



National Fire Protection Association

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MEMORANDUM

TO: NFPA Technical Committee on Hazardous Materials Protective Clothing and Equipment
FROM: Stacey Van Zandt
DATE: May 12, 2011
SUBJECT: NFPA 1991 ROC TC FINAL Ballot Results (F2011)

The Final Results of the NFPA 1991 ROC Letter Ballot are as follows:

31 Members Eligible to Vote
2 Not Returned (Thompson and Wisner)
21 Affirmative on All (Nystrom – affirmative with comment)
8 Negatives (Baxter, Fithian, Gohlke, Kavalesky, Kelly, Storment, Stull, & Ziskin)
0 Abstentions

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 20.
31 eligible to vote - 2 not returned - 0 abstentions = $29 \times 0.66 = 19.14$
- (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:
[31 eligible $\div 2 = 15.5 = (16)$]

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.

Document # 1991

1991-1 Eligible To Vote:31 Affirmative: 27 Negative: 2 Abstain: 0 Not Returned: 2

1.3.6, 4.3.18, 5.1.1.11, 5.2.4, 5.3.2.2, 8.4.4.1, 8.8.4.11, 8.8.4.12, and A.1.3.6 (Log # 31)

Not Returned

Thompson, D.**Wisner, Jr., J.**

Negative

Storment, S. The committee has falsely assumed that all NFPA 1991 vapor-protective suits must be encapsulating in nature. Anyone that is familiar with the history of this standard's development would know that this is not the case. The committee's attention is directed to paragraph A.3.3.47 that recognizes that different configurations of vapor-protective suits are possible and can be tested. The suggested change for the specification of respiratory equipment is entirely consistent with this provision and the current language in the standard is design-restrictive. At worst, the committee should have decided on an action of "hold for further study" for this comment as it should investigate ways for encouraging the improvement of vapor-protective suits designs. These designs have not changed for last 30 years showing the lack of imagination for many manufacturers. The greatest danger of these suits is not in the potential for chemical exposure, but in the heat stress and ergonomic limitations of the suits. It is precisely for this reason that the requirement of specifying only one type of respiratory equipment that the current requirement is design-restrictive.

Stull, J. The committee has falsely assumed that all NFPA 1991 vapor-protective suits must be encapsulating in nature. Anyone that is familiar with the history of this standard's development would know that this is not the case. The committee's attention is directed to paragraph A.3.3.47 that recognizes that different configurations of vapor-protective suits are possible and can be tested. The suggested change for the specification of respiratory equipment is entirely consistent with this provision and the current language in the standard is design-restrictive. At worst, the committee should have decided on an action of "hold for further study" for this comment as it should investigate ways for encouraging the improvement of vapor-protective suits designs. These designs have not changed for last 30 years showing the lack of imagination for many manufacturers. The greatest danger of these suits is not in the potential for chemical exposure, but in the heat stress and ergonomic limitations of the suits. It is precisely for this reason that the requirement of specifying only one type of respiratory equipment that the current requirement is design-restrictive.

Affirmative with Comment

Baxter, C. It is the intent of the current committee to limit certification to ensembles containing a certified NFPA 1981 open-circuit SCBA. Questions still remain regarding the used of closed-circuit SCBA with NFPA 1991 ensembles. Negative comments relating to history of the standard's development are not useful unless the history is also provided.

1991-2 Eligible To Vote:31 Affirmative: 26 Negative: 2 Abstain: 1 Not Returned: 22.3.2, 2.3.4, 8.18.4, 8.15.5, and 8.18.6 (Log # 8)

Not Returned

Thompson, D.**Wisner, Jr., J.**

Negative

Document # 1991

Storment, S. If it has been acceptable to other committees to adopt ASTM F2700, which are more reliant on TPP testing than is the case for NFPA 1991 (e.g., structural fire fighting for NFPA 1971), then why should the committee including persons knowledge with the other activities, choose to hold this comment? Given that this test method is used in the same manner for several different standards, each going through the revision process at the same time, this is a matter for consideration by the TCC for correlation purposes.

Stull, J. If it has been acceptable to other committees to adopt ASTM F2700, which are more reliant on TPP testing than is the case for NFPA 1991 (e.g., structural fire fighting for NFPA 1971), then why should the committee including persons knowledge with the other activities, choose to hold this comment? Given that this test method is used in the same manner for several different standards, each going through the revision process at the same time, this is a matter for consideration by the TCC for correlation purposes.

Abstain

Fithian, W. Recent information has been provided that brings into question which method provides the more accurate performance result. At this time, there is insufficient data or documentation to determine which method is better for this application.

1991-3 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2

3.3.2.5 Radiological Particulate Terrorism Agents and A.3.3.2.5 (New) (Log # 3)

Not Returned

Thompson, D.

Wisner, Jr., J.

1991-4 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2

3.3.25 External Fittings (Log # 1)

Not Returned

Thompson, D.

Wisner, Jr., J.

1991-5 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2

3.3.54 Respiratory Equipment (Log # 2)

Not Returned

Thompson, D.

Wisner, Jr., J.

1991-6 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2

3.3.55 Sample (Log # 17)

Not Returned

Thompson, D.

Wisner, Jr., J.

Document # 1991

1991-7 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2**4.3.17** (Log # 26)**Not Returned****Thompson, D.****Wisner, Jr., J.**

1991-8 Eligible To Vote:31 Affirmative: 23 Negative: 6 Abstain: 0 Not Returned: 2**4.3.17** (Log # 5)**Not Returned****Thompson, D.****Wisner, Jr., J.****Negative**

Baxter, C. There is potential room for further discussions on this topic. However, the committee comment provided does come directly from the referenced paper in the later negative comments received. The paper does state "EN464 appears to offer a more stringent protocol by which to conduct such testing and results in a higher level of sensitivity than ASTM F1052". Therefore, the committee statement provided is not "totally erroneous". However, there is enough data contained within the paper to suggest that "a 10 m-bar (4-in H₂O), 4 min test offers the optimum level of sensitivity for both film-based and elastomeric fabrics".

This paper also brings up issues regarding the sensitivity of the test to temperature fluctuations. This topic should also be addressed. Studies should be performed to ensure that the evaluation of pressure using the current test methods is a valid practice at undefined temperatures.

These topics should be re-addressed with the ASTM F23 committee. If necessary, a TIA could be used to increase the pressures if it is determined to be necessary after proper evaluation.

Kavalesky, P. I agree with Jeff Stull's comments listed under PC 1991-8 (Log #5)

Kelly, B. I see no evidence that increasing pressure and time assures better gas-tight integrity.

Storment, S. I am completely and utterly amazed by this decision of the committee. Somehow, convincing arguments must have been made that higher test pressures will ensure better quality and improved integrity of suits. The committee has absolutely no evidence on which to base this supposition. The committee statement used to justify the rejection of the comment is totally erroneous. On the contrary, I have provided information (if anyone cared to look) of a peer-review article where research was done to demonstrate the basis for the current requirement and why any deviation from the current requirement should be rejected. I thought my substantiation in this area was quite clear particularly on the thinking that European requirement is more rigorous. As the author of ISO 17491 and having to fight a host of ridiculous arguments against a single harmonized pressure test for vapor-protective suits (a term not used in Europe anyway), the word "rigorous" was only inserted as a manner of placation for European, self-serving interests for the chemical suit industry. If end users believe that the quality of their suits will improve as a consequence of changing this requirement, then they are sadly mistaken. The quality of current suits in meeting the inflation test does not have anything to do with the inflation and test pressures being too low -- it is a manner of poor manufacturing or improper handling of the suits after they have been manufactured. This is why it is recommended that suits be inspected and tested on a regular basis including immediately after their receipt. If this issue is not reversed, I will consider putting this standard into suspense through a NITMAM.

Document # 1991

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Ziskin, M. There is no benefit to increased test pressure. There is no data to support that such a change will benefit the user.

1991-9 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2

4.3.18 (Log # 9)

Not Returned

Thompson, D.

Wisner, Jr., J.

Affirmative with Comment

Storment, S. The committee statement is in error. Testing according to 4.3.18 is for ensembles, which can include footwear that is attached to the suit forming the ensemble. In some cases, full footwear has been attached to compliant ensembles. The correct statement is that the requirement in 4.3.18 is not intended to apply to over boots, when the ensemble includes a bootie design.

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1991-10 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2

4.5 (Log # 29)

Not Returned

Thompson, D.

Wisner, Jr., J.

Document # 1991

1991-11 Eligible To Vote:31 Affirmative: 25 Negative: 4 Abstain: 0 Not Returned: 2**5.1.1.8(5)** (Log # 18)

Not Returned**Thompson, D.****Wisner, Jr., J.****Negative****Kavalesky, P.** See my Explanation of Negative on Comment 1991-8 (Log #5).**Storment, S.** See my Explanation of Negative on Comment 1991-8 (Log #5).**Stull, J.** See my Explanation of Negative Vote on Comment 1991-8.**Ziskin, M.** See my Explanation of Negative on Comment 1991-8 (Log #5).

1991-12 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2**6.1.3** (Log # 15)

Not Returned**Thompson, D.****Wisner, Jr., J.**

1991-13 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2**6.1.3(5)** (Log # 14)

Not Returned**Thompson, D.****Wisner, Jr., J.**

1991-14 Eligible To Vote:31 Affirmative: 24 Negative: 5 Abstain: 0 Not Returned: 2**7.1.2(1), 7.1.3, and 7.1.4** (Log # 7)

Not Returned**Thompson, D.****Wisner, Jr., J.****Negative****Kavalesky, P.** See my Explanation of Negative on Comment 1991-8 (Log #5).**Kelly, B.** I see no evidence that increasing pressure and time assures better gas-tight integrity.**Storment, S.** See my Explanation of Negative on Comment 1991-8 (Log #5).**Stull, J.** See my Explanation of Negative Vote on Comment 1991-8.**Ziskin, M.** See my Explanation of Negative on Comment 1991-8 (Log #5).

1991-15 Eligible To Vote:31 Affirmative: 24 Negative: 4 Abstain: 1 Not Returned: 2**7.2, 7.3, 7.4, 7.5, 7.7, and 8.6** (Log # 32)

Not Returned

Thompson, D.

Wisner, Jr., J.

Negative

Gohlke, D. There are many recommendations in this log and I agree with many of the actions taken, but my negative is based primarily on two points. First and simplest is that I thought the toxic industrial chemicals DMS, acrolein and acrylonitrile were to be added to the industrial list of chemicals and that the chemical warfare agent list would be reduced to just two, mustard and sarin. This point may be an editorial oversight. My second point is more fundamental and that is that I believe the endpoints should be based on cumulative permeation and not breakthrough time based on a rate of 0.1 ug/cm²/min. The arguments against this are: 1) that for "normal" response curves this would relax the requirement, by perhaps a factor of 4. and 2) that the "safe" cumulative exposures are not known. Both of these arguments overlook the fact that for unusual response curves, like those shown in Figure 4 D of ASTM F 739, the exposure may not be captured by breakthrough time measurements, and therefore leave the wearer open to an exposure of unknown magnitude, whereas a cumulative measurement would capture it and limit it to a known level. I therefore argue that we need to move to cumulative measurements now, even if the "safe" performance levels chosen are arbitrary artifacts of the test protocol, they will at least limit the exposures to amounts in the range of the amounts that are safe for the CWAs. The breakthrough protocol does not provide the same level of confidence or safety. So instead of being less "safe," the cumulative protocol is actually more "safe." We should move to cumulative measurements now to close the possibility for allowing this uncontrolled mechanism of exposure.

Storment, S. I am more than disappointed in the committee's failure to address permeation resistance based on cumulative permeation masses. I believe that the presentation that was delivered by a non-member of the committee misrepresented information and was deceiving to the committee members on this topic. This is an area that has been well researched (funded by TSWG and the subject of reviewed final report); it well established that the current permeation test procedures over predict the needed protection from hazardous chemicals. The notion that the end users will be significantly less protected by the implementation of cumulative permeation masses is absolutely ludicrous and is only self-serving to those manufacturers which persist in perpetuating the fantasy that there are true distinctions in material technology on the basis of infinitesimally small differences in breakthrough time. Ironically, the committee decision to form a task group to study this problem is contradictory to committee statement that the use of cumulative permeation masses results in factor of lowering the protection of suits by a factor of 4 (an erroneous statement in its own right as I will show the committee separately). The fact is that the committee has already information in the current standard for judging the efficacy for cumulative permeation masses in the form of acceptable cumulative permeation for chemical warfare agents, including two of the most skin toxic substances known to man. If it is acceptable to permit 1.25 ug/cm² of Sarin and 4.0 ug/cm² of distilled mustard to pass through the suit material, why should the committee consider that 6.0 ug/cm² as applied to industrial chemicals represents a significant lessening of the current protection requirements? It should also be pointed out that the cumulative permeation masses at 6.0 ug/cm² are applied to four chemicals in the standard including acrolein, acrylonitrile, chlorine, and dimethyl sulfate. The toxicity of the these industrial chemicals by skin absorption, and for that matter, nearly all industrial chemicals is no where near the levels presented by chemical warfare agents. The truth is that when I apply my model developed for TSWG to the industrial ASTM F1001 chemicals listed in NFPA 1991, the levels of cumulative permeation that would be permitted for these chemicals would be on the order 60 to 6000 ug/cm² not 6.0 ug/cm². This would more than upset the "apple cart" that a number of suit manufacturers have predicated their marketing strategies on. Therefore, a recommended cumulative mass of 6.0 ug/cm², the same level used in NFPA 1994, is actually very much on the safe side for exposure. Remember, breakthrough time is a misnomer. Do not be tricked into believing that no chemical is passing through the material until the breakthrough time. It is an arbitrary and totally meaningless measurement of chemical permeation that happened to be a convenient way of comparing material chemical resistance when it was first introduced in the early 1980s. I demand a teleconference with the committee during the recirculation of committee ballots to rebut the fallacious arguments against this comment introduced during the ROC meeting.

Stull, J. I am more than disappointed in the committee's failure to address permeation resistance based on cumulative permeation masses. I believe that the presentation that was delivered by a non-member of the committee misrepresented information and was deceiving to the committee members on this topic. This is an area that has been well researched (funded by TSWG and the subject of reviewed final report); it well established that the current permeation test procedures over predict the needed protection from hazardous chemicals. The notion that the end users will be significantly less protected by the implementation of cumulative permeation masses is absolutely ludicrous and is only self-serving to those manufacturers which persist in perpetuating the fantasy that there are true distinctions in material technology on the basis of infinitesimally small differences in breakthrough time. Ironically, the committee decision to form a task group to study this problem is contradictory to committee statement that the use of cumulative permeation masses results in factor of lowering the protection of suits by a factor of 4 (an erroneous statement in its own right as I will show the committee separately). The fact is that the committee has already information in the current standard for judging the efficacy for cumulative permeation masses in the form of acceptable cumulative permeation for chemical warfare agents, including two of the most skin toxic substances known to man. If it is acceptable to permit 1.25 ug/cm² of Sarin and 4.0 ug/cm² of distilled mustard to pass through the suit material, why should the committee consider that 6.0 ug/cm² as applied to industrial chemicals represents a significant lessening of the current protection requirements? It should also be pointed out that the cumulative permeation masses at 6.0 ug/cm² are applied to four chemicals in the standard including acrolein, acrylonitrile, chlorine, and dimethyl sulfate. The toxicity of the these industrial chemicals by skin absorption, and for that matter, nearly all industrial chemicals is no where near the levels presented by chemical warfare agents. The truth is that when I apply my model developed for TSWG to the industrial ASTM F1001 chemicals listed in NFPA 1991, the levels of cumulative permeation that would be permitted for these chemicals would be on the order 60 to 6000 ug/cm² not 6.0 ug/cm². This would more than upset the "apple cart" that a number of suit manufacturers have predicated their marketing strategies on. Therefore, a recommended cumulative mass of 6.0 ug/cm², the same level used in NFPA 1994, is actually very much on the safe side for exposure. Remember, breakthrough time is a misnomer. Do not be tricked into believing that no chemical is passing through the material until the breakthrough time. It is an arbitrary and totally meaningless measurement of chemical permeation that happened to be a convenient way of comparing material chemical resistance when it was first introduced in the early 1980s. I demand a teleconference with the committee during the recirculation of committee ballots to rebut the fallacious arguments against this comment introduced during the ROC meeting.

Ziskin, M. The cumulative protocol represents forward thinking and a needed revision based on our improved understanding of permeation dynamics and data interpretation.

Abstain

Kavalesky, P. The test lab is abstaining from this Public Comment.

Affirmative with Comment

Document # 1991

Baxter, C. The committee has established a task group to continue looking at the cumulative permeation versus breakthrough time as the barrier criteria. The referenced TSWG-sponsored report has not been validated by independent sources, nor has the data been published widely at this time. Further review of the data is underway by the Government and will be shared with the task group working on this issue.

The discussions concerning this proposal did uncover a very important topic for future discussion as well, namely, we should not be calling an ensemble vapor-tight or non-permeable if we are going to allow permeation. The main reason that the breakthrough times were chosen instead of permeation times was specific to this "definition", not the "presentation that was delivered by a non-member of the committee". The presentation was requested by the committee and was very informative.

The comment that "the notion that the end users will be significantly less protected by the implementation of cumulative permeation masses is absolutely ludicrous and is only self-serving to those manufacturers which persist in perpetuating the fantasy that there is a true distinction in material technology on the basis of infinitesimally small differences in breakthrough time" is not indicative of the reasoning behind the decisions that were made at this meeting. Assumptions and generalizations such as this should not be tolerated by the NFPA board. This discussion was driven by end-users, NOT manufacturers.

1991-16 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2
7.4.6 and 7.5.6 (Log # 19)

Not Returned**Thompson, D.****Wisner, Jr., J.**

1991-17 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2
7.5.9 (Log # 12)

Not Returned**Thompson, D.****Wisner, Jr., J.****Affirmative with Comment**

Fithian, W. A study is underway and test data is being collected on currently certified HazMat footwear in order to establish an accurate performance criteria for this test. Data will be available prior to the TCC meeting, and the final performance requirement for the Slip Resistance Test should be based on the test data generated. The proposed value of 0.30 is too low, since this value is essentially the standing slip resistance value for footwear tested by this method.

1991-18 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2
7.5.9 (Log # 25)

Not Returned**Thompson, D.****Wisner, Jr., J.****Affirmative with Comment**

Storment, S. The introduction of a new slip resistance requirement should be harmonized among all standards where it is being implemented and is a matter of correlation by the Technical Correlating Committee.

Document # 1991

Stull, J. The introduction of a new slip resistance requirement should be harmonized among all standards where it is being implemented and is a matter of correlation by the Technical Correlating Committee.

1991-19 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2

7.6 (Log # 20)

Not Returned

Thompson, D.

Wisner, Jr., J.

1991-20 Eligible To Vote:31 Affirmative: 27 Negative: 2 Abstain: 0 Not Returned: 2

7.6.1, 7.6.2, 7.6.3, and 8.6.4.2 (Log # 28)

Not Returned

Thompson, D.

Wisner, Jr., J.

Negative

Storment, S. While I am in entire agreement to the submitter's proposed changes to the permeation test method, the proposed changes to the permeation test criteria and test method as implemented by the committee are unacceptable. The proposed language is awkward, particularly in its formatting for the performance criteria. The proposed changes shows ammonia and chlorine being tested twice, once at 27 C and again at 32 C, which is redundant. The proposed changes also show acrolen and acrylonitrile tested as a gas at 99% percent at a test temperature of 32 C. This is physically impossible as the saturated concentrations for both acrolen and acrylonitrile are 47% and 19%, respectively, at this test temperature based on their calculated saturation vapor pressures using the Antoine equation.

Stull, J. While I am in entire agreement to the submitter's proposed changes to the permeation test method, the proposed changes to the permeation test criteria and test method as implemented by the committee are unacceptable. The proposed language is awkward, particularly in its formatting for the performance criteria. The proposed changes shows ammonia and chlorine being tested twice, once at 27 C and again at 32 C, which is redundant. The proposed changes also show acrolen and acrylonitrile tested as a gas at 99% percent at a test temperature of 32 C. This is physically impossible as the saturated concentrations for both acrolen and acrylonitrile are 47% and 19%, respectively, at this test temperature based on their calculated saturation vapor pressures using the Antoine equation.

Affirmative with Comment

Nystrom, U. I support the decision of the committee (as evident from the ROC meeting minutes) that the TICS acrylonitrile, ammonia and chlorine be tested as part of the industrial chemicals battery using ASTM F739 and the 1 hour permeation breakthrough criteria. This is not clear from the provided ROC language. This is probably just an editorial slip-up but it needs to be fixed.

1991-21 Eligible To Vote:31 Affirmative: 22 Negative: 7 Abstain: 0 Not Returned: 2

7.8.5 and 8.28 (Log # 13)

Not Returned

Document # 1991

Thompson, D.

Wisner, Jr., J.

Negative

Fithian, W. There are a number of testing parameters that require modification, including compromising the ensemble to fit the test fixture and changes to the test method to accommodate a fully encapsulating ensemble. These modifications will likely lead to inconsistencies in the result obtained and further validation on encapsulating ensembles should be conducted to verify this method.

Gohlke, D. I do not believe that including this requirement and method as written with a 3 sec exposure will provide any discriminating information about burn injury with these products. I agree with many of the other arguments made against the inclusion of this requirement and method made by Saint Gobain.

Kavalesky, P. I believe that the comments presented by Peter Kirk are correct and the addition of the ASTM F 1930 is not necessary.

Kelly, B. This test is a redundant. I question a suit that has to be cut open to allow test cables to enter suit to conduct the test, then show gas-tight integrity without being repaired first.

Storment, S. The committee is making a serious mistake in adding a second flash fire test. The utility of a 3-second flash fire exposure using the manikin-based test is questionable given the fact that there is likely little contact of the suit on the manikin sensors and the test would require putting a hole in the suit for providing sensor output. Moreover, if the suit was compromised by severe shrinkage, this damage would prevent the suit from meeting the post-exposure pressure test for the current flash test. Since the committee forgot to make this same change for NFPA 1992, this topic has now become a matter of consideration by the Technical Correlating Committee for correlation purposes.

Stull, J. The committee is making a serious mistake in adding a second flash fire test. The utility of a 3-second flash fire exposure using the manikin-based test is questionable given the fact that there is likely little contact of the suit on the manikin sensors and the test would require putting a hole in the suit for providing sensor output. Moreover, if the suit was compromised by severe shrinkage, this damage would prevent the suit from meeting the post-exposure pressure test for the current flash test. Since the committee forgot to make this same change for NFPA 1992, this topic has now become a matter of consideration by the Technical Correlating Committee for correlation purposes.

Ziskin, M. The existing test is adequate enough and no data exists that would support that an additional test will provide increased benefits to the user.

1991-22 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2

8.1.1.1 and 8.1.1.2 (Log # 21)

Not Returned

Thompson, D.

Wisner, Jr., J.

1991-23 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2

8.1.2.1 (Log # 22)

Not Returned

Document # 1991

Thompson, D.**Wisner, Jr., J.**

1991-24 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2
8.1.9, 8.26.2.2, and 8.26.4.1 (Log # 33)

Not Returned**Thompson, D.****Wisner, Jr., J.**

1991-25 Eligible To Vote:31 Affirmative: 23 Negative: 6 Abstain: 0 Not Returned: 2
8.2.4 (Log # 4)

Not Returned**Thompson, D.****Wisner, Jr., J.****Negative****Baxter, C.** See my Explanation of Negative on Comment 1991-8 (Log #5).**Kavalesky, P.** See my Explanation of Negative on Comment 1991-8 (Log #5).**Kelly, B.** I see no evidence that increasing pressure and time assures better gas-tight integrity.**Storment, S.** See my Explanation of Negative on Comment 1991-8 (Log #5).**Stull, J.** See my Explanation of Negative Vote on Comment 1991-8.**Ziskin, M.** See my Explanation of Negative on Comment 1991-8 (Log #5).

1991-26 Eligible To Vote:31 Affirmative: 23 Negative: 6 Abstain: 0 Not Returned: 2
8.2.4.1 and 8.2.4.2 (Log # 6)

Not Returned**Thompson, D.****Wisner, Jr., J.****Negative****Baxter, C.** See my Explanation of Negative on Comment 1991-8 (Log #5).**Kavalesky, P.** See my Explanation of Negative on Comment 1991-8 (Log #5).**Kelly, B.** I see no evidence that increasing pressure and time assures better gas-tight integrity.**Storment, S.** See my Explanation of Negative on Comment 1991-8 (Log #5).**Stull, J.** See my Explanation of Negative Vote on Comment 1991-8.**Ziskin, M.** See my Explanation of Negative on Comment 1991-8 (Log #5).

Document # 1991

1991-27 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2

8.6.3.3 (Log # 23)

Not Returned**Thompson, D.****Wisner, Jr., J.**

1991-28 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2

8.6.11.5.1 (New) (Log # CC1)

Not Returned**Thompson, D.****Wisner, Jr., J.**

Affirmative with Comment

Storment, S. While I agree with the change, it bothers me that the the committee statement indicates that "it believes" the test cell will be clogged by frozen moisture in the air. Surely with the laboratory experience by the certification organizations, there would either be or not be any history for this type of problem sufficient to warrant the change.

Stull, J. While I agree with the change, it bothers me that the the committee statement indicates that "it believes" the test cell will be clogged by frozen moisture in the air. Surely with the laboratory experience by the certification organizations, there would either be or not be any history for this type of problem sufficient to warrant the change.

1991-29 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2

8.23.3.1 (Log # 10)

Not Returned**Thompson, D.****Wisner, Jr., J.**

1991-30 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2

8.23.3.1, 8.23.4, 8.23.5 (Log # 27)

Not Returned**Thompson, D.****Wisner, Jr., J.**

Affirmative with Comment

Storment, S. See my Comment on Affirmative on Comment 1991-18 (Log #25).

Stull, J. See response to 1991-18.

1991-31 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2

8.23.3.1, 8.23.4, and 8.23.5 (Log # 11)

Not Returned

Document # 1991

Thompson, D.**Wisner, Jr., J.****Affirmative with Comment****Fithian, W.** The new Slip Resistance Test shall be conducted under wet conditions only. Therefore, Table 8.18.4 needs to be corrected, eliminating the dry condition requirements. Additionally, the following section requires editing as follows:8.18.4 b.) Footwear shall be tested ~~in both the dry and~~ under wet conditions. The wet condition shall be achieved using distilled or de-ionized water. The water shall be applied to thoroughly wet the testing surface and make a pool at least as wide and long as the test portion of the footwear in the area of initial contact.**Storment, S.** See my Comment on Affirmative on Comment 1991-18 (Log #25).**Stull, J.** See response to 1991-18

1991-32 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2**8.27.5.1** (Log # 24)

Not Returned**Thompson, D.****Wisner, Jr., J.**

1991-33 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2**8.28.4.3 (New)** (Log # CC2)

Not Returned**Thompson, D.****Wisner, Jr., J.**

1991-34 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2**A.1.1.7** (Log # 30)

Not Returned**Thompson, D.****Wisner, Jr., J.****Affirmative with Comment****Storment, S.** See my Explanation of Negative on Comment 1991-1 (Log #31).**Stull, J.** See response to 1991-1.

1991-35 Eligible To Vote:31 Affirmative: 29 Negative: 0 Abstain: 0 Not Returned: 2**A.6.1.3 (New)** (Log # 16)

Not Returned**Thompson, D.****Wisner, Jr., J.**