

API Ballot Summary Sheet

11/4/2005

Ballot: 61-05: 650-489, Mixed Materials of Construction

AMS ID: 753

Start Date: 9/14/05

Closing Date: 10/26/05

Associate: Gordon Robertson

Coordinator: Gordon Robertson

Proposal: To approve agenda item 650-489

Vote Results

<u>Voter</u>	<u>Company</u>	<u>Comments</u>	<u>Vote Results</u>			
			<u>Affirmative</u>	<u>Negative</u>	<u>Abstain</u>	<u>Did Not Vote</u>
134629	Nelson Acosta	HMT Inspection	Yes	X		
131617	Joel Andreani	Equity Engineering Group, Inc., The	No	X		
38921	Robert Annett	Alyeska Pipeline	No	X		
73074	Ronald Bailey	American Tank & Vessel, Inc.	No	X		
136219	Mark Baker	Baker Consulting Group, Inc.	No	X		
142888	Chris Bashor	Minnesota Pollution Control Agency	No			X
134681	Ernie Blanchard	MOSAIC	No	X		
109375	Jerry Boldra	SBC Global	Yes	X		
22200	Dan Boley	DJA Inspection Services	No	X		
134782	Steve Caruthers	Tank Consultants, Inc.	No			X
154212	Gary Cavey	Conservatek Industries, Inc.	No	X		
7127	Earl Crochet	Kinder Morgan	No	X		
150217	Jody Day	Lide Industries, Inc.	No			X
142685	Domingo de Para	ExxonMobil	No			X
133403	Jeffrey DeArmond	BP p.l.c. Whiting Refinery	No	X		
146748	Terry Delong	Terasen Pipelines (USA) Inc.	No			X
135965	Kenneth Erdmann	Matrix Service Company	No	X		
105011	David Flight	Dow Chemical Company	No			X
134870	Laurence Foster	Marathon Petroleum Company LLC	No	X		
134880	John Fumbanks	Pond and Company Inc.	No	X		
115033	Alan Geis	Colonial Pipeline Company	No	X		
83689	Ty Hagen	Hagen Engineering International, Inc.	No	X		
136619	Robert Hendrix	Eastman Chemical Co	No	X		
70596	Marty Herlevic	James Machine Works, Inc.	No	X		
93133	Randy Kissell	TGB Partnership	Yes	X		
81918	Manfred Lengsfeld		No	X		
135014	John Lieb	Tank Industry Consultants, Inc.	Yes		X	

API Ballot Summary Sheet

11/4/2005

Ballot: 61-05: 650-489, Mixed Materials of Construction

AMS ID: 753

Start Date: 9/14/05

Closing Date: 10/26/05

Associate: Gordon Robertson

Coordinator: Gordon Robertson

Proposal: To approve agenda item 650-489

136274	Thomas Lorentz	AEC Engineering, Inc.	No			X
135072	Francis Maitland	Quense LLC	No	X		
113545	James McBride	Petrex, Inc.	Yes	X		
139045	Craig Meier	ConocoPhillips	No			X
137255	Carl Mikkola	Enbridge Energy Partners, L.P.	No		X	
131185	Douglas Miller	Chicago Bridge & Iron Company(CB&I)	Yes	X		
69609	Bhana Mistry	TIW Steel Platework	No	X		
83736	John Mooney		No	X		
92212	George Morovich	TEMCOR	No		X	
136286	Philip Myers	Chevron Corporation	Yes	X		
132210	David Nasab	Kellogg Brown & Root	No		X	
82544	John Oleyar	HMT, Inc.	No	X		
5193	Richard Pinegar	Cargill Inc.	No			X
102412	Roy Ralph	Petro-Canada	Yes		X	
135169	Michael Richardson	International Paper	Yes		X	
73744	Bruce Roberts		Yes	X		
101360	Marilyn Shores	Willbros Engineers Inc.	No			X
126019	Larry Speaks	Mass Technology Corporation	No	X		
134314	Tearle Taylor	Flint Hills Resources	No	X		
134325	Donald Thain	Shell Global Solutions (US) Inc.	No			X
145034	Leith Watkins	Explorer Pipeline Company	No			X
145896	Alan Watson	A.R. Watson, USA	No		X	
132209	Richard Whipple	Fluor, Inc.	No	X		

API Ballot Summary Sheet

11/4/2005

Ballot: 61-05: 650-489, Mixed Materials of Construction

AMS ID: 753

Start Date: 9/14/05

Closing Date: 10/26/05

Associate: Gordon Robertson

Coordinator: Gordon Robertson

Proposal: To approve agenda item 650-489

	<u>Affirmative</u>	<u>Negative</u>	<u>Abstain</u>	<u>Did Not Vote</u>
Balloting Totals:	31	3	4	12

Total Responses:	38			
Total Ballots:	50			
Response Rate :	62%		Must be > 50%	
Approval Rate:	91%		Must be > 67%	
Consensus:	YES			

API Ballot Summary Sheet

11/4/2005

Ballot: 61-05: 650-489, Mixed Materials of Construction

AMS ID: 753

Start Date: 9/14/05

Closing Date: 10/26/05

Associate: Gordon Robertson

Coordinator: Gordon Robertson

Proposal: To approve agenda item 650-489

API Ballot Comments Sheet

11/4/2005

Ballot: 61-05: 650-489, Mixed Materials of Construction

Start Date: 9/14/05

Closing Date: 10/26/05

AMS Ballot ID: 753

Associate: Gordon Robertson

Coordinator: Gordon Robertson

Proposal: To approve agenda item 650-489

134629 Nelson Acosta

HMT Inspection

<u>Specification Section</u>	<u>Type</u>	<u>Comment</u>	<u>Suggested Change</u>
1.1 & 2.3	Editorial	In the next to last sentence of 1.1 (fourth sentence) change "with-in" to "within". In the last sentence of 2.3, adjust the wording to add "tank" between "steel" and "surface".	1.1 Stainless steel and carbon steel plates may be mixed in the bottom, roof or within any shell course. 2.3 Carbon steel attachments (e.g. clips for scaffolding) shell not be welded directly to any internal stainless steel tank surface.

109375 Jerry Boldra

SBC Global

API Ballot Comments Sheet

11/4/2005

93133 Randy Kissell

TGB Partnership

<u>Specification Section</u>	<u>Type</u>	<u>Comment</u>	<u>Suggested Change</u>
3.1.1	Editorial	Insert a comma after "materials" as shown below: 3.1.1 When the bottom plate and first shell course are of different materials, the diameter is greater than 30.4 m (100 ft) and the operating temperature is greater than 40°C (100°), the design shall account for differential component expansion.	
3.3.2 and 3.3	Technical	Put "C" after 40 in 3.3.2 and 3.3.	
4.2 and 4.3	Editorial	Change "the basic document" to "this standard" to clarify the meaning.	
4.5	Technical	Define "t" as used in this section.	

API Ballot Comments Sheet

11/4/2005

135014 John Lieb

Tank Industry Consultants, Inc.

Specification Section	Type	Comment	Suggested Change
1.1	Editorial	The wording could be improved. My suggestions are below: (This is not a negative comment.)	Change "are allowed to" to "may" in the 4th line. Change "mixed" to "combined" in two places.
1.2	Technical	The second sentence, "Mixed material tanks..." is redundant to the first sentence.	Delete the second sentence in its entirety.
1.3	Editorial	The first part of the first sentence is unnecessary.	Delete "For mixed material tanks" from the 1st sentence so that it starts, "This appendix...".
1.4.1	Technical	M.2 only applies if the operating temperature is greater than 200F. Since Appendix SC does not address operating temperatures greater than 200F, this is not a correct reference. Perhaps the user should be directed to Appendix S, S.3.6 for a more applicable reference. (This is a negative comment)	Consider changing the reference from M.2 to S.3.6, or alternatively specifying the thermal limitations.
2.2	Editorial	Wording improvement	Change "mixed" to "combined" in one place.
2.3	Editorial	Wording improvement.	Change "providing" to "provided".
2.5	Editorial	Wording improvement.	Change "mixed" to "combined" in one place.
3.2	Technical	Correct and improve wording.	Change "variable point method" to "variable design point method". Change "mixed" to "combined" in one place.
4.1	Technical	Rinse water should be clean, e.g., not sea or wastewater. This should be clear from the reference to S.4.9, but it would be better to state it explicitly.	Add "clean" between "...rinsing with" and "water and...".
4.3	Technical	The last sentence is not clear. Does this apply only to carbon steel components? What about carbon steel components welded to stainless steel ones? This section needs more work. We could start with the change proposed below: (This is a negative comment)	Add "of carbon steel components" between "PWHT" and "shall be performed...".
4.6	Editorial	1) "Enhanced" has a good connotation and should not be used in the context of this section, since corrosion is not a good thing. Some may interpret that the potential for galvanic corrosion is reduced by using combined material construction with the current wording. 2) Word improvement.	1) Change "enhanced" to "aggravated" or "increased" or "accelerated". 2) Change "mixed" to "combined" in one place

API Ballot Comments Sheet

11/4/2005

113545 James McBride

Petrex, Inc.

<u>Specification Section</u>	<u>Type</u>	<u>Comment</u>	<u>Suggested Change</u>
3.4.2	Editorial	After the word shall, add be.	Reword as follws: "Reinforcing plates for shell penetrations shall be carbon steel to carbon steel or ..." 1.4 For limitations due to thermal effects, see Appendix M, paragraph M.2
1.4	Editorial	Since 1.4.1 has been eliminated, the heading 1.4 Limitations is unnecessary since there is now only one.	

API Ballot Comments Sheet

11/4/2005

131185 Douglas Miller

Chicago Bridge & Iron Company(CB&I)

Specification Section	Type	Comment	Suggested Change
1.1	Technical	There should be a statement that the purchaser should specify where stainless parts are to used in a carbon steel tank. Manufacturers should not be able to do this without purchaser involvement	Suggested addition to second sentence: "Stainless steel and carbon steel are allowed to be usedthat require only certain portions of the tanks provide high corrosion resistance WHERE SPECIFIED BY THE PURCHASER"
1.2	Technical	Metrication should be consistent and in accordance with the "PVT Metrication Methodology" passed under 650-520 as posted in the Spring 2004 meeting notes on PVT website.	200F should correspond to 90C (see appendix B of 650-520)
1.3	Editorial	The subject of this appendix is mixed material tanks. No need to state that qualifier in sections within the appendix.	In 1.3, delete "For mixed material tanks
1.5, 3, 3.1.1, 3.1.2, 3.2.2	Editorial	Use terminology for maximum design temperature as per 650-471.	Change maximum "operating" temperature to maximum "design" temperature.
3.2	Editorial		The sentence about variable point should be numbered 3.2.1 and the other sections renumbered accordingly.
3.2.1	Technical	SS insert plates in a CS shell should not be prohibited outright. This is an important option for industry to have available. Many inserts will be ok if design temp is not too high.	I suggest a position such as that stated in the opening of section 3 where analysis is required where we as standard writers can't predict the outcome. Require that design of differing material inserts to account for thermal stresses.
3.4.2	Editorial	With the word "match" removed the sentence is not grammatical.	Suggest this wording: "Reinforcing plates for shell penetrations shall match the shell material (e.g. carbon steel repads on carbon steel shell) even if the nozzle material differs from the shell material."
4.3	Technical	I think that we should generally be discouraging users from doing PWHT on nozzle assemblies where the neck is SS and the shell/repad are CS. When hot, the assembly may be significantly relieved of stress, but then when it cools the SS will shrink more resulting in large stress trying to pull the SS neck away from the CS shell. I think result will be worse than if not stress relieved in the first place.	Suggest this wording: "When opening neck and adjacent shell are made of differing materials, one stainless steel and the other carbon steel, the PWHT requirements of 3.7.4 are not mandatory. Such PWHT shall only be done where specified by the purchaser.

API Ballot Comments Sheet

11/4/2005

136286 Philip Myers

Chevron Corporation

Specification Section	Type	Comment	Suggested Change
	Technical	<p>2.6 Suggest that a PE stamped drawing for the tank construction drawings be required whenever the annular plate the bottom or the bottom and first course are of differing materials.</p> <p>3.2 Provide a reason why the variable point cannot be used. It may actually be conservative?</p> <p>Additionally, I suggest that we specify a mill finish requirement for all plates constructed of stainless steel which are large areas such as shell courses or the tops of tanks.</p>	

102412 Roy Ralph

Petro-Canada

Specification Section	Type	Comment	Suggested Change
General	Technical	<p>Purpose of using mixed metallurgy tanks is to enhance corrosion resistance effectiveness at the required spots where it is called for, which we do it presently with corrosion resistant coating. Clause 4.6 is suggesting the same coating to prevent the dissimilar metal welds from galvanic corrosion. It is an irony that after spending so much for stainless steel plates and fabrication and welding, that we have to come back again and depend on the coating system for protection. Previously we had only all C.S. construction that was protected by coating, in this mixed metallurgy construction, if coating fails(chances are very high- as coating life is not that long to match a tank turn around schedule, and also we know how coatings are applied), Corrosion will now be highly accelerated because of galvanic current. If the dissimilar joint is at the bottom course, then extensive corrosion of the dissimilar weld may cause a concern for the structural integrity of the tank.</p>	

API Ballot Comments Sheet

11/4/2005

135169 Michael Richardson

International Paper

<u>Specification Section</u>	<u>Type</u>	<u>Comment</u>	<u>Suggested Change</u>
General	Technical	Limitation on a design temperature of 200 degrees F is too restrictive. I would like to see this appendix incorporate the use of duplex stainless steel as that appendix is being developed.	I would recommend 300 degrees F as the maximum allowable design temperature. Do to the extent of comments I have forwarded them to John Fumbanks.

73744 Bruce Roberts

1. Is there any way to combine Appendix S with this new appendix? Seems like it might be possible.

2. 3.4.2 isn't clear. Consider the following wording:
Reinforcing plates for shell penetrations shall be the same material as the shell.

3. 4.5 may not be clear to our readers overseas. A sketch is needed to show the weld detail you're after.

API Ballot Comments Sheet

11/4/2005
