



ACI Committee 376

Concrete Structures for Refrigerated Liquefied Gas (RLG) Containment

Agenda

Sunday, November 5, 2006

9 AM – 5:00 PM

Adam's Mark Hotel

Room: Directors – E

1. **CALL TO ORDER and APPROVAL OF AGENDA** (approx. 10 min.)
2. **INTRODUCTIONS** (approx. 10 min.)
3. **APPROVAL OF MINUTES** (approx. 10 min.)
Minutes of the Charlotte meeting from November 2, 2006.
4. **ANNOUNCEMENTS** (approx. 20 min.)
 - **Upcoming Events:** Alan Hatfield: "Design and Construction of LNG Full Containment Concrete Tanks in the US Market," Denver 2006.
 - **Review of Committee Policies:** Requirements for voting members – 2 missed-votes limit (*ACI Technical Committee Manual, paragraph 1.8*).
5. **TASK GROUP STATUS AND REPORTS**
 - A) Recap of Task Group membership (please see Appendix B). (approx. 10 min.)
 - B) Report from Task Group chairs on draft sections and Letter Ballot results.
 - Chapter 1 – General** Pawski (approx. 10 min.)

The chapter outlines the scope of the document and provides definitions. The first draft has been completed and the status remains essentially unchanged. Tom Howe will be doing some additional work on the draft. The remaining work includes matching listed definitions with what is actually used in other chapters. This requires the other chapters to be essentially in their final form.

Chapter 2 – Materials and Tests

Berner (*approx. 5 min.*)

The chapter has been completed, balloted and approved. The Committee Chair needs to make sure that ACI is notified of the approval of this chapter.

BREAK

approx. 10:15 to 10:30 A.M.

Chapter 3 – Design loads

Krstulovic (*approx. 45 min.*)

The chapter has been completed and re-balloted. The major part of the chapter has been approved. The status will be reviewed during the meeting.

Chapter 4 – Minimum Performance Criteria

Krstulovic (*approx. 90 min.*)

The chapter has been completed and re-balloted. The major part of the chapter has been approved. A couple of negative votes has been addressed and will reviewed and be re-balloted during the meeting

BROWN-BAG LUNCH PRESENTATION (*Aker Kvaerner and Ishikawajima-Harima Heavy Industries Co., Ltd*) 12:00 to 12:50 P.M.
 Augusto Duque and Takasi Kanekura: "Analysis and Design for Spill Condition of LNG Storage Tank"
 The presentation will review the issue of cold spot and spill conditions. The analysis will highlight transient temperature profiles, mechanical properties of materials at low temperatures, concrete softening, concrete stiffening, rebar discontinuities and a parametric study that helps for a better understanding of concrete behavior subjected to sudden cold temperatures.

Chapter 4 – Continued

Chapter 5 – Load factors and strength reduction factors

Krstulovic (*approx. 15 min.*)

The chapter is being developed. Current status of the chapter will be reviewed and discussed during the meeting.

Chapter 6 – Analysis and Design

Hoptay and Praveen (*approx. 15 min*)

Chapter 6 has been recently balloted. Some comments and questions have been provided as a part of the balloting process. These still need to be resolved. Most of the discussion is planned for the task group meeting on Monday. The seismic section is in a very good shape.

Chapter 7 – Detailing

Hoptay (*approx. 15 min*)

The chapter is currently being developed. Issue on what details should be included in the standard will be briefly discussed. The concept figures in Appendix A will be reviewed first to see if some of them need to be updated or eliminated. A list of other details to be included (e.g., base of secondary containment, roof/wall juncture, corner protection, inner tank details, and roof penetration details) will be discussed second. The goal is to get a first cut of the list of the details so that they can be drafted and reviewed prior to the spring meeting.

Break

approx. 3:00 to 3:15 P.M.

Chapter 8 – Foundations

Allen (*approx. 10 min*)

The task group has completed approximately 80% of the chapter. Existing material will be briefly reviewed during the full committee meeting. The task group will use the second meeting to try to bring the chapter to completion and prepare it for voting.

Chapter 9 – Construction

Mash (*approx. 5 min*)

The chapter is currently being developed.

Chapter 10 – Commissioning

Hatfield (*approx. 15 min*)

The chapter has been balloted. The latest comments are being worked on. Issue on how to address water quality and integrity test standards will be discussed at the meeting.

Appendix B – Offshore GBS

Hjortset (approx. 5 min.)

The appendix has been completed and balloted. A total of 16 affirmative votes, of which 7 were with comments, and 1 negative vote with comments were received. 9 members abstained from voting and 6 members did not vote. Comments are presently being addressed and corresponding paragraphs will be re-balloted. The Task Group will meet on Monday to work on the chapter.

6. LIAISON REPORTS

(approx. 15 min.)

- API 620
- NFPA 59 A

7. NEW BUSINESS

(approx. 20 min.)

- Hatfield

8. COMMITTEE UPDATE: Pricing Information

Nussmeier (approx. 20 min.)

“Pricing Factors for Cast-In-Place Concrete Tanks and Other LNG Terminal Concrete Structures”

- Pricing trends in the Gulf of Mexico region
- LNG terminal construction in the Gulf area – a pictorial review.

9. ADJOURNMENT

5:00 PM

Monday, November 6, 2006

9:00 AM – 2:00 PM

**Room: [Colorado](#)
Adam’s Mark Hotel**

1. TASK GROUP MEETINGS

- Appendix B – Offshore GBS
- Chapter 6 – Analysis and Design
- Chapter 8 – Foundations

Hjortset (approx. 2.5 h)

Hoptay (approx. 50 min)

Allen (approx. 50 min)

2. NEW BUSINESS

- Coordinating ACI 376 and other Standards

Hatfield (approx. 50 min.)

Respectfully submitted,
Neven Krstulovic
Chairman, ACI 376

cc: D. W. Falconer (TAC Secretary and Managing Director of Engineering)
M. McInerney
C. S. Hanskat (TAC Contact Member)

Appendix I: Task Group Assignments

Task Gr.	CHAPTER	Allen	Berner	Brannan	Douglas	Hanskat	Hashmi	Hatfield	Hjortset	Hoff	Hoffmann	Holleyoak	Hoptay	Howe	Jiang	Khalifa	Krstulovic	Legatos	Malhotra	Mash	Meier	Moncarz	Nussmeier	Pawski	Rajan	Rushing	Sward	Thompson	Wu	Totals
01	1, A								X					X			X							X						4
02	/							X		X						X	X						X							5
03	2		X			X				X							X			X					X		X		8	
04	3, 4, 5	X				X			X				X	X	X	X	X			X				X		X		X	13	
05	6					X			X				X		X	X	X			X				X					9	
	Eq												X					X									X	2		
06	7					X			X				X		X	X	X									X			8	
07	8	X							X				X				X			X				X			X	X	8	
08	9					X		X									X			X				X		X	X	8		
09	10							X									X			X				X				3		
10	11															X	X											2		
11	B								X						X													2		
12	-									X							X											2		
13	-								X				X		X		X					X						5		
TOTAL		2	1	0	0	5	0	2	7	1	3	0	4	2	5	3	7	10	1	5	0	1	0	6	2	3	1	3	3	

X = Task Group "Chair"

TASK GROUP LEGEND:

- 01 = General [including Scope; Definitions; Types of tanks (Appendix A)]
- 02 = Literature search & other resources
- 03 = Materials & tests (including corrosion protection)
- 04 = Design loads; Load factors & strength reduction factors; Performance criteria
- 05 = Analysis and design
- 06 = Detailing
- 07 = Foundations
- 08 = Construction
- 09 = Commissioning
- 10 = Bibliography
- 11 = Appendix B - Offshore structures (GBS)
- 12 = NFPA Liaison