



National Fire Protection Association

1 Batterymarch Park, Quincy, MA 02169-7471
Phone: 617-770-3000 • Fax: 617-770-0700 • www.nfpa.org

MEMORANDUM

TO: NFPA Technical Committee on Liquefied Natural Gas

FROM: Jeanne Moreau

DATE: October 26, 2010

SUBJECT: NFPA 59A ROP **REVISED** - **TC FINAL** Ballot Results (F11)

The Final Results of the NFPA 59A ROP Letter Ballot are as follows:

- 30 Members Eligible to Vote**
- 8 Not Returned** (D. Coers, T. Felleisen, C. Helm, C. Humes, A. Pastuhov, G. Poe, R. Roue, J. Stannard Jr.)
- 12 Negatives** (J. Jablonski, L. Bowdoin Jr., J. Brightwell, D. Butler, B. Eisentrout, J. Gaughan, B. Ho, F. Katulak, N. Legatos, J. Lewis, G. Mahnken, K. Ritz)
- 1 Abstentions** (D. Barber)

There are two criteria necessary to pass ballot [(1) affirmative $\frac{2}{3}$ vote and (2) simple majority].

- (1) The number of affirmative votes needed for the proposal/comment to pass is **14**.
(30 eligible to vote - 9 not returned - 1 abstentions = $20 \times 0.66 = 13.2$)
- (2) In all cases, an affirmative vote of at least a simple majority of the total membership eligible to vote is required. This is the calculation for simple majority:
[30 eligible $\div 2 = 15 + 1 =$ **(16)**]

Reasons for negative votes, etc. from alternate members are not included unless the ballot from the principal member was not received.

According to the final ballot results, all ballot items received the necessary $\frac{2}{3}$ required affirmative votes to pass ballot.

Attachment: (Final) Circulation Explanation Report

59A-1 Entire Document (Log # 153)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Bowdoin, Jr., L. I agree with the basic concept however there has not been any actual revision to the document to accept or reject.

Lewis, J. See comments for specific Log No's below.

59A-2 Entire Document (Log # CP7)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-3 Entire Document (Log # 2)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Bowdoin, Jr., L. I agree that these should be included. In my opinion Committee needs to take independent action outside of this ROP.

59A-4 1.1.2 (Log # 133)

Negative

Katulak, F. The committee statement and action taken to develop an offshore standard seems to be reasons it should be stated that the rest of the standard is inapplicable to offshore facilities.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-5 1.5 (Log # 3)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-6 1.5.1 (Log # 134)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Lewis, J. The conversions to metric should accurate enough that converting the metric value back to US units should not result in a different number.

59A-7 1.6 (Log # 4)

Negative

Eisentrou, B. Canadian LNG code CSA Z276, while at one time was harmonized with NFPA 59A, now covers the same LNG facilities as NFPA 59A with differing requirements. Z276 has been written into LNG specific regulations in Canada and has specific references to other Canadian requirements such as reference to the Canadian electrical code and the National Building Code of Canada. It causes much confusion to reference Canada when many of the provisions of NFPA 59A such as electrical area classifications no longer can be used in Canada. The references should be deleted.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Lewis, J. 59A is used in many other countries besides Canada. If used in Canada, Canadian codes should be used.

59A-8 1.6.1 (Log # 5)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-9 2.3 (Log # 6)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-10 2.3.4 (Log # 7)

Negative

Gaughan, J. For the same reasons stated by B. Eisentrou in his ballot

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-11 2.3.5 (Log # 8)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-12 2.3.6 (Log # 9)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-13 2.3.9 (Log # 10)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-14 Chapter 3 Various Definitions (Log # 147)

Negative

Eisentrou, B. The container definition must apply to both tank systems and ASME pressurized containers that store LNG. However, the change of container definition to include only single wall vessels storing gaseous and/or liquefied natural gas on one hand enlarges the scope of container requirements to vessels storing gas, it seems to not include so called "double wall" ASME storage containers where the inner container contains LNG and the outer container is an insulation cover. The requirements for containers in the standard were written around vessels that have LNG in them, however the new tank standards use the word container to describe the outer container of single containment tank systems where the container only stores gas. The definition is appropriate for the outer container of double and full containment tanks systems since they must be designed to contain LNG. Suggest the new definition be corrected to limit the definition of container to those that store LNG and to those vapor containers that are part of a tank system. New definition :A vessel for storing liquefied natural gas or a vessel for storing natural gas that is part of an LNG tank system.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Lewis, J. Agree with comment of B. Eisentrou.

59A-15 3.3.x Fire Protection and A.3.3.X (New) (Log # 12)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Bowdoin, Jr., L. The supplementary explanation to appear in the annex is confusing as currently proposed as the title is Fire Protection but the explanatory note is to define Fire Prevention. I propose a revision to the annex wording to be:
Fire Protection. Fire prevention as it is used in the definition of Fire Protection covers
[The wording change I propose above is in italics and underlined]

59A-16 3.3.x Pipeline (New) (Log # 154)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-17 3.3.x Pressure Relief Device (New) (Log # 14)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Bowdoin, Jr., L. The wording proposed is incomplete and not always accurate. Many relief devices have values of pressure rise over the pressure specified as the relieving or setpoint pressure(typically a 3 to 5 % rise is permitted). I propose the wording be revised to more accurately express the relationship between the set point pressure and rise in pressure which is in many code applications allowed to rise above the set point pressure. The current definition may lead to misinterpretation of "a specified pressure" as used in the proposed definition as being the pressure relieving device's setpoint pressure. I propose the following rewording to eliminate this potential misinterpretation:

Pressure Relief Device: A device designed to open at a specified pressure in an emergency or abnormal event to prevent a rise of internal pressure in excess of that permitted by the applicable design code the Pressure Relief Device is designed to mitigate against.

Lewis, J. Recommend modification of wording to read "--- do to emergency or abnormal conditions but not more than that permitted by the applicable design code."

59A-18 3.3.x Safe Area (New) (Log # 155)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-19 3.3.x Sources of Ignition (New) (Log # 15)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-20 3.3.x Vacuum-Jacketed (New) (Log # 16)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Eisentrou, B. The new definition of vacuum-jacketed describes an outer shell which encloses both piping and containers. However the use of "outer shell" in the definition is inconsistent with the use of "outer tank" in chapter 7.4.2 which has several paragraphs that have design requirements for the outer tank of a ASME LNG storage vessel. Either the use of "outer tank" in chapter 7.4.2 should be changed to outer shell or the definition of vacuum-jacketed be changed to use outer tank in addition to outer shell. Suggest the wording of the definition be changed as to not require the rewording of paragraph 7.4.2. The new definition would be

Vacuum-Jacketed A method of construction which incorporates an outer shell or tank designed the maintain a vacuum in the annular space between the inner container or piping and the outer shell or tank.

Lewis, J. Delete "annular" which implies concentric circles. This should apply to any space.

Agree with comment by B. Eisentrou.

59A-21 3.3.1 Barrel (Log # CP2)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-22 3.3.5.3 Full Containment Center (Log # 136)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Eisentrout, B. While the use of capped is rejected by the committee, the continued use of enclosed not correct either. The new definition proposed in issue 59A -14 still uses the wording enclosed. The secondary container is not enclosed by a roof. The roof is part of and integral to the container, thus the container "includes" a roof. Replace the words "is enclosed by" with "includes" .

Lewis, J. Agree with comment by B. Eisentrout.

59A-23 3.3.9 Fail Safe (Log # 11)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-24 3.3.11 Flame Spread Index and 9.3.1.3 (Log # 169)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-25 3.3.12 G (Log # 13)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-26 3.3.19 Noncombustible Material (Log # CP3)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-27 3.3.25.1 Ambient Vaporizer (Log # CP4)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-28 3.3.25.2 Heated Vaporizer (Log # CP5)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Eisentrou, B. Existing Definition 3.3.25.3 Heated Vaporizer A vaporizer that derives its heat from the combustion of fuel, electric power, or waste heat such as from boilers or internal combustion engines.

While a heated vaporizer is defined as a heater whose source of heat is not a process fluid, the requirements in the paragraph 8.4 would seem to apply to any vaporizer that has a heat source no matter what the source is. As paragraph 8.4 is written there are no piping or shutoff requirements for process vaporizers and this does not seem to be the intent of the TC. If the process vaporizer definition were made a subset of heated vaporizer all of the requirements for heated vaporizers in paragraph 8.4 would apply to process vaporizers. Elsewhere in the standard process vaporizers are only referenced in paragraph 5.2.5.4 "Remote heated, ambient, and process vaporizers shall be located 100 ft (30m) from a property line that can be built upon." and paragraph 8.5.1 The relief valve capacity of heated or process vaporizers shall be selected to provide discharge capacity of 110 percent of rated vaporizer natural gas flow capacity without allowing the pressure to rise more than 10 percent above the vaporizer maximum allowable working pressure. To correct the wording it is suggested that the definition of heated vaporizer be modified to include vaporizers whose source of heat may be a process fluid.

Revised definition

3.3.25.2 Heated Vaporizer A vaporizer that derives its heat from the combustion of fuel, electric power, process fluids or waste heat.

Renumber Process Vaporizer 3.3.25.2.3 from 3.3.25.3

Delete the words "or process" in paragraph 8.5.1

Paragraph 5.2.5.4 can remain unchanged as its meaning is clear

59A-29 3.3.25.2 Heated Vaporizer (Log # 17)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-30 3.3.25.2.1 Integral Heated Vaporizer (Log # CP6)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-31 3.3.25.3 Process Vaporizer (Log # 18)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Eisentrou, B. See comments to 59A-28 (Log #CP5) above to include the definition of process vaporizer as a subset of heated vaporizer.

Lewis, J. Agree with comment by B. Eisentrou.

59A-32 4.5 (Log # 19)

Negative

Ritz, K. The addition of the proposed term "Construction" adds clarity to the type of records required.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Lewis, J. Agree with comment by K. Ritz. "materials of construction" would not obviously include welding

59A-33 5.2.3.6 (Log # 140)

Negative

Butler, D. Changing the average level of methane in air which may not extend beyond a property line that can be built on to LFL from 50% LFL reduces the level of safety provided.

Gaughan, J. I believe the proposed change is an unjustified reduction in safety. I could support a margin of safety in terms of a percentage of LEL even has high as 90 % of LEL but not 100 % of LEL. Alternatively I could support a margin of safety in terms of the calculated distance to LEL plus 10% of something to that effect.

Jablonski, J. I disagree with the change of using the LFL in place of the 50% LFL for spacing distances. I feel that this reduces the level of safety to the public.

Mahnken, G. The proposed LFL criterion for vapor cloud exclusion zones equates to a prescription for unsafe separation distances wherein large vapor (“flash”) fires may ignite on site and propagate downwind to the property line and beyond. Consequently, if the LFL is adopted, the “exclusion zone” would be reduced to a flash fire hazard zone which could readily cause severe harm to property and personnel outside the property line.

Related concerns for this proposal are discussed below (Items 1-6). In my opinion, these concerns, if taken in combination, also support keeping the current ½ LFL criterion, at least until a better solution can be found. A compromise that would allow more flexibility in prescribing vapor cloud exclusion zones is described below (Item 7)

(1). The hazard zone associated with vapor cloud fires is defined by the American Institute of Chemical Engineers (AIChE) and the Center for Chemical Process Safety (CCPS) as follows:

“The cloud border to the Lower Flammability Limit defines a hazard zone for personnel safety; i.e., any person within the cloud LFL contour is likely to be in danger. Additionally, fuel-air clouds are often non-homogeneous in concentration and pockets of higher than average concentration can ignite outside the border as estimated by a dispersion model using a prescribed averaging time.”

[Source: page 80 of “Guidelines for Vapor Cloud Explosion, Pressure Vessel Burst, BLEVE and Flash Fire Hazards”, Center for Chemical Process Safety, 2nd edition, 2010.]

(2) The “December 2004 Report by Sandia National Laboratories” referred to in the proposal substantiation was concerned with potential consequences of large LNG spills over water and was not treating the LFL as a criterion or safe limit for exposure to LNG vapor fires. To the contrary, the report makes the following statement:

“If a large vapor cloud formed, the flame could propagate downwind, as well as back to the source. If the cloud is ignited at a significant distance from the spill, the thermal hazard zones can be extended significantly. The thermal radiation from the ignition of a vapor cloud can be very high within the ignited cloud and, therefore, particularly hazardous to people”

[Source: page 46 in “Guidance on Risk Analysis and Safety Implications of a Large Liquefied Natural Gas (LNG) Spill Over Water”, SANDIA REPORT SAND2004-6258]

(3) Based on Items 1 and 2 above, the proposal substantiation appears to ignore the potential harm from very large flash fires that may ignite on site and propagate downwind to the LFL contour (= property line) and beyond. The likelihood of cloud ignition at or below the LFL is relatively low as described in the proposal substantiation. But the exclusion zone is also presumably supposed to protect against on-site flash fires reaching property line and beyond, which the LFL criterion fails to do. If such is not the intention of the exclusion zone, a clarification is needed in the Standard.

(4) In other words, the LFL criterion is unsuitable because it would allow an exclusion zone whose outer limit corresponds to the outer flammable “edge” of a massive flammable vapor cloud. Any person or object located near the “LFL contour” of such a cloud is in “harm's way”. Once ignited from inside the property, a very severe flash fire could readily propagate in the downwind direction towards the LFL contour, which will actually be pushed beyond the property line due to thermal expansion behind the advancing flame front.

(5) The substantiation acknowledges the variability of predictions from dispersion models depending on the source models used, but fails to satisfactorily address the consequences - i.e. potential incorrect concentration predictions associated with modeling errors and uncertainty. In reality, the actual vapor concentration at a specified distance for a given release scenario may be much higher than the concentration predicted by even the best models. The LFL criterion leaves no margin for erroneous/uncertain concentrations predictions. Therefore the LFL results in unsafe separation distances beyond the property line, even if one were to agree with the substantiation's apparent premise - i.e. that the LFL at the property line represents a safe exclusion

distance for off site personnel and property simply because ignition is unlikely where the cloud concentration is predicted to be below the LFL.

(6) Dispersion model experts have estimated that dispersion model predictions may err by roughly a “factor of two”. This factor of two represents an “inherent” model uncertainty or “tolerance” for which “imposing tighter restrictions on the accuracy of model predictions”, as recommended in the proposal substantiation, is not possible. Therefore, a safety factor is needed. The current 1/2 LFL criterion therefore provides a safety factor which to some extent allows for errors by the “best” dispersion models in predicting distance to the LFL. The following two extracts supporting the “factor of two” for error estimates on predicted concentration are from articles written, respectively, by the authors of the Model Evaluation Protocol and the author of DEGADIS. These estimations are generalized, not referring to any specific model.

D. Weber, M. Ivings [“On defining a Safety Criterion for Flammable Clouds”, Health and Safety Laboratory, HSL/2007/30, 2002]:

“Allowing for a more complicated release scenario, which models will find more “difficult”, it is probably fair to conclude that a good model should be expected to do no better than fit measured concentrations to within a factor of two, and that a mediocre one may do a lot worse. Thus, if one believed LFL to be the appropriate criterion for the actual concentration (which we have seen may not always be the case) then a conservative interpretation of the results from one of the better models, would indicate that 1/2 LFL might be more appropriate for the predicted concentration.”

J. Havens [Journal of Loss Prevention in the Process Industries, 1992, Vol5, No 1 pg 28-41]:

“The consistency of the DEGADIS predictions with the observations from all of the tests suggests that the point of diminishing returns has been reached in the development of models for this (limited) application. In this regard, it is important to consider that our ability to predict dispersion with dense gas effects will, in most cases, be limited by uncertainties which remain in the prediction of passive dispersion. Since atmospheric passive dispersion is due to boundary layer turbulence, our ability to predict the former is limited by our understanding of the latter. Considering the difficulty of predicting passive dispersion (concentration prediction) with uncertainty less than a factor of two or three, we should not expect to achieve much higher levels of confidence for the prediction of non-passive atmospheric dispersion of dense gas clouds.”

(7) A proposed compromise is to prescribe the minimum distance to the property line as either: (1) the 1/2 LFL contour or (2) the closest “no harm” distance for thermal dose and flame impingement as calculated by a vapor fire model, such as per the SFPE Handbook or the CCPS reference in Item 1 above. This option, being prescriptive, would assume ignition occurs on site and when the cloud reaches its maximum extent to the LFL as determined by the dispersion model - also taking into account dispersion model error bands of a factor of 2 or as determined by the MEP.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Ho, B. I am not totally convinced the substantiation that the statement "Had the fire moved downwind it would have been easy to argue that there are pockets containing flammable vapors in the cloud even though the average concentration is below the LFL" has been clearly addressed or answered. I have witnessed pockets of fire moving downward from the source with the wind from Texas A&M LNG fire test and it may imply irregular LFL contours are observed. Thus it is unsure what much conservatism we should have.

Affirmative with Comment

Lewis, J. This represents a reasonable level of safety for public considering the conservative assumptions that go into the calculations.

59A-34 5.3.1.1 (Log # 137)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-35 5.3.1.1(1) (Log # 20)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-36 5.3.1.1(2) (Log # 21)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-37 5.3.1.1(3) (Log # 22)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-38 5.3.1.3 (Log # 23)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-39 5.3.2.2 (Log # 138)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-40 5.3.2.5 (Log # 148)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-41 5.3.2.10 (Log # 24)

Negative

Brightwell, J. 103.5 kPa is the correct conversion of 15 psi.

Lewis, J. Use 103 or 103.5 as 105 kPa is not 15 psi

Ritz, K. The original proposed 103.5 Kpa value is precise as it relates to 15 psi, and while I agree with the TC that the value is a soft metric conversion, the current 100 Kpa listed in the standard and the committee proposed 105 Kpa are both inaccurate. To align with the new API 625 and current Canadian LNG standard, a value of 103 Kpa should be considered.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Eisentrou, B. See comments to 59A-20 (Log #16) . The use of "outer tank" is inconsistent with the definition of vacuum-jacketed.

59A-42 5.3.3.1 (Log # 139)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-43 5.3.3.4, A.5.3.3.4 (New), 5.3.3.6, and A.5.2.3.4 (New) (Log # 1)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Bowdoin, Jr., L. There appears to be a typo at the end of text in 5.3.3.4. The committee "accept" is incorrectly shown as point #4 of the paragraph 5.3.3.4. This error needs to be corrected by removing point #4.

59A-44 5.3.3.6 (Log # 135)

Negative

Katulak, F. Annexes are not mandatory and jurisdictions outside the U.S. use the standard, so these should be language in the main part of the documents.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-45 5.3.3.6 (Log # 168)

Negative

Katulak, F. I agree with the substantiation given for the proposal.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Lewis, J. We need to pursue validation but it must be applicable to a stated size of release.

59A-46 5.3.3.6 (Log # CP14)

Negative

Butler, D. Changing the average level of methane in air which may not extend beyond a property line that can be built on to LFL from 50% LFL reduces the level of safety provided.

Gaughan, J. Same reason as for 59A-33 (Log #140).

Jablonski, J. See my Explanation of Negative on Proposal 59A-33 (Log #140).

Mahnken, G. Same reason as for 59A-33 (Log #140).

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-47 Table 5.3.3.7 (Log # 25)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-48 Table 5.3.3.7 (Log # 157)

Negative

Eisentrou, B. While I agree with the TC rejection of adding definition of design spill for flammable gases as these are covered by codes referenced in the standard, the committee action does not address the need to define design spills for LNG as made by point 3 of the recommendation. The issue of what is a design spill is subject to much interpretation and is inconsistently applied. For example EPA regulations for toxic materials consider small bore pipe breaks but not guillotine failures of large bore piping. Even table 5.3.3.7 is inconsistent for example for process facilities the design spill is "The flow from any single accidental leak source". Yet for tanks that have in-tank pumps the design spill is defined as "The largest flow from any single line that could be pumped into the impounding area with the container withdrawal pump(s) considered to be delivering at full rated capacity." This description infers that the piping failure would be a full line size break. If the same line pump discharge line were in the process area it would have a much different spill scenario. The failure of full line size piping has such a remote possibility that it should not be considered. Suggest the committee consider the following definition of design spill and use it for both design spills for process facilities.(last two rows of the table)

Design spill

The maximum flow of LNG that could be spilled from any of the following:

(a) The largest branch connection, 2 in or smaller, on the piping system serving the impoundment.

(b) The largest flow from an LNG relief valve discharging locally serving the impoundment.

(c) The largest flow from a gasket failure where the assumed failure is the complete loss of gasket materials between adjacent bolt holes.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Lewis, J. Agree with comment by B. Eisentrou.

59A-49 5.3.3.9 (Log # 26)

Negative

Lewis, J. This is inconsistent with small facility limits of 100,000 gal per vessel and 280,000 gallons aggregate for small facilities.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-50 5.3.3.x (New) (Log # 156)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-51 5.3.7 (Log # 27)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-52 5.4.1 (Log # 144)

Negative

Legatos, N. Assigning Occupancy Categories to Buildings and Structures per ASCE 7 implies that the Importance Factor, I, will vary in each case depending on the occupancy classification. This is in conflict with the intent of Section 7.3.2 as expressed in Appendix Section B.1, according to which Importance Factor I should be 1.0 for all seismic forces and shears. [See also Section 7.3.3.1]

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Eisentrou, B. While the classification system and the category system fill a needed void for the definition of design standards the use of roman numerals for both the design category/classification and occupancy category of ASCE-7 creates confusion. The classification uses increasing numbers for reducing hazard while the ASCE-7 is the opposite. To eliminate the potential confusion the following changes are suggested.

Change 5.4.1 to Building and Structures Design Classification (changed category to classification)

change 5.4.1.1 Classification I to Classification A

change 5.4.1.2 Classification II to Classification B

change 5.4.1.3 Classification III to Classification C

change 5.4.2.1 Classification I to Classification A

change 5.4.2.2 Classification II to Classification B

change 5.4.2.3 Classification III to Classification C

to be consistent with the new design standards for storage tanks, the associated critical piping should be designed at the same level as the storage tanks thus classification 1 (new classification A) should be revised to include ALE (Aftershock Level earthquake) The new wording should be

5.4.2.1. Classification A Seismic design shall use the OBE, SSE and ALE ground motions as defined in clause 7.4.4.2 for determination of loads to be used per ASCE-7.

The remainder of 5.4.2.1 is unchanged

Lewis, J. Agree with N. Legatos and comment by B. Eisentrou.

59A-53 6.3.6 (Log # 28)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-54 6.4.1 (Log # 29)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-55 6.5.2(a) (Log # 30)**Abstain**

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-56 6.5.6.1 (Log # 31)**Abstain**

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-57 Chapter 7 (Log # 149)**Abstain**

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Eisentrou, B. As originally organized new paragraph 7.3.1.5 (original paragraph 7.3.1.6) applied to all containers whether they were part of tank systems or ASME containers. However the wording of the new paragraph applies to only tank systems. To retain the original intent the wording "or containers" is suggested to be added after tank systems. The new wording would be
7.3.1.5 Where two or more tank systems or containers are sited

As originally organized new paragraph 7.3.1.7 (original paragraph 7.3.1.8) applied to all containers whether they were tank systems or ASME containers however the wording of the new paragraph applies to only tank systems. To retain the original intent the wording "or containers" is suggested to be added after tank systems. The new wording would be
7.3.1.7 Provisions shall be made for removal of the tank system or container from service.

All sections conversion of 15 psi to metric units is inconsistent with the other issues and Z276. 15 psi should be 103 kpa but not 105 or 100. 103 is consistent with Z276. See proposal 64 and 65

Editorial correction to new paragraph 7.4.3.2 change "tanks" to "tank systems"

Revise title of 5.3.4 Container Spacing to "Container and Tank system Spacing"

In addition to these changes paragraph 5.3.4.1 should be changed to include tank systems. Replace "constructed LNG containers" with "tank systems"

5.3.4.2 changes are also required. Change "construction LNG storage containers" to "tank systems"

Change add the words "or tank system" after container

Revised wording of 5.3.4.2 Full and double containment tank systems of greater than 70,000 gal (265 m³) water capacity shall be separated from adjoining tank systems such that a fire in one tank system will not cause the loss of containment from adjacent tank systems. This will be accomplished by ensuring that no part of the adjacent tank system roof, walls, or its impoundment structure reaches a temperature at which the strength of the material of the tank system roof, wall or impoundment structure loses its structural integrity. No changes to subsequent wording until 5.3.2.4.2 (b) replace tank with "tank system" and 5.3.4.2.(2) (d) change " tank" to " tank System"

5.3.4.3 Revise the wording to The minimum separation distance between LNG tank systems or LNG containers and containers containing flammable refrigerants or between LNG tank systems or LNG containers or containers containing flammable refrigerants and property line that can be built upon shall be in accordance with Table 5.3.4.1

Change wording in table Title to "Separation distances between tank systems, containers and exposures". Add "or tank system" after container in the table.

Lewis, J. 7.3.7.5 lower case a rather than capital A in second line

7.4.2.2 annular plate radial joints

7.5.4.2 "space"?

59A-58 7.2.2 (Log # CP1)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-59 7.2.2.6 (Log # 146)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-60 7.3.1.2(2) (Log # 145)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-61 7.3.2.1(1) (Log # 32)

Negative

Ritz, K. The original proposed use of g vs. G is consistent with the definition.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-62 7.3.6 (Log # 33)

Negative

Brightwell, J. 103.5 kPa is the correct conversion of 15 psi.

Lewis, J. Do not agree with "soft" conversion practice

Ritz, K. The original proposed 103.5 Kpa value is precise as it relates to 15 psi, and while I agree with the TC that the value is a soft metric conversion, the current 100 Kpa listed in the standard and the committee proposed 105 Kpa are both inaccurate. To align with the new API 625 and current Canadian LNG standard, a value of 103 Kpa should be considered.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Eisentrou, B. Use 103 Kpa to be consistent with Z276.

59A-63 7.4.1 (Log # 34)

Negative

Brightwell, J. 103.5 kPa is the correct conversion of 15 psi.

Lewis, J. Do not agree with "soft" conversion practice

Ritz, K. The original proposed 103.5 Kpa value is precise as it relates to 15 psi, and while I agree with the TC that the value is a soft metric conversion, the current 100 Kpa listed in the standard and the committee proposed 105 Kpa are both inaccurate. To align with the new API 625 and current Canadian LNG standard, a value of 103 Kpa should be considered.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Eisentrout, B. See comment on 59A-62 (Log #33).

59A-64 7.4.1.1 (Log # 35)

Negative

Brightwell, J. 103.5 kPa is the correct conversion of 15 psi.

Lewis, J. Do not agree with "soft" conversion practice

Ritz, K. The original proposed 103.5 Kpa value is precise as it relates to 15 psi, and while I agree with the TC that the value is a soft metric conversion, the current 100 Kpa listed in the standard and the committee proposed 105 Kpa are both inaccurate. To align with the new API 625 and current Canadian LNG standard, a value of 103 Kpa should be considered.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Eisentrout, B. See comment on 59A-62 (Log #33).

59A-65 7.4.2 (Log # 36)

Negative

Brightwell, J. 103.5 kPa is the correct conversion of 15 psi.

Lewis, J. Do not agree with "soft" conversion practice

Ritz, K. The original proposed 103.5 Kpa value is precise as it relates to 15 psi, and while I agree with the TC that the value is a soft metric conversion, the current 100 Kpa listed in the standard and the committee proposed 105 Kpa are both inaccurate. To align with the new API 625 and current Canadian LNG standard, a value of 103 Kpa should be considered.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Eisentrout, B. See comment on 59A-62 (Log #33).

59A-66 7.4.2.3(A) (Log # 37)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-67 7.4.2.3(B) (Log # 38)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-68 7.4.2.4(B)(1) (Log # 39)

Negative

Brightwell, J. 103.5 kPa is the correct conversion of 15 psi.

Lewis, J. Do not agree with "soft" conversion practice

Ritz, K. The original proposed 103.5 Kpa value is precise as it relates to 15 psi, and while I agree with the TC that the value is a soft metric conversion, the current 100 Kpa listed in the standard and the committee proposed 105 Kpa are both inaccurate. To align with the new API 625 and current Canadian LNG standard, a value of 103 Kpa should be considered.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-69 7.4.2.4(C) (Log # 40)

Negative

Brightwell, J. 103.5 kPa is the correct conversion of 15 psi.

Ritz, K. The original proposed 103.5 Kpa value is precise as it relates to 15 psi, and while I agree with the TC that the value is a soft metric conversion, the current 100 Kpa listed in the standard and the committee proposed 105 Kpa are both inaccurate. To align with the new API 625 and current Canadian LNG standard, a value of 103 Kpa should be considered.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-70 7.4.2.4(H) (Log # 41)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-71 7.4.2.4(I) (Log # 42)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-72 7.4.2.8(1) (Log # 43)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-73 7.7.3 (Log # 44)

Negative

Brightwell, J. 103.5 kPa is the correct conversion of 15 psi.

Lewis, J. Do not agree with "soft" conversion practice

Ritz, K. The original proposed 103.5 Kpa value is precise as it relates to 15 psi, and while I agree with the TC that the value is a soft metric conversion, the current 100 Kpa listed in the standard and the committee proposed 105 Kpa are both inaccurate. To align with the new API 625 and current Canadian LNG standard, a value of 103 Kpa should be considered.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-74 7.7.4 (Log # 45)

Negative

Brightwell, J. 103.5 kPa is the correct conversion of 15 psi.

Ritz, K. The original proposed 103.5 Kpa value is precise as it relates to 15 psi, and while I agree with the TC that the value is a soft metric conversion, the current 100 Kpa listed in the standard and the committee proposed 105 Kpa are both inaccurate. To align with the new API 625 and current Canadian LNG standard, a value of 103 Kpa should be considered.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-75 7.7.5 (Log # 46)

Negative

Brightwell, J. 103.5 kPa is the correct conversion of 15 psi.

Ritz, K. The original proposed 103.5 Kpa value is precise as it relates to 15 psi, and while I agree with the TC that the value is a soft metric conversion, the current 100 Kpa listed in the standard and the committee proposed 105 Kpa are both inaccurate. To align with the new API 625 and current Canadian LNG standard, a value of 103 Kpa should be considered.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-76 8.2.1 (Log # 47)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-77 8.3.3.2 (Log # CP15)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-78 8.4.3.1 (Log # 48)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Bowdoin, Jr., L. I believe an editorial change to the wording is necessary to clarify that the intent of the wording is to locate the discharge to areas where people are not normally present. I propose the word "normally" be inserted into the sentence before present.

8.4.3.1 The LNG or gas that can accumulate between the valves or other double block-and-bleed systems shall be piped to an area having no source of ignition, and where people are not normally present.

Gaughan, J. Agree with the word change proposed by L. Bowdoin

59A-79 8.4.5.2 (Log # 49)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-80 8.4.5.2 (Log # CP8)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-81 8.4.5.2(2) (Log # 50)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-82 8.4.5.2(3) (Log # 51)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-83 8.4.6 (Log # 52)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Katulak, F. I am not sure if the proposal can be practically implemented.

59A-84 8.4.6.1(2) (Log # 53)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Lewis, J. See specific comments

9.7.3.2 Not comfortable with 20% random inspection for high pressure pipe

9.7.3.3 Socket welds at <-20F is poor practice because of transient

59A-85 Chapter 9 (Log # 170)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Eisentrou, B. To keep the seismic design of critical piping, the piping designated as category I, consistent with the the new seismic design criteria of the container or tank system that it is intended to protect, the ALE (aftershock level earthquake) event must be added to 9.2.2.2.(1)

Revised 9.2.2.2.(1) Category I piping shall be designed for the OBE, SSE and ALE events. For the OBE design, response modifications shall not be used.

Lewis, J. See specific comments

9.7.3.2 Not comfortable with 20% random inspection for high pressure pipe

9.7.3.3 Socket welds at <-20F is poor practice because of transient

59A-86 9.2.1 and 9.4.2.5 (Log # 150)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Eisentrou, B. To be consistent with the wording in 7.3.1.2 we should include " tank systems" since in 7.3.1.2 there are separate paragraphs for piping associated with tank systems and for piping associated with ASME containers. New wording for new 9.2.1 "except those which are part of or within an LNG container or tank system" and changes to refer to 7.3.1.2 for piping which is part of an LNG tank system or container.

Lewis, J. 9.2.1 "All" is to inclusive (includes the lawn sprinkles?)

9.4.2.5 Can't find it. No change.

59A-87 9.3.1.2(3) (Log # 158)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-88 9.3.1.4 (Log # CP13)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-89 9.3.2.4.1 (Log # 54)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-90 9.3.2.5(A) (Log # 55)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-91 9.4.2.6(1) (Log # 56)

Negative

Gaughan, J. I think the wording is ambiguous. Does the valve have to be tested to meet the standard or can the manufacture just claim that it was designed to meet the testing standard. I would propose we just state the valve is to be tested to the referenced standard. If that is not our intent than we should delete the requirement.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Katulak, F. I don't feel I know enough about the issue to vote.

59A-92 9.4.2.9 (Log # 57)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Ritz, K. The original proposed text was not captured as indicated in the Committee Action on 59A-85, Log 170, (piping chapter re-write). Original proposed text should be considered.

59A-93 9.4.2.10 (Log # 58)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-94 9.4.2.12 (Log # 59)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-95 9.7.1.2.x (New) (Log # 159)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-96 9.7.4.1 (Log # 60)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-97 9.9.1(a) (New) (Log # 61)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Ritz, K. The original proposed text was not captured as indicated in the Committee Action on 59A-85, Log 170, (piping chapter re-write). Original proposed text should be considered.

59A-98 9.10.1 (Log # 62)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-99 9.10.1(4)(x) (New) (Log # 160)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-100 9.11.4 (Log # 63)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Lewis, J. Should be 9.11.3.1, not part of V.J. function

59A-101 9.11.4.1 (Log # 64)

Negative

Bowdoin, Jr., L. The wording of this paragraph was subsequently modified in committee review of Chapter 9 to delete the word "full" from the sentence.

See Proposal # 59A-85 (Log #170).

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-102 9.11.6.1 (Log # 65)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-103 9.11.6.1.1 (New) (Log # 66)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-104 9.11.6.2(A) (Log # 67)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-105 9.11.6.3 (New) (Log # 68)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Lewis, J. performance means safety not function

59A-106 9.11.8 (Log # CP9)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-107 9.11.8.2 (Log # 161)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-108 Chapter 10 (Log # 151)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-109 10.2.2.3 (Log # 69)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-110 10.6 (Log # 70)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-111 10.7.1 (Log # 71)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-112 10.7.2 (Log # 72)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-113 Table 10.7.2, Row B, Line 1 (Log # 73)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-114 Table 10.7.2, Row B, Line 2 (Log # 74)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-115 Table 10.7.2, Row H (Log # 75)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-116 10.7.5.1 (Log # 76)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-117 Chapter 11, Title (Log # 77)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-118 11.1 (Log # 78)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-119 11.2 (Log # 79)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-120 11.2.1 (Log # 80)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-121 11.3.2 (Log # 81)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-122 11.5.2 (Log # 82)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-123 11.5.2.1 (Log # 83)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-124 11.5.2.2 (Log # 84)

Negative

Bowdoin, Jr., L. The language is too vague and subject to misinterpretation as written. The intent of this section is to prohibit marine cargo transfer operations and ship stores loading (or unloading) from occurring concurrently. The present language however could be interpreted as prohibiting any ships stores activity a while any LNG is flowing in any piping system at the jetty head, including LNG recirculation operations. This is not the intent .

I propose that the the phase "while LNG or flammable fluids are being transferred through piping systems" be replaced with "while LNG or flammable fluids transfer operations are underway."

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Lewis, J. Should probably be transferred through "ship-to-shore" piping systems in the last sentence.

59A-125 11.5.3.1 (Log # 162)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-126 11.5.3.3 (Log # 163)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-127 11.5.3.3(C) (Log # 164)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-128 11.5.3.3(E) (Log # 165)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-129 11.5.3.4 (Log # 166)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-130 11.5.4(2) (Log # 167)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-131 11.6.8 (Log # 85)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-132 11.7.3 (Log # CP10)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-133 11.8.2 (Log # 86)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-134 12.3.4 (Log # 87)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-135 12.3.5 (Log # 88)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-136 12.4.4 (Log # 89)

Negative

Brightwell, J. Clarifies the applicability of 72.

Ritz, K. The proposal as written brings clarity as to which components must comply with NFPA 72 National Fire Alarm Code. NFPA 72 is applicable to many different types of facilities, much of which aimed at public areas of assembly such as apartment complex's and high rise buildings. The proposal aids an LNG facility owner/operator in understanding the requirements applicable to an industrial process facility such as an LNG facility.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-137 12.5.2 (Log # 90)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-138 13.1 (Log # CP11)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-139 13.1.1 (Log # 91)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-140 13.1.2 (Log # 92)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-141 13.2.9 (Log # 93)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-142 13.3.10(1) (Log # 94)

Negative

Brightwell, J. 103.5 kPa is the correct conversion of 15 psi.

Ritz, K. The original proposed 103.5 Kpa value is precise as it relates to 15 psi, and while I agree with the TC that the value is a soft metric conversion, the current 100 Kpa listed in the standard and the committee proposed 105 Kpa are both inaccurate. To align with the new API 625 and current Canadian LNG standard, a value of 103 Kpa should be considered.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-143 13.3.11 (Log # 95)

Negative

Brightwell, J. 103.5 kPa is the correct conversion of 15 psi.

Ritz, K. The original proposed 103.5 Kpa value is precise as it relates to 15 psi, and while I agree with the TC that the value is a soft metric conversion, the current 100 Kpa listed in the standard and the committee proposed 105 Kpa are both inaccurate. To align with the new API 625 and current Canadian LNG standard, a value of 103 Kpa should be considered.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-144 13.3.12.2 (Log # 96)

Negative

Bowdoin, Jr., L. I believe the proposal was complete and with an adequate explanation why a change is required, that is, that a container covered under this chapter may be designed to operate above 25 psig and thus a 25 psig limit is inappropriate (and technically unsupportable) for the paragraph.

Gaughan, J. I support the proposed change and I think the substantiation provided was correct. There is no technical basis to put an arbitrary pressure limit of 25 psi here.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-145 13.3.16 (Log # 97)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-146 13.4 (Log # 98)

Negative

Brightwell, J. 103.5 kPa is the correct conversion of 15 psi.

Ritz, K. The original proposed 103.5 Kpa value is precise as it relates to 15 psi, and while I agree with the TC that the value is a soft metric conversion, the current 100 Kpa listed in the standard and the committee proposed 105 Kpa are both inaccurate. To align with the new API 625 and current Canadian LNG standard, a value of 103 Kpa should be considered.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-147 13.6.9 (Log # 99)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-148 13.7.1 (Log # 100)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-149 13.7.2 (Log # 101)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Legatos, N. This proposal introduces the API 625-derived term "LNG storage tank systems" (which the accompanying substantiation also refers to as "integrated tank systems" and "integrated refrigerated tank systems"). However, there is no explanation of what exactly this term entails and how it differs from - and is an improvement over - the current term "LNG storage containers".

I believe that such an explanation should be provided - either in the main body of the Code or in one of the Appendices.

59A-150 13.7.3 (Log # 102)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-151 13.8.3(2) (Log # 103)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-152 13.14.1 (Log # 104)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-153 13.14.2 (Log # 105)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-154 13.15.1 (Log # 106)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-155 13.18.1(1) (Log # 107)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-156 13.18.1(4) (Log # 108)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-157 13.18.3.1 (Log # 109)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-158 13.18.4.1 (Log # 110)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-159 13.18.4.2(A) (Log # 111)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-160 13.18.4.6 (Log # 112)**Abstain**

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-161 13.18.4.7(B) (Log # 113)**Negative**

Lewis, J. I believe that maintenance records and inspection records should be kept for the life of the facility.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-162 13.18.5.1(2)(c) (Log # 114)**Abstain**

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-163 13.18.5.1(2)(d) (Log # 115)**Abstain**

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-164 13.18.5.4(A) (Log # 116)**Abstain**

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-165 Chapter 14 (Log # 171)**Negative**

Lewis, J. 14.10.1/2 Records should be kept for life of facility.
14.10.3 Records to plant personnel should be always available, but not to others except through authorized plant personnel.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Bowdoin, Jr., L. There appears to be an editorial error in one of the paragraphs in the proposal. Paragraph 14.7.5 refers to itself (paragraph 14.7.5). I believe it should refer to section 14.7, Chapter 14 or the 59A standard but not to itself.

59A-166 14.4.4 (Log # 117)**Abstain**

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-167 14.4.4(5) (Log # 118)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-168 14.6.2 (Log # 119)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-169 14.6.3 (Log # 120)

Negative

Brightwell, J. The reference looks correct in the proposal.

Ritz, K. The proposed references are correct. 14.6.3 in the 2009 edition was previously located in 11.6.16.1 in the 2006 edition. the 2006 edition 11.6.16.1 referenced text in 11.6.15. The text in 11.6.15 in the 2006 edition is the same text in 14.14.1.2, and 14.14.1.3 in the 2009. The reference is correct as proposed.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-170 14.6.4(12) (Log # 121)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-171 14.7.5 (Log # 122)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-172 14.8.1.1 (Log # 123)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-173 14.8.1.3 (Log # 124)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-174 A.5.5.2 (Log # CP12)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-175 A.8.3.1 (Log # 125)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-176 A.9.10.1 (Log # 126)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-177 A.10.7.2(d) (Log # 143)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-178 A.13.18.3.2 (Log # 127)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-179 B.1 (Log # 152)

Negative

Bowdoin, Jr., L. I believe this change needs to be incorporated into new issue of 59A.

Eisentrout, B. Update of this appendix is needed as the seismic design criteria has been changed and the standard will be revised to include them. The proposed rewritten annex is now submitted

Annex B Seismic Design of LNG Plants

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

B.1 Introduction. The purpose of Annex B is to provide information on the selection and use of operating basis earthquake (OBE), safe shutdown earthquake (SSE) and Aftershock level Earthquake (ALE) seismic levels.

These three seismic levels form part of the requirements of this standard for the design of LNG containers, system components required to isolate the container and maintain it in a

safe shutdown condition, and any structures or systems the failure of which could affect the integrity of the aforementioned.

B.2 Operating Basis Earthquake (OBE). The OBE is a probable earthquake to which a facility can be subjected during its design life. All elements of the facility defined in 7.3.2.5 are designed to withstand this event in accordance with conventional engineering procedures and criteria, and, therefore, the facility is expected to remain in operation.

The OBE is defined as ground motion having a 10 percent probability of exceedance within a 50-year period (mean return interval of 475 years). For design, this motion is typically represented by design response spectra covering the appropriate ranges of natural period and damping ratio. The OBE design response spectrum is not adjusted by an importance factor.

Following any event with a magnitude greater than OBE, the facility is expected to be evaluated for permanent damage and repaired as necessary.

B.3 Safe Shutdown Earthquake (SSE).

B.3.1 The SSE ground motion is the “risk-adjusted maximum considered earthquake (MCER) ground motion,” per the definition in ASCE 7, Minimum Design Loads for Buildings and Other Structures. For most locations, except possibly those near active faults, the MCER is determined by adjustment from ground motion that has a 2 percent probability of exceedance in a 50-year period, to ground motion that achieves targeted risk requirements. The ASCE 7 adjustment establishes a uniform probability of failure criteria (1% chance of collapse in 50 years) for structures designed in accordance with the seismic provisions of ASCE 7-10. In this standard, the LNG facility is designed to contain the LNG and prevent catastrophic failure of critical facilities under an SSE event. This more onerous performance criteria is achieved through design requirements of API625, API620 Appx L and ACI376 which have established response reduction factors to prevent collapse at the design level ground motion.

ASCE 7 requires the base design level earthquake to be 2/3 of MCER. Setting the importance factor, I, equal to 1.5 (corresponding to structures containing extra hazardous materials) results in a design level equal to MCER. Thus SSE = MCER, as required by this standard is consistent with ASCE 7-10 provisions for the design level ground motion. Design of critical facilities to this standard exceeds the design performance requirements of ASCE 7.

The facility is not required to remain operational following the SSE event.

B.3.2 The objective of the selection and use of the SSE is to provide a minimum level of public safety in the event of a very low probability seismic event. It is recognized that the required probability level to achieve acceptable public safety varies from project to project, depending on such factors as location and population density. It is desirable to allow the owner flexibility in achieving the required level of public safety.

B.3.3 The SSE level of seismic loading is to be used for a limit state check on the specified components. The specified SSE is the minimum level of ground motion that must be used for

the analysis. The actual level must be specified by the owner, and when used in conjunction with other considerations, such as location, siting, type of impounding system, hazard control,

local climatic conditions, and physical features, it must be sufficient to ensure adequate public safety to the satisfaction of the regulatory authorities. A risk analysis study is recommended.

At the SSE level of seismic loading, primary components of the LNG container are permitted to reach the stress limits specified in 7.4.4.8. An LNG container subjected to this level of loading must be capable of continuing to contain a full volume of LNG.

B.3.4 The impounding system must, as a minimum, be designed to withstand the SSE level of loading while empty and the ALE level of loading while holding the volume, V, as specified

in 7.4.4.7. The rationale is that should the LNG container fail following an SSE, the impounding system must remain intact and be able to contain the contents of the LNG container when subjected to an aftershock.

B.3.5 Systems or components, the failure of which could affect the integrity of the LNG container, the impounding system, or the system components required to isolate the LNG

container and maintain it in a safe shutdown condition, must be designed to withstand an SSE.

B.3.6 The operator is required to install instrumentation capable of measuring ground motion at the plant site. Following an earthquake that produces ground motion equal to or greater than the design OBE ground motion, it is advisable that the operator of the facility either take the LNG container out of service and have it inspected or prove that the LNG container components have not been subjected to loading in excess of the container's OBE stress level and design criteria.

For instance, if the LNG container was partially full during the seismic event, calculations can prove that the container OBE stress levels were not exceeded.

B.4 Aftershock LEVEL earthquake The aftershock level earthquake (ALE) ground motion is defined as 50% of the SSE ground motion.

B.5 Design Response Spectra. Using the OBE and SSE ground motions as defined in Section B.2 and B.3.1, respectively, vertical and horizontal design response spectra must be constructed that cover the entire range of anticipated damping ratios and natural periods of vibration, including the fundamental period and damping ratio for the sloshing (convective) mode of vibration of the

contained LNG.

B.6 Other Seismic Loads.

B.6.1 Small LNG plants consisting of shop-built LNG containers and limiting processing equipment should be designed for seismic loading using the ground motion specified by ASCE 7, Minimum Design Loads for Buildings and Other Structures.

Either a structural response analysis should be performed or an amplification factor of 0.60 should be applied to the maximum design spectral acceleration (SDS), as defined

in 7.5.2.1 7.3.3.1, to determine the loads on the vessels or piping.

B.5.2 All other structures, buildings and process equipment must be designed for the seismic loading as determined by the classification and occupancy category in accordance with 5.4.1 and 5.4.2 and ACSE 7, Minimum Design Loads for Buildings and other Structures.

Ritz, K. I believe the proponent of the Annex B revision intends to submit the proposed text. The text is important to align the seismic requirements in the main body of the standard to those to be listed in Annex B.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-180 Annex E (Log # 141)

Negative

Bowdoin, Jr., L. While I support the eventual movement of the Performance-Based Alternative Standard for Annex E similar to that proposed by the submitter, I think a necessary precondition for doing so is to run at a sufficient number of example (real or hypothetical) facility designs through the proposed methodology in a rigorous manner to validate that the language and methods prescribed yield valid and supportable conclusions. Absent the completion of this validation step, there is sufficient uncertainty (in my view) to include Performance (Risk Assessment) Based LNG Plant Siting as Annex E.

Specific comments are as follows: Chapter.15.1.3 is unworkable. Risks cannot be parsed out so that only some risks are included and others not. Risk assessment cannot be applied when existing facilities are omitted from the analysis as it yields incomplete results.

15.2.3 is most likely an unworkable condition as a periodic review of a plant that has been approved and constructed in accordance with a Risk methodology can be unapproved over time without a requirement that surroundings cannot be modified to preclude their present use.

Table 15.5.1 should be referenced as to source of data. Probabilities listed should be per unit or per nit length which needs to be specified.

Table 15.7.4.2 The threshold criteria is too restrictive in that it requires that no part of an exposed concrete outer surface of the container structure can exceed 570oF (300oC) over the duration of the fire. This would require overly conservative separation distances of concrete structures. While some concrete mixes may be subject to some spalling at these relatively low temperatures not all concrete suffers deleterious effects at these such low temperatures and designs can be produced to account for these effects. This criteria needs revision to read - the bulk temperature of the concrete outer wall or other load bearing structures shall not the design limits of the container or structure to be able to perform its design function.

Table 15.7.4.2 also needs a note to inform users that active and passive fire protection measures shall be considered in determining the temperature exposures.

15.7.4.4 More guidance on the type of available models that can evaluate hazards from RPT's is required.

Ho, B. The committee meeting action was to accept the proposal as revised. However, revised Annex E does not consistently align with the new Chapter 15 in terms of contents, thus potentially provide confusion. Since I agree with Log #142 to completely delete Annex E and replace with new Chapter 15, I vote to reject this Log #141, and propose a new Annex E be written to mirror the new Chapter 15.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Brightwell, J. This still needs to stay in the Annex.

Ritz, K. I support the text proposed for annex E if the text remains in annex E (non-mandatory) at this time.

59A-181 Annex E (Log # 142)

Negative

Bowdoin, Jr., L. While I support the eventual movement of the Performance-Based Alternative Standard from Annex E to a mandatory chapter similar to that proposed by the submitter, I think a necessary precondition for doing so is to run at a sufficient number of example (real or hypothetical) facility designs through the proposed methodology in a rigorous manner to validate that the language and methods prescribed yield valid and supportable conclusions. Absent the completion of this validation step, there is insufficient substantiation (in my view) to make Annex E a mandatory Chapter.

Brightwell, J. This topic needs more development and review before moving it to the main body of the code.

Ritz, K. While supportive of the alternative risk based siting criteria being located in the non-mandatory annex "E", I do not support the relocation of annex E to a new mandatory Chapter 15. I do not believe the climate is appropriate to list risk based siting criteria in the mandatory chapter of NFPA 59A. I would reconsider if after the new risk based siting requirements from Annex "E" was used in an actual siting of a new LNG facility. This would validate the process and its acceptance with the AHJ's and the public.

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Lewis, J. In principle, this is good but needs significant modification. If it's an annex, it probably should not be in regulatory language ("shall") as the acceptability of a specific QRA methodology is a discretionary decision of the AHJ. The work group should continue its efforts.

Mahnken, G. (1) Recognized guidelines and methodologies are provided for determining (calculating) tolerable risks to off site individuals and society in terms of fatalities. But there appears to be no method or guidance provided in Chapter 15 to determine the tolerable risk to "surrounding property and installations", even though an assessment is required per paragraph 15.2.1. Off site property and installations could include nuclear and conventional power plants, chemical plants, refineries, shipping channels, highways, etc. Some low probability events may include important severe consequences for individuals and society - i.e. loss of residences, utility services, investments, jobs, etc. Quantification of such risks is difficult and achieving stakeholder consensus is even more difficult because there are no well established guidelines for tolerable risk to off site property. The default appears to be that the AHJ and stakeholders may have to rely on risk-informed judgment and consensus rather than a straightforward quantitative assessment of risk to off site property. In any event, I think an Appendix statement is needed to clarify the committee's expectations of how off site property risks should be assessed, with examples if possible.

(2) A requirement for third party independent validation of the Risk Assessment should be added, in my opinion.

(3) In 15.7.3.3, a vapor cloud fire model is needed in addition to a dispersion model. Can we recommend an appropriate vapor fire model? Likewise for fireball model in 15.7.3.4.

(4) Determining "ignition probabilities" is a new approach for this standard. Can we provide more specifics in an Appendix for the benefit of users who may be unfamiliar with this approach?

(5) In Table 15.5.1, the annual probability of rupture of pipelines would typically be given in units of "per meter per year".

59A-182 E.6.2(3) (Log # 128)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-183 F.1.2.2 (Log # 129)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-184 F.1.2.3 (Log # 130)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

59A-185 F.1.2.4 (Log # 131)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Bowdoin, Jr., L. The 2010 ASME Boiler and Pressure Vessel Code has been issued and should be incorporated into F1.2.4 in lieu of the 2007 code version referenced in this Proposal.

Gaughan, J. I agree with the comment from L. Bowdoin, Since the 2010 edition is published we should reference it except if there is a technical reason not to ?

59A-186 F.1.2.8 (Log # 132)

Abstain

Barber, D. My reasons for this decision are based on the fact that I am an overseas member of the committee, and much of the voting relates to what is essentially US requirements. I do not therefore feel fully competent to comment on this occasion.

Affirmative with Comment

Bowdoin, Jr., L. I believe the 2010/2011 edition of SP0169 has been approved (or is about to be). A vote was held in September on the new std. The latest edition should be used.