listening !