

2012 Fall Revision Cycle

Report on Proposals

A compilation of NFPA® Technical Committee Reports on Proposals for public review and comment

Public Comment Deadline: March 2, 2012

NOTE: The proposed NFPA documents addressed in this Report on Proposals (ROP) and in a follow-up Report on Comments (ROC) will only be presented for action at the NFPA June 2013 Association Technical Meeting to be held June 10–13, 2013, at the McCormick Place Convention Center, Chicago, IL, when proper Amending Motions have been submitted to the NFPA by the deadline of October 5, 2012. Documents that receive no motions will not be presented at the meeting and instead will be forwarded directly to the Standards Council for action on issuance. For more information on the rules and for up-to-date information on schedules and deadlines for processing NFPA documents, check the NFPA website (www.nfpa.org) or contact NFPA Standards Administration.



National Fire Protection Association®

1 BATTERYMARCH PARK, QUINCY, MA 02169-7471

Information on NFPA Codes and Standards Development

I. Applicable Regulations. The primary rules governing the processing of NFPA documents (codes, standards, recommended practices, and guides) are the *NFPA Regulations Governing Committee Projects (Regs)*. Other applicable rules include *NFPA Bylaws*, *NFPA Technical Meeting Convention Rules*, *NFPA Guide for the Conduct of Participants in the NFPA Standards Development Process*, and the *NFPA Regulations Governing Petitions to the Board of Directors from Decisions of the Standards Council*. Most of these rules and regulations are contained in the *NFPA Directory*. For copies of the *Directory*, contact Codes and Standards Administration at NFPA Headquarters; all these documents are also available on the NFPA website at “www.nfpa.org.”

The following is general information on the NFPA process. All participants, however, should refer to the actual rules and regulations for a full understanding of this process and for the criteria that govern participation.

II. Technical Committee Report. The Technical Committee Report is defined as “the Report of the Technical Committee and Technical Correlating Committee (if any) on a document. A Technical Committee Report consists of the Report on Proposals (ROP), as modified by the Report on Comments (ROC), published by the Association.”

III. Step 1: Report on Proposals (ROP). The ROP is defined as “a report to the Association on the actions taken by Technical Committees and/or Technical Correlating Committees, accompanied by a ballot statement and one or more proposals on text for a new document or to amend an existing document.” Any objection to an action in the ROP must be raised through the filing of an appropriate Comment for consideration in the ROC or the objection will be considered resolved.

IV. Step 2: Report on Comments (ROC). The ROC is defined as “a report to the Association on the actions taken by Technical Committees and/or Technical Correlating Committees accompanied by a ballot statement and one or more comments resulting from public review of the Report on Proposals (ROP).” The ROP and the ROC together constitute the Technical Committee Report. Any outstanding objection following the ROC must be raised through an appropriate Amending Motion at the Association Technical Meeting or the objection will be considered resolved.

V. Step 3a: Action at Association Technical Meeting. Following the publication of the ROC, there is a period during which those wishing to make proper Amending Motions on the Technical Committee Reports must signal their intention by submitting a Notice of Intent to Make a Motion. Documents that receive notice of proper Amending Motions (Certified Amending Motions) will be presented for action at the annual June Association Technical Meeting. At the meeting, the NFPA membership can consider and act on these Certified Amending Motions as well as Follow-up Amending Motions, that is, motions that become necessary as a result of a previous successful Amending Motion. (See 4.6.2 through 4.6.9 of *Regs* for a summary of the available Amending Motions and who may make them.) Any outstanding objection following action at an Association Technical Meeting (and any further Technical Committee consideration following successful Amending Motions, see *Regs* at 4.7) must be raised through an appeal to the Standards Council or it will be considered to be resolved.

VI. Step 3b: Documents Forwarded Directly to the Council. Where no Notice of Intent to Make a Motion (NITMAM) is received and certified in accordance with the Technical Meeting Convention Rules, the document is forwarded directly to the Standards Council for action on issuance. Objections are deemed to be resolved for these documents.

VII. Step 4a: Council Appeals. Anyone can appeal to the Standards Council concerning procedural or substantive matters related to the development, content, or issuance of any document of the Association or on matters within the purview of the authority of the Council, as established by the *Bylaws* and as determined by the Board of Directors. Such appeals must be in written form and filed with the Secretary of the Standards Council (see 1.6 of *Regs*). Time constraints for filing an appeal must be in accordance with 1.6.2 of the *Regs*. Objections are deemed to be resolved if not pursued at this level.

VIII. Step 4b: Document Issuance. The Standards Council is the issuer of all documents (see Article 8 of *Bylaws*). The Council acts on the issuance of a document presented for action at an Association Technical Meeting within 75 days from the date of the recommendation from the Association Technical Meeting, unless this period is extended by the Council (see 4.8 of *Regs*). For documents forwarded directly to the Standards Council, the Council acts on the issuance of the document at its next scheduled meeting, or at such other meeting as the Council may determine (see 4.5.6 and 4.8 of *Regs*).

IX. Petitions to the Board of Directors. The Standards Council has been delegated the responsibility for the administration of the codes and standards development process and the issuance of documents. However, where extraordinary circumstances requiring the intervention of the Board of Directors exist, the Board of Directors may take any action necessary to fulfill its obligations to preserve the integrity of the codes and standards development process and to protect the interests of the Association. The rules for petitioning the Board of Directors can be found in the *Regulations Governing Petitions to the Board of Directors from Decisions of the Standards Council* and in 1.7 of the *Regs*.

X. For More Information. The program for the Association Technical Meeting (as well as the NFPA website as information becomes available) should be consulted for the date on which each report scheduled for consideration at the meeting will be presented. For copies of the ROP and ROC as well as more information on NFPA rules and for up-to-date information on schedules and deadlines for processing NFPA documents, check the NFPA website (www.nfpa.org) or contact NFPA Codes & Standards Administration at (617) 984-7246.

2012 Fall Revision Cycle ROP Contents

by NFPA Numerical Designation

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290	P	Standard for Fire Testing of Passive Protection Materials for Use on LP-Gas Containers.....	290-1
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TYPES OF ACTION

P Partial Revision

N New Document

R Reconfirmation

W Withdrawal

**2012 Fall Revision Cycle ROP
Committees Reporting**

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496 Standard for Purged and Pressurized Enclosures for Electrical Equipment	P	496-1
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67 Guideline on Explosion Protection for Gaseous Mixtures in Pipe Systems	N	67-1
68 Standard on Explosion Protection by Deflagration Venting	P	68-1
Explosives		
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498 Standard for Safe Havens and Interchange Lots for Vehicles Transporting Explosives	P	498-1
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Emergency Medical Services Protective Clothing and Equipment		
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Respiratory Protection Equipment		
1852 Standard on Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA)	P	1852-1
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1855 Standard on Selection, Care, and Maintenance of Protective Ensembles for Technical Rescue Incidents	N	1855-1
Structural and Proximity Fire Fighting Protective Clothing and Equipment		
1851 Standard for Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting	P	1851-1
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1962 Standard for the Inspection, Care, and Use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose	P	1962-1
1964 Standard for Spray Nozzles	P	1964-1
Fire Protection for Nuclear Facilities		
801 Standard for Fire Protection for Facilities Handling Radioactive Materials	P	801-1
Fire Risk Assessment Methods		
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Fire Service Training			
1404	Standard for Fire Service Respiratory Protection Training	P	1404-1
1451	Standard for a Fire Service Vehicle Operations Training Program	P	1451-1
Fire Tests			
259	Standard Test Method for Potential Heat of Building Materials	P	259-1
260	Standard Methods of Tests and Classification System for Cigarette Ignition Resistance of Components of Upholstered Furniture	P	260-1
261	Standard Method of Test for Determining Resistance of Mock-Up Upholstered Furniture Material Assemblies to Ignition by Smoldering Cigarettes	P	261-1
270	Standard Test Method for Measurement of Smoke Obscuration Using a Conical Radiant Source in a Single Closed Chamber	P	270-1
274	Standard Test Method to Evaluate Fire Performance Characteristics of Pipe Insulation	P	274-1
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290	Standard for Fire Testing of Passive Protection Materials for Use on LP-Gas Containers	P	290-1
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505	Fire Safety Standard for Powered Industrial Trucks Including Type Designations, Areas of Use, Conversions, Maintenance, and Operations	P	505-1
Manufactured Housing			
225	Model Manufactured Home Installation Standard	P	225-1
501	Standard on Manufactured Housing	P	501-1
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FORM FOR COMMENT ON NFPA REPORT ON PROPOSALS
2012 Fall Revision CYCLE
FINAL DATE FOR RECEIPT OF COMMENTS: 5:00 pm EDT, March 2, 2012

For further information on the standards-making process, please contact the Codes and Standards Administration at 617-984-7249 or visit www.nfpa.org/codes.

For technical assistance, please call NFPA at 1-800-344-3555.

FOR OFFICE USE ONLY

Log #: _____

Date Rec'd: _____

Please indicate in which format you wish to receive your ROP/ROC electronic paper download
(Note: If choosing the download option, you must view the ROP/ROC from our website; no copy will be sent to you.)

Date 8/1/200X Name John B. Smith Tel. No. 253-555-1234

Company _____ Email _____

Street Address 9 Seattle St. City Tacoma State WA Zip 98402

***If you wish to receive a hard copy, a street address MUST be provided. Deliveries cannot be made to PO boxes.

Please indicate organization represented (if any) Fire Marshals Assn. of North America

1. (a) NFPA Document Title National Fire Alarm Code NFPA No. & Year NFPA 72, 200X ed.

(b) Section/Paragraph 4.4.1.1

2. Comment on Proposal No. (from ROP): 72-7

3. Comment Recommends (check one): new text revised text deleted text

4. Comment (include proposed new or revised wording, or identification of wording to be deleted): [Note: Proposed text should be in legislative format; i.e., use underscore to denote wording to be inserted (inserted wording) and strike-through to denote wording to be deleted (~~deleted wording~~).]

Delete exception.

5. **Statement of Problem and Substantiation for Comment:** (Note: State the problem that would be resolved by your recommendation; give the specific reason for your Comment, including copies of tests, research papers, fire experience, etc. If more than 200 words, it may be abstracted for publication.)

A properly installed and maintained system should be free of ground faults. The occurrence of one or more ground faults should be required to cause a 'trouble' signal because it indicates a condition that could contribute to future malfunction of the system. Ground fault protection has been widely available on these systems for years and its cost is negligible. Requiring it on all systems will promote better installations, maintenance and reliability.

6. Copyright Assignment

(a) I am the author of the text or other material (such as illustrations, graphs) proposed in the Comment.

(b) Some or all of the text or other material proposed in this Comment was not authored by me. Its source is as follows: (please identify which material and provide complete information on its source)

I hereby grant and assign to the NFPA all and full rights in copyright in this Comment and understand that I acquire no rights in any publication of NFPA in which this Comment in this or another similar or analogous form is used. Except to the extent that I do not have authority to make an assignment in materials that I have identified in (b) above, I hereby warrant that I am the author of this Comment and that I have full power and authority to enter into this assignment.

Signature (Required)

John B. Smith

PLEASE USE SEPARATE FORM FOR EACH COMMENT

Mail to: Secretary, Standards Council · National Fire Protection Association
1 Batterymarch Park · Quincy, MA 02169-7471 OR
Fax to: (617) 770-3500 OR Email to: proposals_comments@nfpa.org

SAMPLE

FORM FOR COMMENT ON NFPA REPORT ON PROPOSALS
2012 Fall Revision CYCLE
FINAL DATE FOR RECEIPT OF COMMENTS: 5:00 pm EDT, March 2, 2012

For further information on the standards-making process, please contact the Codes and Standards Administration at 617-984-7249 or visit www.nfpa.org/codes.

For technical assistance, please call NFPA at 1-800-344-3555.

FOR OFFICE USE ONLY

Log #: _____

Date Rec'd: _____

Please indicate in which format you wish to receive your ROP/ROC electronic paper download
(Note: If choosing the download option, you must view the ROP/ROC from our website; no copy will be sent to you.)

Date _____ Name _____ Tel. No. _____

Company _____ Email _____

Street Address _____ City _____ State _____ Zip _____

*****If you wish to receive a hard copy, a street address MUST be provided. Deliveries cannot be made to PO boxes.**

Please indicate organization represented (if any) _____

1. (a) NFPA Document Title _____ NFPA No. & Year _____

(b) Section/Paragraph _____

2. Comment on Proposal No. (from ROP): _____

3. Comment Recommends (check one): new text revised text deleted text

4. Comment (include proposed new or revised wording, or identification of wording to be deleted): [Note: Proposed text should be in legislative format; i.e., use underscore to denote wording to be inserted (inserted wording) and strike-through to denote wording to be deleted (~~deleted wording~~).]

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(a) I am the author of the text or other material (such as illustrations, graphs) proposed in the Comment.

(b) Some or all of the text or other material proposed in this Comment was not authored by me. Its source is as follows: (please identify which material and provide complete information on its source)

I hereby grant and assign to the NFPA all and full rights in copyright in this Comment and understand that I acquire no rights in any publication of NFPA in which this Comment in this or another similar or analogous form is used. Except to the extent that I do not have authority to make an assignment in materials that I have identified in (b) above, I hereby warrant that I am the author of this Comment and that I have full power and authority to enter into this assignment.

Signature (Required) _____

PLEASE USE SEPARATE FORM FOR EACH COMMENT

Mail to: Secretary, Standards Council · National Fire Protection Association
1 Batterymarch Park · Quincy, MA 02169-7471 OR
Fax to: (617) 770-3500 OR Email to: proposals_comments@nfpa.org

COMMITTEE MEMBER CLASSIFICATIONS^{1,2,3,4}

The following classifications apply to Committee members and represent their principal interest in the activity of the Committee.

1. M Manufacturer: A representative of a maker or marketer of a product, assembly, or system, or portion thereof, that is affected by the standard.
2. U User: A representative of an entity that is subject to the provisions of the standard or that voluntarily uses the standard.
3. IM Installer/Maintainer: A representative of an entity that is in the business of installing or maintaining a product, assembly, or system affected by the standard.
4. L Labor: A labor representative or employee concerned with safety in the workplace.
5. RT Applied Research/Testing Laboratory: A representative of an independent testing laboratory or independent applied research organization that promulgates and/or enforces standards.
6. E Enforcing Authority: A representative of an agency or an organization that promulgates and/or enforces standards.
7. I Insurance: A representative of an insurance company, broker, agent, bureau, or inspection agency.
8. C Consumer: A person who is or represents the ultimate purchaser of a product, system, or service affected by the standard, but who is not included in (2).
9. SE Special Expert: A person not representing (1) through (8) and who has special expertise in the scope of the standard or portion thereof.

NOTE 1: "Standard" connotes code, standard, recommended practice, or guide.

NOTE 2: A representative includes an employee.

NOTE 3: While these classifications will be used by the Standards Council to achieve a balance for Technical Committees, the Standards Council may determine that new classifications of member or unique interests need representation in order to foster the best possible Committee deliberations on any project. In this connection, the Standards Council may make such appointments as it deems appropriate in the public interest, such as the classification of "Utilities" in the National Electrical Code Committee.

NOTE 4: Representatives of subsidiaries of any group are generally considered to have the same classification as the parent organization.

Sequence of Events Leading to Issuance of an NFPA Committee Document

Step 1 Call for Proposals

▼ Proposed new document or new edition of an existing document is entered into one of two yearly revision cycles, and a Call for Proposals is published.

Step 2 Report on Proposals (ROP)

▼ Committee meets to act on Proposals, to develop its own Proposals, and to prepare its Report.

▼ Committee votes by written ballot on Proposals. If two-thirds approve, Report goes forward. Lacking two-thirds approval, Report returns to Committee.

▼ Report on Proposals (ROP) is published for public review and comment.

Step 3 Report on Comments (ROC)

▼ Committee meets to act on Public Comments to develop its own Comments, and to prepare its report.

▼ Committee votes by written ballot on Comments. If two-thirds approve, Report goes forward. Lacking two-thirds approval, Report returns to Committee.

▼ Report on Comments (ROC) is published for public review.

Step 4 Association Technical Meeting

▼ “*Notices of intent to make a motion*” are filed, are reviewed, and valid motions are certified for presentation at the Association Technical Meeting. (“Consent Documents” that have no certified motions bypass the Association Technical Meeting and proceed to the Standards Council for issuance.)

▼ NFPA membership meets each June at the Association Technical Meeting and acts on Technical Committee Reports (ROP and ROC) for documents with “certified amending motions.”

▼ Committee(s) vote on any amendments to Report approved at NFPA Annual Membership Meeting.

Step 5 Standards Council Issuance

▼ Notification of intent to file an appeal to the Standards Council on Association action must be filed within 20 days of the NFPA Annual Membership Meeting.

▼ Standards Council decides, based on all evidence, whether or not to issue document or to take other action, including hearing any appeals.

The Association Technical Meeting

The process of public input and review does not end with the publication of the ROP and ROC. Following the completion of the Proposal and Comment periods, there is yet a further opportunity for debate and discussion through the Association Technical Meeting that takes place at the NFPA Annual Meeting.

The Association Technical Meeting provides an opportunity for the final Technical Committee Report (i.e., the ROP and ROC) on each proposed new or revised code or standard to be presented to the NFPA membership for the debate and consideration of motions to amend the Report. The specific rules for the types of motions that can be made and who can make them are set forth in NFPA's rules, which should always be consulted by those wishing to bring an issue before the membership at an Association Technical Meeting. The following presents some of the main features of how a Report is handled.

The Filing of a Notice of Intent to Make a Motion. Before making an allowable motion at an Association Technical Meeting, the intended maker of the motion must file, in advance of the session, and within the published deadline, a Notice of Intent to Make a Motion. A Motions Committee appointed by the Standards Council then reviews all notices and certifies all amending motions that are proper. The Motions Committee can also, in consultation with the makers of the motions, clarify the intent of the motions and, in certain circumstances, combine motions that are dependent on each other together so that they can be made in one single motion. A Motions Committee report is then made available in advance of the meeting listing all certified motions. Only these Certified Amending Motions, together with certain allowable Follow-Up Motions (that is, motions that have become necessary as a result of previous successful amending motions) will be allowed at the Association Technical Meeting.

Consent Documents. Often there are codes and standards up for consideration by the membership that will be noncontroversial and no proper Notices of Intent to Make a Motion will be filed. These "Consent Documents" will bypass the Association Technical Meeting and head straight to the Standards Council for issuance. The remaining documents are then forwarded to the Association Technical Meeting for consideration of the NFPA membership.

What Amending Motions Are Allowed. The Technical Committee Reports contain many Proposals and Comments that the Technical Committee has rejected or revised in whole or in part. Actions of the Technical Committee published in the ROP may also eventually be rejected or revised by the Technical Committee during the development of its ROC. The motions allowed by NFPA rules provide the opportunity to propose amendments to the text of a proposed code or standard based on these published Proposals, Comments, and Committee actions. Thus, the list of allowable motions include motions to accept Proposals and Comments in whole or in part as submitted or as modified by a Technical Committee action. Motions are also available to reject an accepted Comment in whole or part. In addition, Motions can be made to return an entire Technical Committee Report or a portion of the Report to the Technical Committee for further study.

The NFPA Annual Meeting, also known as the NFPA Conference & Expo, takes place in June of each year. A second Fall membership meeting was discontinued in 2004, so the NFPA Technical Committee Report Session now runs once each year at the Annual Meeting in June.

Who Can Make Amending Motions. NFPA rules also define those authorized to make amending motions. In many cases, the maker of the motion is limited by NFPA rules to the original submitter of the Proposal or Comment or his or her duly authorized representative. In other cases, such as a Motion to Reject an accepted Comment, or to Return a Technical Committee Report or a portion of a Technical Committee Report for Further Study, anyone can make these motions. For a complete explanation, the NFPA Regs should be consulted.

Action on Motions at the Association Technical Meeting. In order to actually make a Certified Amending Motion at the Association Technical Meeting, the maker of the motion must sign in at least an hour before the session begins. In this way a final list of motions can be set in advance of the session. At the session, each proposed document up for consideration is presented by a motion to adopt the Technical Committee Report on the document. Following each such motion, the presiding officer in charge of the session opens the floor to motions on the document from the final list of Certified Amending Motions followed by any permissible Follow-Up Motions. Debate and voting on each motion proceeds in accordance with NFPA rules. NFPA membership is not required in order to make or speak to a motion, but voting is limited to NFPA members who have joined at least 180 days prior to the Association Technical Meeting and have registered for the meeting. At the close of debate on each motion, voting takes place, and the motion requires a majority vote to carry. In order to amend a Technical Committee Report, successful amending motions must be confirmed by the responsible Technical Committee, which conducts a written ballot on all successful amending motions following the meeting and prior to the document being forwarded to the Standards Council for issuance.

Standards Council Issuance

One of the primary responsibilities of the NFPA Standards Council, as the overseer of the NFPA codes and standards development process, is to act as the official issuer of all NFPA codes and standards. When it convenes to issue NFPA documents, it also hears any appeals related to the document. Appeals are an important part of assuring that all NFPA rules have been followed and that due process and fairness have been upheld throughout the codes and standards development process. The Council considers appeals both in writing and through the conduct of hearings at which all interested parties can participate. It decides appeals based on the entire record of the process as well as all submissions on the appeal. After deciding all appeals related to a document before it, the Council, if appropriate, proceeds to issue the document as an official NFPA code or standard. Subject only to limited review by the NFPA Board of Directors, the decision of the Standards Council is final, and the new NFPA code or standard becomes effective twenty days after Standards Council issuance.

Report of the Committee on

Fire and Emergency Services Protective Clothing and Equipment
(FAE-AAC)**William E. Haskell, III**, *Chair*

National Institute for Occupational Safety & Health, MA [E]

Eric J. Beck, *Secretary*Mine Safety Appliances Company, PA [M]
Rep. Compressed Gas Association

Jason L. Allen, Intertek Testing Services, NY [RT]
Leslie Anderson, US Department of Agriculture, MT [E]
Roger L. Barker, North Carolina State University, NC [SE]
Brian D. Berchtold, US Department of the Navy, DE [RT]
Steven D. Corrado, Underwriters Laboratories Inc., NC [RT]
Nicholas J. Curtis, Lion Apparel, Inc., OH [M]
Richard M. Duffy, International Association of Fire Fighters, DC [L]
Cristine Z. Fargo, International Safety Equipment Association, VA [M]
Robert A. Freese, Globe Manufacturing Company, NH [M]
Patricia A. Gleason, Safety Equipment Institute (SEI), VA [RT]
James S. Johnson, Lawrence Livermore National Laboratory, CA [RT]
David G. Matthews, Fire & Industrial (P.P.E) Ltd., United Kingdom [SE]
 Rep. International Standards Organization
Gary L. Neilson, Sparks, NV [U]
 Rep. NFPA Fire Service Section
Anthony D. Putorti, Jr., National Institute of Standards & Technology,
 MD [RT]
Jeffrey O. Stull, International Personnel Protection, Inc., TX [SE]
William A. Van Lent, Veridian Ltd., Inc., IA [M]
 Rep. Fire & Emergency Manufacturers & Services Association
Richard H. Young, DuPont Protection Technologies, VA [M]

Alternates

Chris Bain, Oklahoma State Firefighters Association, OK [C]
 (Voting Alt. to OSFA Rep.)
Louis Carpentier, Innotex Inc., Canada [M]
 (Alt. to William A. Van Lent)
Brandi L. Chestang, US Department of the Navy, FL [RT]
 (Alt. to Brian D. Berchtold)
Patricia A. Freeman, Globe Manufacturing Company, LLC, NH [M]
 (Alt. to Robert A. Freese)
David V. Haston, US Department of Agriculture, CA [E]
 (Alt. to Leslie Anderson)
Kimberly M. Henry, PBI Performance Products, Inc., NC [M]
 (Alt. to Richard H. Young)
Pamela A. Kavalesky, Intertek Testing Services, NY [RT]
 (Alt. to Jason L. Allen)
Karen E. Lehtonen, Lion, OH [M]
 (Alt. to Nicholas J. Curtis)
Robin B. Royster, Underwriters Laboratories Inc., NC [RT]
 (Alt. to Steven D. Corrado)
Michael T. Rupert, Mine Safety Appliances Company, PA [M]
 (Alt. to Eric J. Beck)
Stephen R. Sanders, Safety Equipment Institute (SEI), VA [RT]
 (Alt. to Patricia A. Gleason)
Grace G. Stull, International Personnel Protection Inc., TX [SE]
 (Alt. to Jeffrey O. Stull)
Donald B. Thompson, North Carolina State University, NC [SE]
 (Alt. to Roger L. Barker)

Nonvoting

Christina M. Baxter, US Department of Defense, VA [E]
 Rep. TC on Hazardous Materials PC&E
Dean W. Cox, Fairfax County Fire & Rescue Department, VA [U]
 Rep. TC on Special Operations PC&E
Stephen J. King, Babylon, NY [SE]
 Rep. TC on Structural and Proximity Fire Fighting PC&E
Daniel N. Rossos, Portland Fire & Rescue, OR [U]
 Rep. TC on Respiratory Protection Equipment
Rick L. Swan, IAFF Local 2881/CDF Fire Fighters, CA [L]
 Rep. TC on Wildland Fire Fighting PC&E
Bruce H. Varner, Goodyear, AZ [E]
 Rep. TC on Electronic Safety Equipment

Committee Scope: This Committee shall have primary responsibility for documents on the design, performance, testing, and certification of protective clothing and protective equipment manufactured for fire and emergency services organizations and personnel, to protect against exposures encountered during emergency incident operations. This Committee shall also have the primary responsibility for documents on the selection, care, and maintenance of such protective clothing and protective equipment by fire and emergency services organizations and personnel.

Report of the Committee on

Electronic Safety Equipment (FAE-ELS)

Bruce H. Varner, *Chair*
Goodyear, AZ [SE]**Christina Spoons**, *Secretary*
Westmont Fire Department, IL [C]

Jason L. Allen, Intertek Testing Services, NY [RT]
Robert J. Athanas, FDNY/SAFE-IR, Incorporated, NY [U]
Nelson P. Bryner, National Institute of Standards & Technology, MD [RT]
John P. Campman, Grace Industries, Inc., PA [M]
Louis Chavez, Underwriters Laboratories Inc., IL [RT]
Michael G. Feely, Boston Fire Department, MA [U]
Wayne C. Haase, Summit Safety, Inc., MA [M]
William E. Haskell III, National Institute for Occupational Safety & Health,
 MA [E]
Jeffrey L. Hull, District of Columbia Fire & EMS Department, DC [E]
Richard Katz, Mine Safety Appliances Company, PA [M]
Michael F. McKenna, Antelope, CA [SE]
John H. Morris, ISG Infrasy, GA [M]
Lawrence M. Nyberg, Motorola Solutions Inc., IL [M]
Craig Parkulo, Tyco/Scott Health and Safety, NC [M]
Kevin M. Roche, Phoenix Fire Department, AZ [U]
Stephen R. Sanders, Safety Equipment Institute (SEI), VA [RT]
Gordon R. Sletmoe, Medford Fire-Rescue, OR [U]
Steven H. Weinstein, Honeywell Safety Products, CA [M]
 Rep. International Safety Equipment Association
Timothy W. Wolf, Scottsdale Fire Department, AZ [C]

Alternates

Craig Gestler, Mine Safety Appliances Company, PA [M]
 (Alt. to Richard Katz)
Patricia A. Gleason, Safety Equipment Institute (SEI), VA [RT]
 (Alt. to Stephen R. Sanders)
Zachary Stephen Haase, Summit Safety, Inc., MA [M]
 (Alt. to Wayne C. Haase)
John Jarboe, Grace Industries, Inc., MD [M]
 (Alt. to John P. Campman)
Robert M. Knabbe, FDNY/SAFE-IR, Incorporated, NY [U]
 (Alt. to Robert J. Athanas)
Mark Krizik, Motorola, Inc., IL [M]
 (Alt. to Lawrence M. Nyberg)
Neil P. Lakomiak, Underwriters Laboratories Inc., IL [RT]
 (Alt. to Louis Chavez)
Jeffrey L. Landis, Tyco/Scott Health and Safety, NC [M]
 (Alt. to Craig Parkulo)
David A. Little, ISG Infrasy, GA [M]
 (Alt. to John H. Morris)
Nick Luzie, Honeywell Safety Products, CA [M]
 (Alt. to Steven H. Weinstein)
Chad A. Morey, Intertek Testing Services, NY [RT]
 (Alt. to Jason L. Allen)
Timothy R. Rehak, National Institute for Occupational Safety & Health, PA
 [E]
 (Alt. to William E. Haskell III)
Kate A. Remley, National Institute of Standards & Technology, CO [RT]
 (Alt. to Nelson P. Bryner)
Steven D. Townsend, City of Carrollton Fire Department, TX [E]
 (Voting Alt. to Carrollton F.D. Rep.)

Committee Scope: This committee shall have primary responsibility for documents on the design, performance, testing, and certification of electronic safety equipment used by fire and emergency services personnel during emergency incident operations, and shall also have primary responsibility for documents on the selection, care, and maintenance of electronic safety equipment.

Report of the Committee on**Emergency Medical Services Protective Clothing and Equipment (FAE-EMS)**

William E. Haskell III, *Chair*
National Institute for Occupational Safety & Health, MA [E]

Karen E. Lehtonen, *Secretary*
Lion, OH [M]

Jason L. Allen, Intertek Testing Services, NY [RT]
Michael L. Aries, Town of Natick Fire Department, MA [L]
Rep. International Association of Fire Fighters
Steven D. Corrado, Underwriters Laboratories Inc., NC [RT]
James E. Davis, Columbus Firefighters Local 67, OH [L]
Todd P. Davis, Town of Longmeadow Fire Department, MA [C]
William A. Fithian, Safety Equipment Institute (SEI), VA [RT]
Daniel J. Gohlke, W. L. Gore and Associates, MD [M]
Donald F. Groce, Best Glove Inc., GA [M]
Eugene M. Novak, Jr., Commonwealth of Massachusetts, MA [E]
Richard W. Patrick, US Department of Homeland Security, MD [E]

Alternates

Nicholas J. Curtis, Lion Apparel, Inc., OH [M]
(Alt. to Karen E. Lehtonen)
Pamela A. Kavalesky, Intertek Testing Services, NY [RT]
(Alt. to Jason L. Allen)
Angie M. Shepherd, National Institute for Occupational Safety & Health, PA [E]
(Alt. to William E. Haskell III)
Gregg A. Skelly, Underwriters Laboratories Inc., NC [RT]
(Alt. to Steven D. Corrado)

Committee Scope: This Committee shall have primary responsibility for documents on protective clothing and protective equipment, except respiratory protective equipment, that provides hand, torso, limb, and face protection for fire fighters or other emergency services responders during incidents that involve emergency medical operations. These operations include first aid, cardiopulmonary resuscitation, basis life support, advanced life support, and other medical procedures provided to patients prior to arrival at a hospital or other health care facility. Additionally, this committee shall have primary responsibility for documents on the selection, care, and maintenance of emergency medical protective clothing and protective equipment by fire and emergency services organizations and personnel.

Report of the Committee on**Respiratory Protection Equipment (FAE-RPE)**

Daniel N. Rossos, *Chair*
Portland Fire & Rescue, OR [U]

Steven H. Weinstein, *Secretary*
Honeywell Safety Products, CA [M]
Rep. International Safety Equipment Association

Heinz W. Ahlers, National Institute for Occupational Safety & Health, PA [E]
Jason L. Allen, Intertek Testing Services, NY [RT]
Christopher Anaya, Sacramento Metropolitan Fire Department, CA [C]
Rep. California State Firefighters Association
David T. Bernzweig, Columbus (OH) Division of Fire, OH [L]
Rep. Columbus Fire Fighters Union
W. Lee Birch, Luxfer Gas Cylinders, CA [M]
A. Paul Bull, Charles Town, WV [SE]
Rodney V. Colbert, Fairfax County Fire & Rescue Department, VA [U]
Brian H. Cox, Clovis Fire Department, CA [U]
Deborah L. Crisher, City of Virginia Beach Fire Department, VA [U]
Nathan Dower, Dallas Fire-Rescue Department, TX [U]
Robin R. Gainey, Jacksonville Fire Rescue Department, FL [L]
Rep. International Association of Fire Fighters
Ed Golla, TRI/Air Testing, TX [RT]
A. Ira Harkness, US Department of the Navy, FL [RT]
David V. Haston, US Department of Agriculture, CA [RT]
John Jarboe, Grace Industries, Inc., MD [M]
James S. Johnson, Lawrence Livermore National Laboratory, CA [RT]
Clint Kaller, Los Angeles County Fire Department, CA [U]
Craig Martin, Avon-ISI, GA [M]
Ian Maxwell, Interspiro AB, Sweden [M]

Stephen T. Miles, National Institute for Occupational Safety & Health, WV [E]
Rep. National Institute for Occupational Safety & Health
Ruby Ochoa, Trace Analytics LLC, TX [RT]
Jerry Phifer, Tyco/Scott Health & Safety, NC [M]
Samuel C. Pitts, US Marine Corps Systems Command, VA [E]
Michael T. Rupert, Mine Safety Appliances Company, PA [M]
Stephen R. Sanders, Safety Equipment Institute (SEI), VA [RT]
Robert Sell, Draeger Safety, Inc., PA [M]
Richard S. Tobin, Jr., Fire Department City of New York, NY [U]
Kenton D. Warner, KDW Consulting, LLC, FL [SE]

Alternates

Marshall J. Black, US Department of the Navy, FL [RT]
(Alt. to A. Ira Harkness)
John P. Campman, Grace Industries, Inc., PA [M]
(Alt. to John Jarboe)
J. Michael Carlson, TRI Air Testing, TX [RT]
(Alt. to Ed Golla)
Dennis K. Davis, US Department of Agriculture, MT [RT]
(Alt. to David V. Haston)
Beverly F. Gullledge, Tyco/Scott Safety, NC [M]
(Alt. to Jerry Phifer)
David Hodson, Draeger Safety UK Ltd., United Kingdom [M]
(Alt. to Robert Sell)
John F. Kuhn, Mine Safety Appliances Company, PA [M]
(Alt. to Michael T. Rupert)
Beth C. Lancaster, US Marine Corps Systems Command, VA [E]
(Alt. to Samuel C. Pitts)
Nick Luzie, Honeywell Safety Products, CA [M]
(Alt. to Steven H. Weinstein)
Clint Mayhue, International Safety Instruments (ISI), GA [M]
(Alt. to Craig Martin)
Chad A. Morey, Intertek Testing Services, NY [RT]
(Alt. to Jason L. Allen)
William T. Mundy, Fire Department City of New York, NY [U]
(Alt. to Richard S. Tobin, Jr.)
Kenneth A. Pravetz, City of Virginia Beach Fire Department, VA [U]
(Alt. to Deborah L. Crisher)
Timothy M. Radtke, US Department of the Interior, CO [E]
(Voting Alt. to USDOJ Rep.)
Norman Seals, Dallas Fire-Rescue Department, TX [U]
(Alt. to Nathan Dower)
Dick Smith, Trace Analytics LLC, TX [RT]
(Alt. to Ruby Ochoa)
Jonathan V. Szalajda, National Institute for Occupational Safety & Health, PA [E]
(Alt. to Heinz W. Ahlers)

Nonvoting

Matthew I. Chibbaro, US Department of Labor, DC [E]
John Steelnack, US Department of Labor, DC [E]
(Alt. to Matthew I. Chibbaro)
Rep. Occupational Safety & Health Administration

Committee Scope: This Committee shall have primary responsibility for documents on respiratory equipment, including breathing air, for fire and emergency services personnel during incidents involving hazardous or oxygen deficient atmospheres. This Committee shall also have primary responsibility for documents on the selection, care, and maintenance of respiratory protection equipment and systems by fire and emergency services organizations and personnel.

Report of the Committee on**Special Operations Protective Clothing and Equipment (FAE-SCE)**

Dean W. Cox, *Chair*
Fairfax County Fire & Rescue Department, VA [U]

Karen E. Lehtonen, *Secretary*
Lion, OH [M]

Jason L. Allen, Intertek Testing Services, NY [RT]
Collin M. Byrne, Lynchburg Police Department, VA [U]
Steven D. Corrado, Underwriters Laboratories Inc., NC [RT]
Shawn G. Davis, Essex-Windsor Emergency Medical Services, Canada [U]
Keith B. Dempsey, City of Dalton Fire Department, GA [C]
James A. Frank, CMC Rescue, Inc., CA [M]
Stephen J. Geraghty, Fire Department City of New York, NY [U]
Daniel J. Gohlke, W. L. Gore and Associates, MD [M]

William E. Haskell III, National Institute for Occupational Safety & Health, MA [E]

Diane B. Hess, PBI Performance Products, Inc., NC [M]

Gavin P. Horn, University of Illinois Fire Service Institute, IL [SE]

Steve Hudson, Pigeon Mountain Industries, Inc., GA [M]

H. Dean Paderick, Special Rescue International, VA [SE]

Jack E. Reall, Columbus (OH) Division of Fire, OH [U]

Stephen R. Sanders, Safety Equipment Institute (SEI), VA [RT]

Michael T. Stanhope, TenCate/Southern Mills, Inc., GA [M]

R. Douglas Stephenson, City of Johns Creek Fire Department, GA [U]

Alternates

Charles S. Dunn, TenCate/Southern Mills, GA [M]

(Alt. to Michael T. Stanhope)

William A. Fithian, Safety Equipment Institute (SEI), VA [RT]

(Alt. to Stephen R. Sanders)

Kimberly M. Henry, PBI Performance Products, Inc., NC [M]

(Alt. to Diane B. Hess)

Pamela A. Kavalesky, Intertek Testing Services, NY [RT]

(Alt. to Jason L. Allen)

Kim Klaren, Fairfax County Fire & Rescue Department, VA [U]

(Alt. to Dean W. Cox)

Loui McCurley, PMI-West, CO [M]

(Alt. to Steve Hudson)

James E. Murray, Fire Department City of New York, NY [U]

(Alt. to Stephen J. Geraghty)

Ashley M. Scott, Lion Apparel, Inc., OH [M]

(Alt. to Karen E. Lehtonen)

Angie M. Shepherd, National Institute for Occupational Safety & Health, PA [E]

(Alt. to William E. Haskell III)

Beverly Wooten Stutts, Underwriters Laboratories Inc., NC [RT]

(Alt. to Steven D. Corrado)

Committee Scope: This Committee shall have primary responsibility for documents on special operations protective clothing and protective equipment, except respiratory equipment, that provides hand, foot, torso, limb, head, and interface protection for fire fighters and other emergency services responders during incidents involving special operations functions including, but not limited to, structural collapse, trench rescue, confined space entry, urban search and rescue, high angle/mountain rescue, vehicular extraction, swift water or flooding rescue, contaminated water diving, and air operations.

This Committee shall also have primary responsibility for documents on station/work uniform garments that are not of themselves primary protective garments but can be combined with a primary protective garment to serve dual or multiple functions.

Additionally, this Committee shall have primary responsibility for documents on the selection, care, and maintenance of special operations protective clothing and equipment by fire and emergency services organizations and personnel.

Report of the Committee on

Structural and Proximity Fire Fighting Protective Clothing and Equipment (FAE-SPF)

Stephen J. King, *Chair*
Babylon, NY [SE]

Benjamin Mauti, *Secretary (Alternate)*
Mine Safety Appliances Company, PA [M]
(Alt. to John F. Rihn)

Jason L. Allen, Intertek Testing Services, NY [RT]

Roger L. Barker, North Carolina State University, NC [SE]

Brian D. Berchtold, US Department of the Navy, DE [RT]

Steven D. Corrado, Underwriters Laboratories Inc., NC [RT]

Dean W. Cox, Fairfax County Fire & Rescue Department, VA [U]

Paul F. Curtis, L.N. Curtis & Sons, CA [IM]

Rick D. Davis, National Institute of Standards & Technology, MD [RT]

Scott R. Doan, Alameda County Fire Department, CA [U]

Tim Durby, Phoenix Fire Department, AZ [U]

Rep. International Fire Service Training Association

Richard C. Edinger, Chesterfield County Fire & Emergency Medical Services, VA [E]

Rep. International Association of Fire Chiefs

David P. Fanning, E. D. Bullard Company, KY [M]

William A. Fithian, Safety Equipment Institute (SEI), VA [RT]

Patricia A. Freeman, Globe Manufacturing Company, LLC, NH [M]

Richard O. Granger, Jr., Charlotte Fire Department, NC [U]

William E. Haskell III, National Institute for Occupational Safety & Health, MA [E]

Emeral Earl Hayden, City of El Paso Fire Department, TX [L]

Rep. International Association of Fire Fighters

Steve L. Lakey, Northwest Safety Clean Inc., OR [IM]

Rep. Verified Independent Services Providers Association

Karen E. Lehtonen, Lion, OH [M]

Lance Matiste, Fire-Dex, OH [M]

Michael F. McKenna, Antelope, CA [SE]

Daniel F. Melia, Fire Department City of New York, NY [U]

Andrew R. Oliver, Gear Wash LLC, WI [IM]

Louis V. Ott, Gentex Corporation, PA [M]

Matthew D. Pegg, Brampton Fire & Emergency Services, Canada [U]

Rep. Ontario Association of Fire Chiefs

Tom Ragan, Shelby Specialty Gloves, TN [M]

John F. Rihn, Mine Safety Appliances Company, PA [M]

R. Wendell Robison, Fillmore, UT [C]

Rep. National Volunteer Fire Council

Kelly Sisson, City of La Mesa Fire Department, CA [U]

Douglas Sloan, Honeywell First Responder Products, NY [M]

Jeffrey O. Stull, International Personnel Protection, Inc., TX [SE]

Tim W. Tomlinson, Addison Fire Department, TX [C]

Alternates

Wells Bullard, E. D. Bullard Company, KY [M]

(Alt. to David P. Fanning)

Nicholas J. Curtis, Lion Apparel, Inc., OH [M]

(Alt. to Karen E. Lehtonen)

Mark J. Dolim, L.N. Curtis & Sons, CA [IM]

(Alt. to Paul F. Curtis)

Richard C. Ford, II, Chicago Fire Department, IL [E]

(Voting Alt. to Chicago F.D. Rep.)

A. Ira Harkness, US Department of the Navy, FL [RT]

(Alt. to Brian D. Berchtold)

Tricia Hock, Fire-Dex, OH [M]

(Alt. to Lance Matiste)

Pamela A. Kavalesky, Intertek Testing Services, NY [RT]

(Alt. to Jason L. Allen)

Kim Klaren, Fairfax County Fire & Rescue Department, VA [U]

(Alt. to Dean W. Cox)

Michael A. Laton, Honeywell First Responder Products, GA [M]

(Alt. to Douglas Sloan)

Anthony D. Putorti, Jr., National Institute of Standards & Technology, MD [RT]

(Alt. to Rick D. Davis)

Robin B. Royster, Underwriters Laboratories Inc., NC [RT]

(Alt. to Steven D. Corrado)

Angie M. Shepherd, National Institute for Occupational Safety & Health, PA [E]

(Alt. to William E. Haskell III)

Grace G. Stull, International Personnel Protection, Inc., TX [SE]

(Alt. to Jeffrey O. Stull)

Donald B. Thompson, North Carolina State University, NC [SE]

(Alt. to Roger L. Barker)

Robert D. Tutterow, Jr., Charlotte Fire Department, NC [U]

(Alt. to Richard O. Granger, Jr.)

Don Welch, II, Globe Manufacturing Company, NH [M]

(Alt. to Patricia A. Freeman)

David K. Whiting, Columbus Division of Fire, OH [E]

(Alt. to Richard C. Edinger)

Patrick J. Woods, Fire Department City of New York, NY [U]

(Alt. to Daniel F. Melia)

Nonvoting

William R. Hamilton, US Department of Labor, DC [E]

Andrew Levinson, US Department of Labor, DC [E]

(Alt. to William R. Hamilton)

Rep. Occupational Safety & Health Administration

Staff Liaison: **David G. Trebisacci**

Committee Scope: This committee shall have primary responsibility for documents on protective ensembles, except respiratory protection, that provides head, limb, hand, foot, torso, and interface protection for fire fighters and other emergency services responders during incidents involving structural fire fighting operations or proximity fire fighting operations.

Structural fire fighting operations include the activities of rescue, fire suppression, and property conservation during incidents involving fires in buildings, enclosed structures, vehicles, marine vessels, or like properties. Proximity fire fighting operations include the activities of rescue, fire suppression, and property conservation during incidents involving commercial and military aircraft fires, bulk flammable gas fires, bulk flammable and combustible liquids fires, combustible metal fires, exotic fuel fires, and other such fires that produce very high levels of radiant heat as well as convective and conductive heat.

Additionally, this committee shall have primary responsibility for documents on the selection, care, and maintenance of structural and proximity fire fighting protective ensembles by fire and emergency services organizations and personnel.

These lists represent the membership at the time each Committee was balloted on the text of this report. Since that time, changes in the membership may have occurred. A key to classifications is found at the front of the document.

The Report of the Committee on **Fire and Emergency Services Protective Clothing and Equipment** is presenting seven Reports for adoption, as follows:

The Reports were prepared by the:

- Technical Correlating Committee on **Fire and Emergency Services Protective Clothing and Equipment** (FAE-AAC)
- Technical Committee on Electronic Safety Equipment (FAE-ELS)
- Technical Committee on Emergency Medical Services Protective Clothing and Equipment (FAE-EMS)
- Technical Committee on Respiratory Protection Equipment (FAE-RPE)
- Technical Committee on Special Operations Protective Clothing and Equipment (FAE-SCE)
- Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment (FAE-SPF)

Report I: The Technical Committee proposes for adoption, amendments to NFPA 1851, **Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting**, 2008 edition. NFPA 1851-2009 is published in Volume 13 of the 2011 National Fire Codes and in separate pamphlet form.

The report on NFPA 1851 has been submitted to letter ballot of the **Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment**, which consists of 33 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

This Report on Proposals has also been submitted to the **Technical Correlating Committee on Fire and Emergency Services Protective Clothing and Equipment** (TCC) in two parts. Part I is a letter ballot on the TCC Actions, if any; and Part II is an informational letter ballot on the Report as a whole. The TCC, which consists of 20 voting members, voted as follows:

Since there were no TCC Actions, there is no ballot on Part I.

Part II: 16 voted affirmatively, and 4 ballots were not returned (Bain, Barker, Duffy, Putorti).

Mr. Stull voted affirmatively stating:

The TCC heard a presentation indicating the specific needs for firefighter hygiene and cleaning off ensemble elements following specific fires; this information should be incorporated into the appendix material of NFPA 1851 (and NFPA 1855).

Report II: The Technical Committee proposes for adoption, amendments to NFPA 1852, **Standard on Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA)**, 2008 edition. NFPA 1852-2008 is published in Volume 13 of the 2011 National Fire Codes and in separate pamphlet form.

The report on NFPA 1852 has been submitted to letter ballot of the **Technical Committee on Respiratory Protection Equipment**, which consists of 31 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

This Report on Proposals has also been submitted to the **Technical Correlating Committee on Fire and Emergency Services Protective Clothing and Equipment** (TCC) in two parts. Part I is a letter ballot on the TCC Actions, if any; and Part II is an informational letter ballot on the Report as a whole. The TCC, which consists of 20 voting members, voted as follows:

Since there were no TCC Actions, there is no ballot on Part I.

Part II: 16 voted affirmatively, and 4 ballots were not returned (Barker, Duffy, Putorti, Bain).

Mr. Stull voted affirmatively stating: The issue of continued air quality should be reviewed as it applies to new types of pressure vessels, especially for long term storage.

Report III: The Technical Committee proposes for adoption, a new document NFPA 1855, **Standard on Selection, Care, and Maintenance of Protective Ensembles for Technical Rescue Incidents**, 2013 edition.

The report on NFPA 1855 has been submitted to letter ballot of the **Technical Committee on Special Operations Protective Clothing and Equipment**, which consists of 19 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

This Report on Proposals has also been submitted to the **Technical Correlating Committee on Fire and Emergency Services Protective Clothing and Equipment** (TCC) in two parts. Part I is a letter ballot on the TCC Actions, if any; and Part II is an informational letter ballot on the Report as a whole. The TCC, which consists of 20 voting members, voted as follows:

Part I: 15 voted affirmatively, and 5 ballots were not returned (Bain, Barker, Duffy, Neilson, Putorti).

Part II: 15 voted affirmatively, and 5 ballots were not returned (Bain, Barker, Duffy, Neilson, Putorti).

Mr. Stull voted affirmatively stating: The TCC was informed of new research that shows the hazards of skin contamination that can be attenuated by improved firefighter post scene hygiene and the proper cleaning of ensemble elements. This information should be incorporated into the appendix of NFPA 1855 (and NFPA 1851).

Report IV: The Technical Committee proposes for adoption, amendments to NFPA 1981, **Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services**, 2007 edition. NFPA 1981-2007 is published in Volume 14 of the 2011 National Fire Codes and in separate pamphlet form.

The report on NFPA 1981 has been submitted to letter ballot of the **Technical Committee on Respiratory Protection Equipment**, which consists of 31 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

This Report on Proposals has also been submitted to the **Technical Correlating Committee on Fire and Emergency Services Protective Clothing and Equipment** (TCC) in two parts. Part I is a letter ballot on the TCC Actions, if any; and Part II is an informational letter ballot on the Report as a whole. The TCC, which consists of 20 voting members, voted as follows:

Part I: 14 voted affirmatively, 2 negatively after circulation of negative ballots (Berchtold, Haston), and 4 ballots were not returned (Bain, Barker, Neilson, Putorti).

Mr. Berchtold voted negatively stating:

Committee Action on proposal 1981-14 (Log #CP3), (Sections 3.3, 6.2, and 6.3) is in conflict with CFR/NIOSH/Regulations/Directives.

Mr. Haston voted negatively stating:

The TCC actions for proposals 1981-7 (Log #CP1) and 1981-26 (Log #CP7) do not appear to be correlation issues. Both TCC actions involve a considerable amount of new material which was not available for public review during ROP.

The TCC direction circumvents the ROP process and is not an appropriate means of adding new material or making major revisions. Public proposals should have been submitted, this TCC direction demonstrates a lack of respect for the process.

Part II: 16 voted affirmatively, and 4 ballots were not returned (Bain, Barker, Neilson, Putorti).

Report V: The Technical Committee proposes for adoption, amendments to NFPA 1982, **Standard on Personal Alert Safety Systems (PASS)**, 2007 edition. NFPA 1982 is published in Volume 14 of the 2011 National Fire Codes and in separate pamphlet form.

The report on NFPA 1982 has been submitted to letter ballot of the **Technical Committee on Electronic Safety Equipment**, which consists of 22 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

This Report on Proposals has also been submitted to the **Technical Correlating Committee on Fire and Emergency Services Protective Clothing and Equipment** (TCC) in two parts. Part I is a letter ballot on the TCC Actions, if any; and Part II is an informational letter ballot on the Report as a whole. The TCC, which consists of 20 voting members, voted as follows:

Since there were no TCC Actions, there is no ballot on Part I.

Part II: 16 voted affirmatively, and 4 ballots were not returned (Bain, Barker, Duffy, Putorti).

Report VI: The Technical Committee proposes for adoption, amendments to NFPA 1989, **Standard on Breathing Air Quality for Emergency Services Respiratory Protection**, 2008 edition. NFPA 1989-2008 is published in Volume 14 of the 2011 National Fire Codes and in separate pamphlet form.

The report on NFPA 1989 has been submitted to letter ballot of the **Technical Committee on Respiratory Protection Equipment**, which consists of 31 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

This Report on Proposals has also been submitted to the **Technical Correlating Committee on Fire and Emergency Services Protective Clothing and Equipment** (TCC) in two parts. Part I is a letter ballot on the TCC Actions, if any; and Part II is an informational letter ballot on the Report as a whole. The TCC, which consists of 20 voting members, voted as follows:

Part I: 16 voted affirmatively, and 4 ballots were not returned (Bain, Barker, Duffy, Putorti).

Part II: 16 voted affirmatively, and 4 ballots were not returned (Bain, Barker, Duffy, Putorti).

Report VII: The Technical Committee proposes for adoption, amendments to NFPA 1999, **Standard on Protective Clothing for Emergency Medical Operations**, 2008 edition. NFPA 1999-2008 is published in Volume 15 of the 2011 National Fire Codes and in separate pamphlet form.

The report on NFPA 1999 has been submitted to letter ballot of the **Technical Committee on Emergency Medical Services Protective Clothing and Equipment** which consists of 12 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

This Report on Proposals has also been submitted to the **Technical Correlating Committee on Fire and Emergency Services Protective Clothing and Equipment** (TCC) in two parts. Part I is a letter ballot on the TCC Actions, if any; and Part II is an informational letter ballot on the Report as a whole. The TCC, which consists of 20 voting members, voted as follows:

Part I: 15 voted affirmatively, and 5 ballots were not returned (Bain, Barker, Duffy, Neilson, Putorti).

Part II: 15 voted affirmatively, and 5 ballots were not returned (Bain, Barker, Duffy, Neilson, Putorti).

Mr. Stull voted affirmatively stating:
As identified in the committee statements the incorporation of new test methods should be predicated on the complete validation of those test methods that includes as a minimum interlaboratory testing and correlation with field performances.

1851-1 Log #CPI FAE-SPF **Final Action: Accept**
(Entire Document)

Submitter: Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment,

Recommendation: Review entire document to: 1) Update any extracted material by preparing separate proposals to do so, and 2) review and update references to other organizations documents, by preparing proposal(s) as required.

Substantiation: To conform to the NFPA Regulations Governing Committee Projects.

Committee Meeting Action: Accept

Committee Statement: The technical committee reviewed the entire document and updated any extracted material by preparing separate proposals to do so, reviewed and update references to other organizations documents, by preparing proposal(s) as may have been required.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-2 Log #CP9 FAE-SPF **Final Action: Accept**
(Chapter 3, 4, 6, 7, 8, 11, and Annex A)

Submitter: Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment,

Recommendation: Revise text to read as follows:

~~3.3.13.2 Contract Cleaning. Cleaning conducted by a facility outside the organization that specializes in cleaning protective clothing.~~

3.3.49 Independent Service Provider (ISP). An independent third party utilized by an organization to perform any one or any combination of advanced inspection, advanced cleaning, or advanced repair services.

3.3.49.1 Manufacturer trained ISP. An independent third party trained by any element manufacturer of the same element type to conduct cleaning, inspection and basic repair.

3.3.49.2 Verified ISP. An independent third party verified by a third party certification organization to conduct cleaning, inspection and repair.

3.3.59.1 Manufacturer trained organization. An organization trained by any element manufacturer of the same element type to conduct inspection, cleaning and basic repair.

3.3.59.2 Verified organization. An organization third party verified by a third party certification organization to conduct cleaning, inspection and repair.

~~4.1.4 Manufacturers shall be allowed to exclude proprietary components or specific models from this care and maintenance program.~~

~~4.2.4 Where the organization performs its own repairs or uses an independent service provider (ISP) to perform garment elements repair services, the organization or ISP shall meet the requirements of Chapter 11, Verification, and shall be verified by a third-party certification organization. The repairs identified in Section 8.3 shall be excluded from this requirement.~~

4.2.4 The organization shall use one of the following to perform advanced cleaning, advanced inspection and advanced repair of ensembles and ensemble elements:

(a)* Manufacturer trained organization.

(b)* Manufacturer trained ISP.

(c)* Verified organization.

(d)* Verified ISP

4.2.4.1 Verified organizations or verified ISPs shall meet the requirements of Chapter 11, Verification and shall be verified by a third-party certification organization.

4.2.4.2 Where the organization is a verified organization or uses a verified ISP for advanced cleaning, advanced inspection or advanced repairs, approval from the element manufacturer shall not be required.

~~4.2.4.3 Verified~~ The organizations or verified ISP's shall receive written verification from the third-party certification organization to perform garment element advanced cleaning, advanced inspection and advanced repair services.

~~4.2.4.24*~~ The certification organization's written verification shall specify the categories of garment element repair the verified organization or the verified ISP is verified approved to perform and the processes used to perform these services.

~~4.2.4.35~~ The written verification shall indicate that the verified organization or the verified ISP has demonstrated a working knowledge of Chapter 8, Repair, of this standard as well as the design and performance requirements of NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting.

4.2.4.6 All garment advanced repairs shall be conducted by a verified organization or verified ISP.

4.2.4.7 Manufacturer trained organizations or manufacturer trained ISPs performing advanced cleaning and advanced inspection shall be trained by an element manufacturer of the same element type or by a verified ISP. The element manufacturer or verified ISP shall provide documentation that the organization or ISP has received the necessary training.

~~4.2.5 Where the organization performs its own advanced inspection or advanced cleaning, the organization shall be trained by the ensemble or ensemble element manufacturer or an verified ISP. Where the organization uses~~

~~an ISP to perform advanced inspection or advanced cleaning, the ISP shall be trained by the ensemble or ensemble manufacturer.~~

~~4.2.5.1* The element manufacturer or ISP training provider shall have instructional delivery requisite knowledge and skills for an instructor. Documentation shall be provided upon request to the organization and, where applicable, to the certification organization.~~

~~4.4.2* Where the manufacturer's instructions regarding the care or maintenance of the protective ensembles or elements differ from a specific requirement(s) in this standard, the manufacturer's instructions shall be followed for that requirement.~~

6.3.1 Advanced inspection and any necessary testing shall be performed by a manufacturer trained organization, a manufacturer trained ISP, a verified organization or a verified ISP or the organization's trained personnel.

6.4.1 Complete liner inspection of all garment elements shall be performed by a manufacturer trained organization, a manufacturer trained ISP, a verified organization or a verified ISP or the organization's trained personnel.

7.1.9* When a manufacturer trained ISP or verified ISP is used for contract cleaning or decontamination is used, the ISP shall demonstrate, to the organization's satisfaction, that the procedures for cleaning and decontamination do not compromise the performance of ensembles and ensemble elements.

7.3.1 Advanced cleaning shall be performed by a manufacturer trained organization, a manufacturer trained ISP, a verified organization or a verified ISP or the organization's trained personnel.

7.3.1.1 The advanced cleaning shall be managed by a member of the organization or conducted by members of the organization who have received training in the advanced cleaning of protective ensembles and ensemble elements. The ensemble or ensemble element manufacturer or verified ISP and the organization shall determine the level of training required to perform advanced cleaning. The ensemble or ensemble element manufacturer or verified ISP shall provide written verification of training.

8.1.1 All repairs shall be performed by the original manufacturer, a verified ISP, or a member of the verified organization who has received training by the manufacturer or by a verified ISP in the repair of ensembles or ensemble elements.

8.1.5 Due to the different methods of construction, the ensemble or ensemble element manufacturer shall be contacted if the verified organization or verified ISP is unsure of whether a repair can be accomplished without adversely affecting the integrity of the ensemble or ensemble element.

8.3 Additional Requirements for Basic Garment Element Repair.

The repairs specified in this section shall be performed by the element manufacturer, by both verified and nonverified organizations, or by both verified and nonverified ISPs, manufacturer trained organizations, manufacturer trained ISP's, verified organizations or verified ISP's. Basic repairs shall be limited to the following:

(1) Patching of minor tears, char marks, and ember burns to a separable outer shell

(2) Repairing of skipped, broken, and missing stitches to a separable outer shell

(3) Replacement of missing hardware, excluding positive closure systems to a separable outer shell

(4) Reclosing of the liner of a garment after inspection

8.4.2 Major repairs to the garment outer shell shall be performed only by the garment element manufacturer or by a verified ISP consistent with the garment element manufacturer's methods. The garment element manufacturer shall be contacted if the organization is unsure of whether a repair is major or minor.

8.4.3* All repairs to the garment moisture barrier shall be performed only by the garment element manufacturer or by a verified ISP consistent with the moisture barrier manufacturer's methods. The organization shall contact the original garment element manufacturer if the organization is unsure as to whether an area to be repaired contains a moisture barrier.

8.4.6 Restitching of more than 25 continuous mm (1 continuous in.) of a Major A seam shall require consulting the garment element manufacturer or shall be performed by the garment element manufacturer or by a verified ISP and shall be conducted in a manner consistent with the garment element manufacturer's methods.

8.4.7 Repairs to Major B seams in the moisture barrier shall require consulting the garment element manufacturer and shall be conducted in a manner consistent with the barrier manufacturer's recommendations, be repaired or altered only by the garment element manufacturer or by a verified ISP and shall not be repaired by the organization unless the organization is also a verified ISP.

8.4.7.1 Repairs to Major B seams in the thermal liner that do not affect any moisture barrier material shall be permitted. Restitching of more than 25 continuous mm (1 continuous in.) of any Major B seams shall require consulting the garment element manufacturer or shall be performed by the garment element manufacturer or by a verified ISP and shall be conducted in a manner consistent with the garment element manufacturer's methods.

8.4.9 If replacing trim necessitates sewing into a Major A seam, trim replacement shall be conducted in a manner consistent with the garment element manufacturer's methods, done only by the garment element manufacturer or by a verified ISP unless the organization is also a verified ISP.

8.4.10* Replacement zippers shall be installed in a manner consistent with the garment element manufacturer's method of construction. If the complexity

of the repair is uncertain, the garment element manufacturer shall be consulted. Zippers that are part of a positive closure system shall not be replaced by the organization unless the organization is also a verified ISP.

8.5.2* Where there is indication of a crack, dent, abrasion, bubbling, soft spot, discoloration, or warping in the helmet shell, the helmet element manufacturer or manufacturer trained ISP or verified its designated ISP shall be contacted to determine serviceability.

8.7.2 Other than the replacement of bootlaces and zipper assemblies, all repairs to boots shall be performed by the footwear element manufacturer or manufacturer trained ISP or verified its designated ISP.

11.1.1.1 Verification of the organization or ISP shall be limited to include advanced inspection, advanced cleaning and advanced repairs of garment elements only. Verification of the organization or ISP shall not apply to helmet elements, glove elements, footwear elements, hood element, or optional CBRN ensembles.

11.1.1.2 The verification listing shall contain the repair categories that the organization or the ISP is verified to conduct. Repair categories shall be garment outer shell repairs, garment moisture barrier repairs, and garment thermal barrier repairs.

11.1.4 All verified organizations or ISPs shall be listed by the certification organization. The listing shall contain the repair categories that the organization or the ISP is verified to conduct. Repair categories shall be garment outer shell repairs, garment moisture barrier repairs, and garment thermal barrier repairs.

11.1.5 The certification organization shall not issue any new verifications to the 2008 edition of NFPA 1851, Standard on Selection, Care and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, on or after the NFPA effective date for the 2013 edition which is [NEW EFFECTIVE DATE TO BE INSERTED].

11.1.6 Organizations or ISP's verified to the 2008 edition of NFPA 1851, Standard on Selection, Care and Maintenance of Protective Ensembles shall undergo verification to the 2013 edition of NFPA 1851 within 6 months of the NFPA effective date for the 2013 edition which is [NEW EFFECTIVE DATE TO BE INSERTED].

11.3.7 For verification of an organization's or an ISP's advanced cleaning services, the certification organization shall evaluate the organization's or ISP's procedures in accordance with Section 7.3 of this standard.

11.3.8 For verification of an organization's or an ISP's advanced inspection services, the certification organization shall evaluate the organization's or ISP's procedures in accordance with Sections 6.3 and 6.4 of this standard.

11.3.9-11.3.7 For verification of an organization's or an ISP's repair services, the following series of tests shall be required for each repair category for which the organization or the ISP is verified. Testing shall be conducted using new materials as outlined in Table 11.3.9-11.3.7(a) through Table 11.3.9-11.3.7(c).

Remember Table 11.3.7 (a) through (c) as Table 11.2.9 (a) through (c).

11.3.9.1-11.3.7-1 For repairs to tears in the outer shell, moisture barrier, and thermal barrier, the certification organization shall create the tear in the material(s) to be repaired in accordance with Figure 11.3.9.1-11.3.7-1.

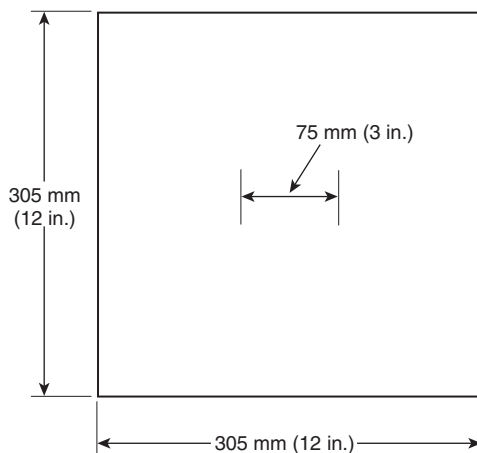


Figure 11.3.9.1 Tear Repairs

11.3.9.2-11.3.7-2 For moisture barrier hole repairs, the certification organization shall create the hole in the material(s) to be repaired in accordance with Figure 11.3.9.2-11.3.7-2.

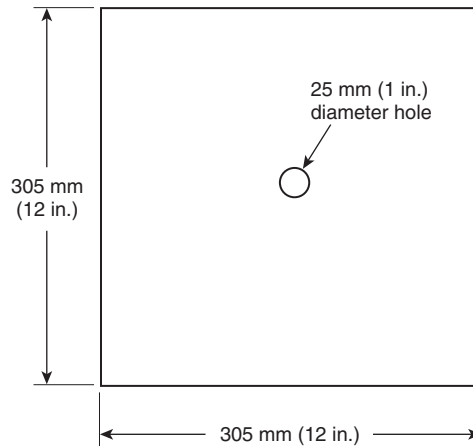


Figure 11.3.9.2 Hole Repairs

11.3.9.3-11.3.8 The certification organization shall not allow test specimens that have been conditioned and tested for one method to be reconditioned and tested for another test method unless specifically permitted in the test method.

11.3.10-11.3.9-The organization or the ISP shall maintain all inspection and test data from the certification organization used in the verification of the organization's or the ISP's services. The organization or ISP shall provide such data, upon request, to the purchaser or authority having jurisdiction.

11.3.11-11.3-10 All repair categories that are verified in accordance with this standard shall undergo verification on an annual basis.

A.4.2.4(a) A manufacturer trained organization receives training from an element manufacturer or a verified ISP in cleaning, inspection and repair services. For garment elements, this entity has not received any formal verification from a third party certification organization.

A.4.2.4(b) A manufacturer trained ISP receives training from an element manufacturer or a verified ISP in cleaning, inspection and repair services. For garment elements, this entity has not received any formal verification from a third party certification organization.

A.4.2.4(c) A verified organization has demonstrated the ability to conduct cleaning, inspection and repairs to a third party certification organization in accordance with this standard and is not required to have the approval of the element manufacturer to perform these services.

A.4.2.4(d) A verified ISP has demonstrated the ability to conduct cleaning, inspection and repairs to a third party certification organization in accordance with this standard and is not required to have the approval of the element manufacturer to perform these services.

A.4.2.4.24 The end user should always request a product verification the list of repair categories for which the verified ISP is approved to perform from the ISP.

A.4.2.5.1 Requirements for instructional delivery requisite knowledge and skills can be found in NFPA 1041, Standard for Fire Service Instructor-Professional Qualifications. An Instructor II-level or equivalent is recommended.

A.4.4.2 It should be noted that the intent of this requirement is not to allow manufacturers to dictate which ISP an organization must use. The organization is allowed a choice in service providers for cleaning, inspection and repairs.

A.6.3.2.1 For any inspection program to be effective, ensembles and ensemble elements should be evaluated by trained individuals. The individuals evaluating the ensembles and ensemble elements should understand the limitations of each element and recognize the signs of failure. Utilizing trained individuals provides consistency on whether an item should be repaired or retired. The manufacturer or verified ISP and the organization should determine the level of training required to perform advanced inspections. Resources for training that should be considered, as a minimum, are the manufacturer(s) of the elements in use; the Fire and Emergency Manufacturers and Services Association (FEMSA) user guides; NFPA 1500, Standard on Fire Department Occupational Safety and Health Program; and professional cleaning and repair facilities.

A.8.2.4 Although some hardware can be replaced in the field, it should be noted that field application might not be as permanent or as strong as when the hardware is replaced at the factory, by a verified organization, or by a verified ISP.

A.11.2.5 The contractual provisions covering verification programs should contain clauses advising the verified organization or verified ISP that, if requirements change, the process should be brought into compliance with the new requirements by a stated effective date through a compliance review program involving all currently verified repairs. Without such clauses, certification organizations would not be able to move quickly to protect their names, marks, or reputations. A verification program would be deficient without these contractual provisions and the administrative means to back them up.

A.11.2.12 Such inspections should include witnessing of advanced cleaning, advanced inspections and advanced repairs and review of the quality management system.

Substantiation: The technical committee is providing the following modifications in order to further clarify and expand the requirements for verification, ISP's and organizations. This language is intended to clarify what entities can perform various functions and the level of training needed and who can provide this training.

Committee Meeting Action: Accept

Number Eligible to Vote: 33

Ballot Results: Affirmative: 27 Negative: 2

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

Explanation of Negative:

LAKEY, S.: 3.3.49 Change Advanced repair to Basic repair when "ISP" is not used in conjunction with Verified.

OLIVER, A.: 4.2.4, (b) - Manufacturer Trained ISP should be limited to basic repairs as there is no oversight of these companies. If this category is needed to expand choice for organizations, the manufacturer trained ISP should be held to the same testing time frame as Verified ISP's. The manufacturer trained ISP should be required to be trained by the manufacturer at the manufacturer's facilities and subject to both an on-site practical and written test annually or every 23 months as proposed. In addition, the manufacturer should provide the trained ISP a certificate that indicates an expiration date of 12 months or to correspond with the 1851 standard revision cycle. Manufacturers should also be required to provide a public list of their manufacturer trained ISP's to assist in market oversight.

8.4.2 Delete "Major". The word "major" implies an advanced repair can be completed by a manufacturer trained organization or ISP.

8.4.3 - Moisture barrier repairs should be considered Advanced repairs and subject to 4.2.4.6

Comment on Affirmative:

STULL, J.: The committee should endeavor to create parity for the requirements of verification affecting both ISPs and organizations, such that one group of providers does not have a distinct advantage over others. Specific qualifications are needed for verification of inspection and cleaning capabilities.

1851-3 Log #42 FAE-SPF **Final Action: Reject**
(3.3.x Patch and A.3.3.x (New))

Submitter: Jason L. Allen, Intertek Testing Services

Recommendation: New text to read as follows:

3.3.X Patch. An additional layer of outer shell, moisture barrier, thermal barrier, and visibility marking material that is placed on top of a damaged area of a garment for the purposes of making a repair.

A.3.3.X Patch. Patches do not include moisture barrier seam sealing tape in the case of repairs made on moisture barrier material using moisture barrier seam sealing tape.

Substantiation: A definition of patch is needed. It could be misconstrued that a patch includes moisture barrier seam sealing tape. The definition is needed for clarification for the acceptability of repairs.

Committee Meeting Action: Reject

Committee Statement: The definition for patch is not required, see 1851-32 (Log #43).

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-4 Log #1 FAE-SPF **Final Action: Accept in Principle**
(3.3.36 Flame Resistance and A.3.3.36 (New))

Submitter: Glossary of Terms Technical Advisory Committee,

Recommendation: Revise text to read as follows:

3.3.36* Flame resistance (protective apparel). The property of a material whereby combustion is prevented, terminated, or inhibited following application of a flaming or non-flaming source of ignition, with or without subsequent removal of the ignition source. ~~Flame resistance can be an inherent property of a material, or it can be imparted by specific treatment.~~ (See also 3.3.50, Inherent Flame Resistance.)

A.3.3.36 Flame resistance can be an inherent property of the textile material, or it can be imparted by specific treatment.

Substantiation: It is important to have consistent definitions of terms within NFPA. The term flame resistance is widely used in the documents associated with protective apparel. NFPA definitions should be in a single sentence. Most NFPA definitions of "flame resistance" and uses of the term are in the

documents associated with firefighters/first responders. In general, for other uses the term has been replaced and previous references to flame resistance are now being replaced by references to materials that meet the requirements of NFPA 701. It is likely that the documents associated with first responders would like to retain this concept and therefore the definition is being modified with a qualifier and with an annex note for the second sentence. Also, a recommendation is being made that NFPA 1500 be the primary document responsible. The definition is included in NFPA 1851, 1951, 1971, 1975, 1977, 2112 and 2113.

Committee Meeting Action: Accept in Principle

Revise text to read as follows:

3.3.36* Flame resistance (protective clothing and equipment). The property of a material whereby combustion is prevented, terminated, or inhibited following application of a flaming or non-flaming source of ignition, with or without subsequent removal of the ignition source. ~~Flame resistance can be an inherent property of a material, or it can be imparted by specific treatment.~~ (See also 3.3.50, Inherent Flame Resistance.)

A.3.3.36 Flame resistance can be an inherent property of the textile material, or it can be imparted by specific treatment.

Committee Statement: The technical committee accepted the proposal in principle, and provided the revised text of Section 3.3.36 (see meeting action). The term "protective clothing and equipment" is more applicable to NFPA 1971, *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, than protective apparel. The submitter also proposes removing the sentence that states that flame resistance can be inherent or can be imparted to the Annex, which is appropriate as well. This change is in agreement with similar proposals reviewed by the NFPA 1951 Special Operations Technical Committee.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-5 Log #20 FAE-SPF **Final Action: Accept in Principle**
(4.2.5)

Submitter: Vicki Smith, LION Apparel

Recommendation: Revise text to read as follows:

Where the organization performs its own advanced inspection, advanced cleaning or basic repair, the organization shall be trained by the ensemble or ensemble element manufacturer, a Verified ISP or an ISP. Where the organization uses an ISP to perform advanced inspection, or advanced cleaning or basic repair, the ISP shall be trained by the ensemble or ensemble element manufacturer.

Substantiation: The standard creates two categories of Independent Service Provider (ISP) — Verified ISP and ISP. A Verified ISP has annual testing of repairs, facility inspection and their Quality Manual audited to verify continued compliance of all services provided. An ISP has not been evaluated for compliance to the standard; therefore should be trained by the manufacturer to perform these services and to train organizations to perform them. Manufacturer training should not be required by Verified ISPs.

Committee Meeting Action: Accept in Principle

Committee Statement: The technical committee accepted the proposal in principle. See 1851-2 (Log #CP9).

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-6 Log #32 FAE-SPF **Final Action: Accept in Principle**
(5.1.2 and A.5.1.2(6))

Submitter: Jeffrey O. Stull, International Personnel Protection, Inc.

Recommendation: Change 5.1.2(6) to read "* Specific physical area of operation" Renumber current (6) as (7).

Add new paragraph to A.5.1.2.(6): One of the hazards faced by firefighters is being struck by vehicular traffic. The high visibility materials required on firefighter PPE effectively enhance visual conspicuity during the variety of fireground operations. The continuous use of high visibility garments is one component of a strategy to mitigate risks from struck-by hazards, which are known to cause serious firefighter injuries and fatalities on an annual basis. Additional high visibility requirements for firefighters on or near roadways are regulated by the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD, 2009 version). It is the responsibility of the authority having jurisdiction (AHJ) to specify appropriate high visibility apparel from the available garment options, if any, and based on a risk assessment, to establish policies for use in accordance with prevailing regulations (the MUTCD) and in compliance with applicable standards (e.g., NFPA 1971, ANSI/SEA 107, ANSI/SEA 207, et.).

Ordinary firefighter protective ensembles many not permit firefighter to float and are likely to impact the safety of firefighters if they fall into water. The use of personal flotation devices may need to be considered for operations near water ways. Personal flotation devices must comply with applicable U.S. Coast Guard Regulations.

Firefighters operating at elevation may need some form of fall protection, which may or may not be incorporated into their protective clothing. Consideration must be given to devices that comply with NFPA 1983.

Substantiation: The need for additional safety equipment may vary with the physical location of the firefighter. In particular, specific person-position hazards such as operating near vehicle traffic, waterways, or at elevation warrant consideration of additional PPE such as supplemental high visibility apparel, personal flotation devices, or fall protection.

Committee Meeting Action: Accept in Principle

Change 5.1.2 (6)* to read "Specific physical area of operation."

Re-number current (6) as (7).

Add new paragraph to A.5.1.2.(6):

A.5.1.2 (6) Examples of physical areas of operations include but are not limited to:

a) One of the hazards faced by firefighters is being struck by vehicular traffic. The high visibility materials required on firefighter PPE effectively enhance visual conspicuity during the variety of fireground operations. The continuous use of high visibility garments is one component of a strategy to mitigate risks from struck-by hazards, which are known to cause serious firefighter injuries and fatalities on an annual basis. Additional high visibility requirements for firefighters on or near roadways are regulated by the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD, 2009 version). It is the responsibility of the authority having jurisdiction (AHJ) to specify appropriate high visibility apparel from the available garment options, if any, and based on a risk assessment, to establish policies for use in accordance with prevailing regulations (the MUTCD) and in compliance with applicable standards (e.g., NFPA 1971, ANSI/SEA 107, ANSI/SEA 207, et.).

b) The use of personal flotation devices may need to be considered for operations near water ways.

c) Firefighters operating at elevation may need some form of fall protection, which may or may not be incorporated into their protective clothing.

Committee Statement: The technical committee accepted the proposal in principle, and provided amended text to the submitted Annex item.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-7 Log #17 FAE-SPF **Final Action: Accept in Principle**
(5.1.6.1 (New))

Submitter: Karen E. Lehtonen, LION

Recommendation: New text to read as follows:

5.1.6.1* As a minimum the organization shall ensure the proper overlap between ensemble elements being used, including but not limited to coat to hood and helmet, coat to pant, coat to glove, and pants to footwear. Any other specialty equipment being used shall also be considered to ensure the equipment does not interfere with the proper function and interface of the protective ensemble or ensemble elements.

Substantiation: Additional attention should be given to the interface areas between elements during the selection process. Specific reference to the interface areas should be called out in this standard to ensure the proper attention is given.

Committee Meeting Action: Accept in Principle

Delete asterisk to 5.1.6

Delete A.5.1.6.

Delete existing text in 5.1.6, and replace with the following:

5.1.6 The organization shall ensure the proper interface between ensemble elements, including but not limited to coat to hood and helmet, coat to pant, coat to glove, and pants to footwear. Any other specialty equipment being used shall also be considered to ensure the equipment does not interfere with the proper function and interface of the protective ensemble or ensemble elements.

Committee Statement: The technical committee accepted the proposal in principle, and provides revised clarifying text as shown in the meeting action.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-8 Log #2 FAE-SPF **Final Action: Accept**
(6.2.2.5(3)(c))

Submitter: James M. Baker, TotalCare

Recommendation: Revise text to read as follows:

Exposed or deformed steel-toe, steel-midsole, or shank.

New / Exposed or deformed protective toe, protective midsole, or shank.

Substantiation: The document assumes that boots will always use steel to protect the toe and midsole. The standard should allow for other technologies that may replace steel.

Committee Meeting Action: Accept

Revise text to read as follows:

6.2.2.5(3)(c) Exposed or deformed steel protective toe, steel protective midsole, or shank.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-9 Log #3 FAE-SPF **Final Action: Accept in Principle**
(6.2.3.1)

Submitter: James M. Baker, TotalCare

Recommendation: Add - Separation or peeling of aluminized fabric.

Substantiation: Peeling and separation of the fabric has been observed during inspection of aluminized fabric. Issue appears in both new and used fabric.

Committee Meeting Action: Accept in Principle

Add a new 6.2.3.1(3) Delamination as evidenced by separation or peeling of the outer shell.

Committee Statement: The technical committee added the term delamination, and revised the text to add clarity to the intent of the paragraph.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-10 Log #4 FAE-SPF **Final Action: Accept in Principle**
(6.2.3.3)

Submitter: James M. Baker, TotalCare

Recommendation: Add - Separation or peeling of aluminized fabric.

Substantiation: Peeling and separation of the fabric has been observed during inspection of aluminized fabric. Issue appears in both new and used fabric.

Committee Meeting Action: Accept in Principle

Add a new 6.2.3.3 (3) Delamination as evidenced by separation or peeling of the outer shell.

Re-number subsequent.

Add a new 6.2.3.2 (3) Delamination as evidenced by separation or peeling of the outer shell.

Re-number subsequent.

Committee Statement: The technical committee added the term delamination, and revised the text to add clarity to the intent of the paragraph. The the TC also added the same text to 6.2.3.2 (3).

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-11 Log #21 FAE-SPF **Final Action: Accept in Principle**
(6.3.1)

Submitter: Vicki Smith, LION Apparel

Recommendation: Revise text to read as follows:

Advanced inspection and any necessary testing shall be performed by a verified ISP, ISP, or the organization's trained personnel.

Substantiation: The standard must clearly delineate the differences between ISP and verified ISP, and the fact that the ISPs which are under no scrutiny must have manufacturers' training to perform advanced inspection and to train organizations on advanced inspection. Verified ISPs on the other hand have chosen to invest in developing NFPA 1851 compliant processes and have chosen to have these processes scrutinized and deemed acceptable by a third party certification organization.

Committee Meeting Action: Accept in Principle

Committee Statement: The technical committee accepted the proposal in principle. See 1851-2 (Log #CP9).

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-12 Log #16 FAE-SPF **Final Action: Accept in Principle**
(6.3.3)

Submitter: Karen E. Lehtonen, LION

Recommendation: Revised text to read as follows:

Advanced inspections of all protective ensemble elements, even if not issued and used, shall be conducted at a minimum of every 12 months, or whenever routine inspections indicate that a problem could exist.

Substantiation: There is confusion in the field regarding this paragraph and if advanced inspections are required annually even if the ensemble or ensemble element is not issued or used. The added language is intended to clarify the committee intent assuming the advanced inspection is required annually regardless of the element being issued or used. See also 7.3.3 for reference.

Committee Meeting Action: Accept in Principle

Revise text to read as follows:

6.3.3* Advanced inspections of all protective ensemble elements that are issued shall be conducted at a minimum of every 12 months, or whenever routine inspections indicate that a problem could exist.

A.6.3.3 If ensemble elements have been issued, they are not reserve, and are intended to be subjected to the advanced inspection.

6.3.3.1 Ensemble elements that have been properly stored in accordance with Chapter 9 and are not being used, are not required to be subjected to advanced inspection.

6.2.1 Individual members shall conduct a routine inspection of their protective ensembles and ensemble elements upon issue and after each use.

Committee Statement: The technical committee accepted the proposal in principle, and provided the text as shown in the meeting action to address the issue. Clarification provided by the TC resulted in language to specify when advanced inspections are necessary for issued ensemble elements.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-13 Log #5 FAE-SPF **Final Action: Accept in Principle (6.3.4)**

Submitter: James M. Baker, TotalCare

Recommendation: The findings of the advanced inspection shall be documented on an inspection form.

Add: This form may be paper, electronic or any type of permanent record.

Substantiation: The statement causes the user to assume they must use a paper form.

Committee Meeting Action: Accept in Principle

Revise 6.3.4 as follows:

6.3.4 The findings of the advanced inspection shall be documented. ~~on an inspection form.~~

Committee Statement: The technical committee accepted the proposal in principle and revised the text of 6.3.4. The TC agrees that the paragraph causes the user to assume they must use a paper form.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-14 Log #33 FAE-SPF **Final Action: Reject (6.3.5, A.12.2.1, and A.12.2.3.1)**

Submitter: Stacy Trenkamp, University of Kentucky Textile Testing Laboratory

Recommendation: Add new text to read as follows:

6.3.5* The advanced inspection shall include, as a minimum, the inspections specified in 6.3.5.1 through 6.3.5.7 and for garment elements only the testing specified in Section 12.1 and ~~Section 12.2.~~

~~Section 12.2~~

~~A.12.2.1 It is important to realize that this field evaluation procedure can produce results that are inconsistent with more comprehensive or sophisticated testing and might detect only the worse-case failure areas. To perform more sophisticated testing of the moisture barrier, the garment manufacturer should be contacted for advice.~~

~~A.12.2.3.1 If there are questions about using an alcohol-tap water mixture for evaluating the protective garment, the garment manufacturer should be contacted directly for advice.~~

Add new Annex text:

A.6.3.5 Loss of integrity can be determined by a field test evaluation of the moisture barrier using the Leakage Evaluation Test. It is important to realize that this field evaluation procedure can produce results that are inconsistent with more comprehensive or sophisticated testing and might detect only the worse-case failure areas. The procedure in this section is based on Section 12.2 of NFPA 1851 2008 Edition. It is recommended that this section be moved to the annex because the Leakage Evaluation Test is an easy and inexpensive indicator of leakage for field evaluations; however, the study from the Firefighter Durability Study Phase I shows that the Water Penetration Barrier Evaluation shows more accurate results.

For this testing, at a minimum, the front and back body panels of each protective garment should be evaluated using three different moisture barrier material areas. Liner evaluations areas should be from high-abrasion areas of the garment, including, but not limited to:

- (1) Broadest Part of the shoulders
- (2) Back waist area of the coat
- (3) Knees
- (4) Crotch Area
- (5) Seat Area

In addition to the areas listed where potential damage to the garment outer shell or thermal barrier has been detected, the evaluation should be conducted on the corresponding area of the moisture barrier. Where potential damage to the garment moisture barrier has been detected, the evaluation should also be conducted on that area.

The liner composite should be positioned in the evaluation apparatus so that the moisture barrier is oriented upward and is contacted with the liquid exposure in the evaluation apparatus. An alcohol-tap water solution should be made by combining 1 part rubbing alcohol, 70 percent isopropanol alcohol with 6 parts tap water. If there are questions about using an alcohol-tap water mixture for evaluating the protective garment, the garment manufacturer should be contacted directly for advice. A 5 gal bucket or similar container should be used to support the liner during evaluation. The evaluation should be performed at room temperature. The evaluation should be conducted using the following procedure:

- (1) If possible, separate the liner from the outer shell.
- (2) Orient the liner such that the moisture barrier is on the outside.
- (3) Position the dry liner over the bucket with the thermal barrier facing down and the moisture barrier side facing up.

(4) Cup the liner area that is being evaluated, so that it is lower than the surrounding liner.

(5) Pour 1 cup of the alcohol-tap water mixture onto the moisture barrier in the cupped area of the liner.

The liner should be visually inspected for leakage on the thermal barrier side after 3 minutes. If any liquid passes through the moisture barrier and wets the thermal barrier, the liner should be removed from service and repaired or replaced. After the evaluation procedure has been performed, the liner shall be cleaned and allowed to completely dry to remove all traces of the alcohol-tap water mixture.

Substantiation: It is proposed and recommended to remove the Leakage Evaluation Test from the body of the Standard and revise/enter the test into the annex. The Durability Study (Phase I) conducted at the University of Kentucky did not show a strong correlation between the Water Penetration Barrier Evaluation and the Leakage Evaluation tests, indicating that the accuracy of the Leakage Evaluation Test is not reliable enough for placement in the body of the text. The study documented that 32% of the moisture barriers tested failed the Leakage Evaluation Test, where as 66% of the same moisture barriers tested failed the Water Penetration Barrier Evaluation. A high concentration of failures in the Water Penetration Barrier Evaluation occurred at moisture barrier seams; therefore, it is being recommended that the Leakage Evaluation Test be moved to the annex of NFPA 1851. This would provide a simple and inexpensive test to be conducted on moisture barrier fabrics as a field evaluation/inspection.

Committee Meeting Action: Reject

Committee Statement: This is an appropriate field test and does not exclude the use of a more stringent hydrostatic test.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-15 Log #6 FAE-SPF **Final Action: Accept in Principle (6.3.5.2)**

Submitter: James M. Baker, TotalCare

Recommendation: ADD - Label integrity and legibility

Substantiation: Label integrity and legibility is required for record keeping.

Committee Meeting Action: Accept in Principle

Add a new 6.3.5.2 (8)* Label integrity and legibility

Asterisk 6.3.5.2 (8) and add an Annex item

A.6.3.5.2 (8) If a label problem is identified, the organization should contact the manufacturer of the ensemble or ensemble element.

Committee Statement: The technical committee accepted the proposal in principle, and added a new list item and Annex item.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-16 Log #7 FAE-SPF **Final Action: Accept in Principle (6.3.5.3)**

Submitter: James M. Baker, TotalCare

Recommendation: ADD - Label integrity and legibility

Substantiation: Label integrity and legibility is required for record keeping.

Committee Meeting Action: Accept in Principle

Add a new 6.3.5.3 (13)* Label integrity and legibility

Asterisk 6.3.5.3 (13) and add an Annex item

A.6.3.5.3(13) If a label problem is identified, the organization should contact the manufacturer of the ensemble or ensemble element.

Committee Statement: The technical committee accepted the proposal in principle, and added an explanatory Annex item.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-17 Log #8 FAE-SPF **Final Action: Accept in Principle (6.3.5.4)**

Submitter: James M. Baker, TotalCare

Recommendation: ADD - Label integrity and legibility

Substantiation: Label integrity and legibility is required for record keeping.

Committee Meeting Action: Accept in Principle

Add a new 6.3.5.4 (8)* Label integrity and legibility

Asterisk 6.3.5.4 (8) and add an Annex item as follows:

A.6.3.5.4(8) If a label problem is identified, the organization should contact the manufacturer of the ensemble or ensemble element.

Committee Statement: The technical committee accepted the proposal in principle, and added an explanatory Annex item.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-18 Log #9 FAE-SPF **Final Action: Accept in Principle**
(6.3.5.5)

Submitter: James M. Baker, TotalCare
Recommendation: ADD - Label integrity and legibility
Substantiation: Label integrity and legibility is required for record keeping
Committee Meeting Action: Accept in Principle
 Add a new 6.3.5.5 (10)* Label integrity and legibility
 Asterisk 6.3.5.5 (10) and add an Annex item
 A.6.3.5.5(10)* If a label problem is identified, the organization should contact the manufacturer of the ensemble or ensemble element.
Committee Statement: The technical committee accepted the proposal in principle, and added a new list item and explanatory Annex item.
Number Eligible to Vote: 33
Ballot Results: Affirmative: 29
Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-19 Log #10 FAE-SPF **Final Action: Accept in Principle**
(6.3.5.7)

Submitter: James M. Baker, TotalCare
Recommendation: ADD - Label integrity and legibility
Substantiation: Label integrity and legibility is required for record keeping
Committee Meeting Action: Accept in Principle
 New 6.3.5.7(5) Label integrity and legibility
 Asterisk 6.3.5.7(5) and add an Annex item
 A.6.3.5.7(5) If a label problem is identified, the organization should contact the manufacturer of the ensemble or ensemble element.
Committee Statement: The technical committee accepted the proposal in principle, and added a new list item and explanatory Annex item.
Number Eligible to Vote: 33
Ballot Results: Affirmative: 29
Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-20 Log #11 FAE-SPF **Final Action: Accept**
(6.3.6.1)

Submitter: James M. Baker, TotalCare
Recommendation: Add - Separation or peeling of aluminized fabric.
Substantiation: Peeling and separation of the fabric has been observed during inspection of aluminized fabric. Issue appears in both new and used fabric.
Committee Meeting Action: Accept
 Add a new 6.3.6.1(3) Delamination as evidenced by separation or peeling of the outer shell.
Committee Statement: The technical committee added the term delamination, and revised the text to add clarity to the intent of the paragraph.
Number Eligible to Vote: 33
Ballot Results: Affirmative: 29
Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-21 Log #12 FAE-SPF **Final Action: Accept**
(6.3.6.2)

Submitter: James M. Baker, TotalCare
Recommendation: Add - Separation or peeling of aluminized fabric.
Substantiation: Peeling and separation of the fabric has been observed during inspection of aluminized fabric. Issue appears in both new and used fabric.
Committee Meeting Action: Accept
 Add a new 6.3.6.2(5) Delamination as evidenced by separation or peeling of the outer shell.
Committee Statement: The technical committee added the term delamination, and revised the text to add clarity to the intent of the paragraph.
Number Eligible to Vote: 33
Ballot Results: Affirmative: 29
Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-22 Log #13 FAE-SPF **Final Action: Accept**
(6.3.6.3)

Submitter: James M. Baker, TotalCare
Recommendation: Add - Separation or peeling of aluminized fabric.
Substantiation: Peeling and separation of the fabric has been observed during inspection of aluminized fabric. Issue appears in both new and used fabric.
Committee Meeting Action: Accept
 Add a new 6.3.6.3(5) Delamination as evidenced by separation or peeling of the outer shell.
Committee Statement: The technical committee added the term delamination, and revised the text to add clarity to the intent of the paragraph.
Number Eligible to Vote: 33
Ballot Results: Affirmative: 29
Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-23 Log #14 FAE-SPF **Final Action: Accept**
(6.3.6.5)

Submitter: James M. Baker, TotalCare
Recommendation: Add - Separation or peeling of aluminized fabric.
Substantiation: Peeling and separation of the fabric has been observed during inspection of aluminized fabric. Issue appears in both new and used fabric.
Committee Meeting Action: Accept
 Add a new 6.3.6.5(3) Delamination as evidenced by separation or peeling of the outer shell.
Committee Statement: The technical committee added the term delamination, and revised the text to add clarity to the intent of the paragraph.
Number Eligible to Vote: 33
Ballot Results: Affirmative: 29
Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-24 Log #34 FAE-SPF **Final Action: Reject**
(6.4.3 and A.6.4.3)

Submitter: Stacy Trenkamp, University of Kentucky Textile Testing Laboratory
Recommendation: Revise text to read as follows:
6.4.3 A complete liner inspection of all garment elements shall be conducted at a minimum after 3-2 years in service and annually thereafter or whenever advanced inspections indicate that a problem might exist. The liner system shall be opened to expose all layers for inspection and testing.
A.6.4.3 It should be noted that this standard's requirement that a complete liner inspection be performed after the first 3-2 years of service and every year thereafter should not negate the necessity of conducting a complete liner inspection sooner than the required time frame if circumstances or appearances dictate. For example, inside layers that show marked discoloration or physical deterioration should trigger a complete liner inspection.
Substantiation: We recommended changing the liner inspection from after three years of service to two years of service based on findings of the Water Penetration Barrier Evaluation conducted in the Firefighter Durability Study Phase I. In this study, it was found that 53% of garments in the 2-3 year age category leaked during the Water Penetration Barrier Evaluation. Since over half of the moisture barriers had water penetration after the evaluation, it is recommended that a liner inspection be completed after two years in service for the safety of the firefighter and for preventative measures against burn injury.
Committee Meeting Action: Reject
Committee Statement: The technical committee rejected the proposal because it believes that the 3 year requirement is sufficient.
Number Eligible to Vote: 33
Ballot Results: Affirmative: 29
Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-25 Log #30 FAE-SPF **Final Action: Reject**
(6.4.5.2)

Submitter: Jeffrey O. Stull, International Personnel Protection, Inc.
Recommendation: Revise text to read as follows:
Changes to inspection procedures:
6.4.5.2 The moisture barrier liner shall be tested using the hydrostatic test to evaluate the water penetration barrier evaluated for liquid leakage, as specified in Section 12.3 Section 12.2 and shall show no leakage.
6.4.5.2.1 If leakage of the liner is found, then those portions of the liner showing leakage shall be further evaluated using the hydrostatic test of the moisture barrier as specified in Section 12.3 to determine the specific areas of leakage.
6.4.5.2.2 The results of the hydrostatic testing shall be used to make a determination if the liner can be repaired or must be replaced.
Changes to water penetration barrier evaluation.
12.3.1 Application. This evaluation method shall apply to moisture barrier materials and moisture barrier seams in structural or proximity fire fighting protective garment elements that are in service and are found to be leaking as a result of the leakage evaluation applied during the advanced inspection.
Replace current paragraph 12.3.2.1, 12.3.2.1.1, and 12.3.2.1.2 with:
12.3.2.1 The same areas of the garment liner that have been found to leak when tested during advanced inspection using the leakage evaluation in 12.2 shall be evaluated.
12.3.2.1.1 The tested areas shall coincide with the center of the test areas evaluated in accordance with 12.2.
Substantiation: A preliminary study has shown that the hydrostatic test identifies leaks in the moisture barrier that are unlikely to result in liquid exposure of the wearer. End users are finding higher than expected failure rates in hydrostatic testing of moisture barriers. These failures apply to material as well as seams and are leading to higher maintenance costs and lower perceptions of barrier quality. A significant number of the failures cannot be identified visually. Moreover, there is often no apparent damage or exposure/use history that can be cited to explain the specific location of the identified failures. Garments that show hydrostatic failures often seem to be still

completely serviceable by the respective end users, with no associated complaints of liquid leakage into the garments. In limited testing, garments that show hydrostatic failures have not been shown to have corresponding failures within the Whole Garment Integrity Test (Shower Test) or in other tests that attempt to simulate fireground liquid exposures.

The proposed changes rely on the leakage evaluation (puddle test) to identify potential failure areas of the liner and moisture barrier. Where leakage is found, it is recommended that the water penetration barrier evaluation be applied to determine the specific areas of leakage in the moisture barrier.

Committee Meeting Action: Reject

Committee Statement: The technical committee rejected the proposal because it believes this is not just a test for water leakage. The hydrostatic test is a more reproducible test than the puddle test.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

Comment on Affirmative:

STULL, J.: The action on this proposal is inconsistent with the approach being proposed for NFPA 1855. No changes have been accepted with respect to the procedures used for integrity checks of the moisture barrier. The current procedures do not reflect industry practice by ISPs and other organizations and should be given further consideration.

1851-26 Log #31 FAE-SPF **Final Action: Reject**
(6.4.5.2, 12.3.4, and 12.3.5)

Submitter: Jeffrey O. Stull, International Personnel Protection, Inc.

Recommendation: Revise text to read as follows:

6.4.5.2 The moisture barrier shall be tested using the hydrostatic test to evaluate the its resistance to water penetration barrier, as specified in Section 12.3 and shall show no Type 2 leakage.

12.3.4.1 (3) Visually inspect the visible side of the moisture barrier after 15 seconds to determine if water penetration has occurred and rate any water penetration according to the instructions provided in 12.3.4.2.

12.3.4.2 Rate the observed water penetration for leak location, time of leak, and type of leak according to Table 12.3.4.2.

12.3.4.3 Any test location that shows a Type 2 rating for any of the rating categories (leak location, time of leak, and type of leak) shall be classified as Type 2 leakage.

12.3.5.1 If any water passes through any Type 2 leakage is found for the moisture barrier or moisture barrier seam, the liner shall be removed from service and repaired or replaced.

Substantiation: The system for applying a pass/fail determination for hydrostatic testing of garment moisture barrier and moisture barrier seams during the complete liner inspection does not account for the potential contribution of the leak to the overall integrity of the garment and its ability to prevent liquid contact with the wearer. Small, non-visible pinhole leaks randomly located on the liner do not result in exposure of the wearer when evaluated under simulated liquid exposure conditions. In contrast, leaks which are visible, which readily occur, and which occur allowing relatively large volumes of liquid do result in potential exposure of the wearer to liquids. The proposed system of rating the damage at the leak location, the onset of leakage, and the type of leak provides discrimination for the significant and potential safety associated with leaks identified by a rigorous hydrostatic test method.

Committee Meeting Action: Reject

Committee Statement: The technical committee rejected the proposal, and believes that it represents a major change in the standard without any supporting data.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

Comment on Affirmative:

OLIVER, A.: Reporting more detailed levels of failure will assist organizations, along with input from their ISP, in determining whether further investment in the element is both safe and economical. In addition, the failure levels with help indicated the type of repairs are needed or whether moisture barrier replacement is needed. This type of reporting should be encouraged by organizations from their service providers.

STULL, J.: Hydrostatic testing has a potentially high impact on firefighter safety and the costs of clothing maintenance. There are also concerns about how the identification of leaks relate to firefighter exposure. While it prudent for the committee to reject the proposed change on the basis of no supporting data, the committee should endeavor to address this topic in a manner which provides an appropriate level of safety and practicality.

Table 12.3.4.2 — System of Rating Moisture Barrier Leaks During Hydrostatic Testing

	Leak Location	Time of leak	Type of leak
Type 1	No apparent visible damage	During full applied pressure	1 to 3 water droplets form; thin water stream from pinhole
Type 2	Visible damage at location of leak	Before full applied pressure	More than 4 water droplets form; test basin fills with water

1851-27 Log #38 FAE-SPF **Final Action: Reject**
(6.5.4.2, 12.3.5.1, and 12.3.5.2)

Submitter: Daniel J. Gohlke, W.L. Gore & Assoc., Inc.

Recommendation: Revise text to read as follows:

6.4.5.2 delete “and shall show no leakage.”

Delete old 12.3.5.1.

New 12.3.5.1 Moisture barriers shall be repaired or replaced if leaks appear in every test site or 4 or more leaks appear in any one test site.

Delete old 12.3.5.2.

New 12.3.5.2 After testing, and before repairing if needed, the liner shall be allowed to dry completely before being returned to service.

Substantiation: The existing criteria for determining whether a moisture barrier needs to be repaired or replaced has led to unnecessary repairs and replacements of moisture barriers. This proposition is supported by observations in the industry of garments performing very satisfactorily or effectively in use, but still incurring repair costs when maintained according to NFPA 1851. Some departments have chosen not to implement NFPA 1851, or not to implement it fully, because of this discrepancy. There also seems to be no evidence or correlation between the level of scrutiny required by NFPA 1851 and actual exposure of the fire fighter on the fire ground to liquids, whether by rain, chemical or blood. In fact, NFPA 1851 actually creates a higher level of scrutiny than does NFPA 1971 for the new garment. Is it unreasonable to have a zero defect exception, when even the FDA does not require zero defects in barriers used in operating room gowns? Even vapor tight suits (NFPA 1991) are allowed to leak, i.e. they are allowed a pressure decay rate in the inflation test. NFPA 1994 garments specify different levels of protection, non of them absolute. Therefore, it seems reasonable to conclude that for structural fire fighting garments not every and all water leaks found according to Clause 12.3 lead to exposure on the fire ground. There are multiple possible modifications to the inspection regime that would alter the current level of required scrutiny. This proposal suggests that the criterion for implementing repairs be graded, so that serious flaws and failures get required as they should be but that inconsequential ones (e.g. single pinholes?) do not mandate repair or replacement.

Committee Meeting Action: Reject

Committee Statement: The technical committee rejected the proposal, and believes that it represents a major change in the standard without any supporting data.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

Comment on Affirmative:

STULL, J.: See my Comment on Affirmative on Proposal 1851-26 (Log #31).

1851-28 Log #22 FAE-SPF **Final Action: Accept in Principle**
(7.3.1)

Submitter: Vicki Smith, LION Apparel

Recommendation: Revise text to read as follows:

Advanced cleaning and any necessary testing shall be performed by a verified ISP, ISP, or the organization’s trained personnel.

Substantiation: The standard must clearly delineate the differences between ISP and verified ISP, and the fact that the ISPs which are under no scrutiny must have manufacturers’ training to perform advanced cleaning and to train organizations on advanced cleaning. Verified ISPs on the other hand have chosen to invest in developing NFPA 1851 compliant processes and have chosen to have these processes scrutinized and deemed acceptable by a third party certification organization.

Committee Meeting Action: Accept in Principle

Committee Statement: The technical committee accepted the proposal in principle. See 1851-2 (Log #CP9).

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-29 Log #15 FAE-SPF **Final Action: Reject**
(7.3.7(10))

Submitter: James M. Baker, TotalCare

Recommendation: New text to read as follows:

7.3.7(10)

ADD – Cleaning and soaking agents shall not leave any residue or cause any degrading of the ensemble of ensemble elements

Substantiation: Preliminary testing of some products show a residue after cleaning. This issue is of particular concern with the moisture barrier. It appears that this residue can cause premature seam tape failures.

Committee Meeting Action: Reject

Committee Statement: The technical committee rejected the proposal. The TC believes that there is no way to check for residue, and that most laundry cleaning agents will leave a residue and add to degradation.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-30 Log #23 FAE-SPF **Final Action: Accept in Principle**
(8.1.1)

Submitter: Vicki Smith, LION Apparel

Recommendation: Revise text to read as follows:

All repairs shall be performed by the original manufacturer, a Verified ISP, and ISP, or a member of the organization who has received training by a manufacturer, a Verified ISP, or by an ISP in the repair of ensemble or ensemble elements.

Substantiation: The standard must clearly delineate the differences between ISP and verified ISP, and the fact that ISPs which are under no scrutiny must have manufacturers’ training to perform basic repairs and to train organizations on basic repairs. Verified ISPs on the other hand have chosen to invest in developing NFPA 1851 compliant processes and have chosen to have these processes scrutinized and deemed acceptable by a third party certification organization.

Committee Meeting Action: Accept in Principle

Committee Statement: The technical committee accepted the proposal in principle. See 1851-2 (Log #CP9).

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-31 Log #CP3 FAE-SPF **Final Action: Accept**
(8.2.3)

Submitter: Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment,

Recommendation: Revise 8.2.3 as follows:

8.2.3 Add to end of this paragraph: For any tears, char marks, ember burns and abraded areas that require a patch larger than 160 cm² (25 in²), the manufacturer or the verified ISP, in conjunction with the organization, shall be consulted.

8.2.3 Delete “32 cm² (5 in²)” and replace with “160 cm² (25 in²)”

Substantiation: The proposed change clarifies the procedures for repairs larger than 160 cm² (25 in²). In 8.2.3 the intent was to allow a 5 square inch patch but in the standard it is currently written as 5 in², not 25 in².

Committee Meeting Action: Accept

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-32 Log #43 FAE-SPF **Final Action: Accept in Principle**
(8.2.3.4)

Submitter: Jason L. Allen, Intertek Testing Services

Recommendation: New text to read as follows:

8.2.3.4 Where moisture barrier tears, holes, or abrasions are being repaired, the applied seam tape shall extend at least 18 mm (3/4 in.) in all directions beyond the edge of the patch or the repaired damage.

Substantiation: The current language in 8.2.3.1 implies that the moisture barrier seam sealing tape must extend 1 inch beyond the edge of the patch or the repaired area of damage; however, the majority of moisture barrier sealing tapes are not sufficiently wide enough to provide this amount of overlap. Furthermore, the required test for efficacy of repairs addressed in Table 11.3.7(c) provides a relatively rigorous demonstration of continued moisture barrier performance.

Committee Meeting Action: Accept in Principle

Add new text to read as follows:

8.2.3.4 Where moisture barrier tears, holes, or abrasions are being repaired, a single width of seam tape shall be used and shall be required to extend at least 12.5 mm (1/2 inch) in all directions beyond the edge of the repaired damage. Where the moisture barrier has a hole or abrasion measuring more than 12.5 mm (1/2 inch) in diameter in any direction or a tear greater than 3 inches in length, a patch consisting of the same moisture barrier fabric shall be used for repair.

Committee Statement: The technical committee accepted the proposal in principle, and added a second clarifying sentence to the new paragraph 8.2.3.4.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-33 Log #39 FAE-SPF **Final Action: Reject**
(10.1)

Submitter: Daniel E. Nichols, Roosevelt Fire District

Recommendation: Revise text to read as follows:

10.1.2 Structural fire fighting ensembles and ensemble elements protective garments, structural firefighting protective gloves, and structural fire fighting protective hoods shall be retired in accordance with 10.2.1, no more than 10 years from the date the ensembles or ensemble elements were manufactured.

10.1.3 Proximity fire fighting ensembles and ensemble elements protective garments, proximity fire fighting protective gloves, and proximity fire fighting protective hoods shall be retired in accordance with 10.2.1, no more than 10

years from the date the ensembles or ensemble elements were manufactured.
10.1.4 Structural fire fighting protective helmets and proximity fire fighting protective helmets shall be retired at a time frame determined by the organization, taking into consideration to condition and maintenance record of such elements.

10.1.4.1 Ear covers of fire fighting protective helmets and proximity fire fighting protective helmets shall be retired in accordance with 10.2.1, no more than 10 years from the date the ensemble elements were manufactured, and shall be replaced in accordance with Chapter 8.

[Renumber subsequent sections]

Substantiation: The 2007 edition placed a finite retirement date on firefighting gear, 10 years from manufacturer. Reviewing the committee documents from last cycle and the information found in the 1851 annex, the information seems to stem from the maintenance and care of textile-based gear components; namely coats and pants. I did not see any compelling information to the need to retire helmets after 10 years of manufacturer. Helmets are not susceptible to sunlight and UV rays as garments, do not flex like garments, and are not degraded by the cleaning process as garments (1851 has specific cleaning processes for helmets). Helmet inspections are much easier to complete than garments, as the failure points found in 1851 include many things that you can see with the naked eye (cracks, bulges, broken hardware, chipped paint, missing components, separating shells and outer layers).

Furthermore, helmets are crafted using various materials; leather, Kevlar, and fiberglass-composites. I did not find any information that these materials degraded similar to the outer shell or liners of protective garments.

This issue is important to us for two reasons. First, we buy helmets at a bulk rate to get a lower price since we do not need to buy a sized helmet for most of our incoming volunteer members. We have helmets that may be in their original factory boxes for 2-3 years prior to distribution. Being subjected to absolutely no hazards, we have needlessly lost out on using these helmets for their intended lifespan. Secondly, we have bought helmets that we have seen last longer than other, particularly leather helmets. We made a significant investment in some of our helmets being leather due to the increased durability we have seen with these helmets.

To specifically address the ear covers, which are made and have the similar properties of garments, we have proposed the 10 year retirement and mandatory replacement of these in this proposal.

It is our opinion that a blanket 10 years for all helmets is not warranted due to the vast different between garments and helmets as well as the current blanket requirement not taking into account the different materials a helmet can be constructed from. The proposed language allows the organization to determine the life cycle of helmets, based on maintenance, use, materials, and idle (storage) time.

Thank you for your consideration.

Committee Meeting Action: Reject

Committee Statement: The technical committee rejected the proposal, and directs the reader to 1851-36 (Log #18).

Number Eligible to Vote: 33

Ballot Results: Affirmative: 28 Negative: 1

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

Explanation of Negative:

MELIA, D.: There is no scientifically-validated data that shows that a fire helmet degrades over a 10 year period to the point of failure. Many helmets are still in excellent condition after 10 years and are being forced into retirement by this standard. The committee without any hard data is putting a financial burden on the fire service. With all the technological advances seen over the last 20 years I find it hard to comprehend how the manufacturers and testing labs cannot develop a non destructive test that would show a fire helmet can still provide the needed protection for a firefighter after 10 years. An example would be football helmet testing. The expense to the fire service to be forced to replace a fire helmet that still provides adequate protection is unacceptable. Having one blanket retirement age for all components of this standard puts an undue burden on the fire service. It is well accepted that gloves will never make it to 10 years. A well made helmet does provide the needed protection for longer than 10 years with a documented inspection, care and maintenance program in place. The goal is to provide safe equipment for the people wearing the gear. I know several larger departments that have decided not to follow the guidelines established by the NFPA because they cannot afford to replace helmets that are still being maintained and continue to provide adequate protection.

1851-34 Log #CP10 FAE-SPF **Final Action: Accept**
(10.1.2 and 10.1.3)

Submitter: Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment,

Recommendation: 10.1.2 and 10.1.3:

Change "10.2.1" in each of these paragraphs to read "10.2.1 or 10.2.2."

Substantiation: The technical committee is proposing these changes to indicate that in certain situations structural fire fighting ensembles and ensemble elements may be used in non-live fire training.

Committee Meeting Action: Accept

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-35 Log #36 FAE-SPF **Final Action: Reject**
(10.1.2 and 10.1.2.1 (New))

Submitter: Stacy Trenkamp, University of Kentucky Textile Testing Laboratory

Recommendation: Revise text to read as follows:

10.1.2* Structural fire fighting ensembles and ensemble elements shall be retired in accordance with 10.2.1, no more than 10 years from the date the ensembles or ensemble elements were manufactured.

10.1.2.1 Structural fire fighting garments shall also be retired prior to the 10 years from date of manufacture in the event the garment has sustained damage such that it is beyond repair. Additional factors to consider shall include but not be limited to physical damage, thermal damage, or excessive soil build up to any or all of the layers.

Substantiation: According to the Fire Fighter Durability Study Phase I completed at the University of Kentucky, 23 of the 40 retired garments collected were retired prior to the 10 years from the date of manufacture. The reason for retirement varied and 57% of these retired garments did not meet one or more of the NFPA 1851 Advanced Inspection Requirements. Soiled ensembles and ensemble elements typically reflect less radiant heat. After materials are saturated with hydrocarbons, they tend to absorb rather than reflect the radiant heat from the surrounding fire. Ensemble and ensemble elements contaminated with hazardous bodily fluids could spread contaminants in the fire station and or living areas if a firefighter wears it again. Ensembles and ensemble elements impregnated with oil, grease, and hydrocarbon deposits from soot and smoke can ignite and cause severe burns and injuries, even if the materials are normally flame resistant.

Committee Meeting Action: Reject

Committee Statement: The technical committee rejected the proposal because it believes this is covered elsewhere in the standard (see paragraph 10.1.4).

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-36 Log #18 FAE-SPF **Final Action: Reject**
(10.1.2 and 10.1.3)

Submitter: Karen E. Lehtonen, LION

Recommendation: Revised text to read as follows:

10.1.2* Structural fire fighting ensembles and ensemble elements shall be retired in accordance with 10.2.1, ~~no more than 10 years from the date the ensembles or ensemble elements were manufactured.~~ Structural fire fighting ensembles and ensemble elements that have followed the cleaning, inspection and repair requirements of this standard at least annually shall be retired 10 years from the date the ensemble or ensemble element was issued to be worn. Structural fire fighting ensembles and ensemble elements that have not followed the cleaning, inspection and repair requirements of this standard at least annually shall be retired no more than 10 years from the date the ensembles or ensemble elements date of manufacture.

10.1.3* Proximity fire fighting ensembles and ensemble elements shall be retired in accordance with 10.2.1, ~~no more than 10 years from the date the ensembles or ensemble elements were manufactured.~~ Proximity fire fighting ensembles and ensemble elements that have followed the cleaning, inspection and repair requirements of this standard at least annually shall be retired 10 years from the date the ensemble or ensemble element was issued to be worn. Proximity fire fighting ensembles and ensemble elements that have not followed the cleaning, inspection and repair requirements of this standard at least annually shall be retired no more than 10 years from the date the ensembles or ensemble elements date of manufacture.

Substantiation: Ensembles and Ensemble elements that at least annually have been properly cared for, inspected and maintained in accordance with the requirements of this standard should be allowed to be retired more than 10 years after placement in service. By following a program for inspection, care and maintenance as outlined in this standard there is a protocol that has been established for proper review of the ensemble or ensemble element to ensure its continued fitness for use. In the absence of a care and maintenance program then the element should be required to be retired 10 years from the date of manufacture.

Committee Meeting Action: Reject

Committee Statement: The technical committee spent considerable time discussing the issue of mandatory retirement. The technical committee is rejecting this proposal and is making no changes to the retirement criteria based on the following factors:

- (1) Since the NFPA standards are revised every five years, the ten years represents two revision cycles which incorporate significant enough performance enhancements in ensembles and ensemble elements to warrant retirement of PPE 10 years from the date of manufacture.
- (2) In the absence of a scientifically-validated test method that would support modifying or eliminating the current mandatory retirement of 10 years, the Technical Committee confirmed the existing 10 year requirement for all PPE.
- (3) In the absence of a non-destructive test or evaluation method that can conclusively and reliably determine PPE remains compliant with the performance requirements in place at the time of manufacture, the committee continues to support the existing retirement criteria.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-37 Log #24 FAE-SPF **Final Action: Accept in Principle (11.1.1.1)**

Submitter: Vicki Smith, LION Apparel

Recommendation: Revise text to read as follows:

Verification of the organization or ISP shall be limited to advanced inspection, advanced cleaning and repairs of garment elements only. Verification of the organization or ISP shall not apply to helmet elements, glove elements, footwear elements, hood element, or optional CBRN ensemble.

Substantiation: The standard contains redundant training requirements for Verified ISPs. Presently Verified ISPs have non-brand specific repair testing to ensure they meeting performance criteria established by the standard, but must seek training from each brand manufacture to clean and inspect the garments that they have demonstrated competence to repair. Although verification testing is specific to garment repairs, the scope of verification covers all operational processes and the quality system since they are required to be documented in a Quality Manual. Once annually, the third party certification organization performs a random inspection of the facility and audits the Quality Manual to verify continued compliance for all services provided. This means that advanced inspection and advanced cleaning, in addition to repairs, are scrutinized for NFPA 1851 compliance and deemed acceptable by a third party certification organization. Advanced inspection and advanced cleaning training by each individual brand manufacturer should not be required for Verified ISPs.

Committee Meeting Action: Accept in Principle

Committee Statement: The technical committee accepted the proposal in principle. See 1851-2 (Log #CP9).

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-38 Log #48 FAE-SPF **Final Action: Accept in Principle (11.2.12)**

Submitter: Jason L. Allen, Intertek Testing Services

Recommendation: Revise text to read as follows:

11.2.12* The certification organization shall have a follow-up inspection program of the organization's or the ISP's facilities of the compliant services with at least one random and unannounced visit per 12 month period annually to verify continued compliance.

Substantiation: The proposed change will permit more flexibility in the scheduling of audits.

Committee Meeting Action: Accept in Principle

Revise text to read as follows:

11.2.12* The certification organization shall have a follow-up inspection program of the Verified organization's or the Verified ISP's facilities of the compliant services with at least one random and unannounced visit ~~per 12-month period annually~~ to verify continued compliance.

Committee Statement: The technical committee accepted the proposal in principle and agrees with the intent of the proposal. However, the TC offered alternative language to clarify the issue.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 28 Negative: 1

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

Explanation of Negative:

LAKEY, S.: there are Federal Agencies that require the Verified ISP's currency to be within the 12 month period and do not recognize a facility that is past their due date typed on the verification certificate. The cause and effect would be the Verified ISP to lose a customer. Case example would be a Nuclear Energy Site run on Strict SOP's.

1851-39 Log #44 FAE-SPF **Final Action: Reject (11.3.7.x (New))**

Submitter: Jason L. Allen, Intertek Testing Services

Recommendation: New text to read as follows:

11.3.7.X Outer shell, thermal barrier, and moisture barrier material shall be selected for verification testing such that the materials have breaking strengths that are in excess of the respective seam requirements for seams constructed of these materials.

A.11.3.7.X For example, if an outer shell is evaluated for seam strength and is required to have a seam strength that is greater than 667 N (150 lb), then the outer shell material must have a breaking strength that is at least 667 N (150 lb).

Substantiation: In the evaluation of repaired seams, it is important that the quality of the seam be evaluated through its ability to meet the respective strength requirements in paragraph 7.1.1.3, as specified in NFPA 1971, if seams are constructed of a fabric that has a breaking strength that is less than the required seam strength, the breaking of the fabric along the seam does not permit an adequate evaluation of the organization of ISP's ability to properly repair the seam.

Committee Meeting Action: Reject

Committee Statement: The technical committee rejected the proposal because NFPA 1971, *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, has a provision for the seam to be stronger than the material, which is why it is allowed here. This could require a repaired seam to be stronger than a new seam.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 28 Negative: 1

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

Explanation of Negative:

STULL, J.: The requirement in NFPA 1971 is recognized; however, the objective of verification is to permit an independent assessment of the ISP or organization to conduct a valid repair. This can only be confirmed by the quantitative measurement of seam strength. In this circumstance, certainly the failure of the seam before the base material is one proof that seam repair quality is deficient. However, it does not provide an objective basis for assessing seam quality.

1851-40 Log #45 FAE-SPF **Final Action: Accept in Principle (11.3.7.1 (New))**

Submitter: Jason L. Allen, Intertek Testing Services

Recommendation: New text to read as follows:

11.3.7.X Sample seams shall be prepared by the organization or the ISP that have been certified as compliant with the applicable requirements of NFPA 1971.

11.3.7.X.1 It shall be permitted that sample seams be provided to the certification organization from a manufacturer of NFPA 1971 compliant garments.

11.3.7.X.2 If an ISP provides repairs for several different manufacturers, then only one set of seam samples shall be required for testing.

Substantiation: No instructions are currently provided in NFPA 1851 for how and who creates the seam samples for verifying the repair capabilities of the organization of ISP. The above instructions are intended to clarify the responsibilities for the source of seam samples and issues related to testing ISPs that service multiple manufacturer garments.

Committee Meeting Action: Accept in Principle

Add new text to read as follows:

11.3.7.3 Sample seams shall be prepared and submitted to the certification organization by a NFPA 1971 certified manufacturer, verified organization, or verified ISP submitting the seams for verification testing.

11.3.7.3.1 Where a verified organization or verified ISP performs repairs for more than one manufacturer, then only one set of seam samples shall be required for verification testing.

Committee Statement: The technical committee accepted the proposal in principle, and added the clarifying text as shown in the meeting action.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 27 Negative: 2

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

Explanation of Negative:

LAKEY, S.: NFPA 8.2.1 States that the repair shall be performed in the manner and using like materials as the garment element manufacturer which includes Seams. Sample seams should not be treated any differently than a seam used in actual repair situations. We are Testing for Competency in performing actual repairs.

OLIVER, A.: Professional ISP's that decide to obtain third party verification should be required to have the equipment and the ability to create their own seam samples in order to become verified.

1851-41 Log #49 FAE-SPF **Final Action: Accept in Principle (11.3.7.3)**

Submitter: Jason L. Allen, Intertek Testing Services

Recommendation: New text to read as follows:

11.3.7.3 For repairs to outer shell and thermal barrier seams, the certification organization shall create defects in sample seams by removing multiple stitches such that the seam would not longer be compliant in terms of its seam strength.

Substantiation: No instructions are currently provided in NFPA 1851 for how and who creates the seam samples for verifying the repair capabilities of the organization or ISP. The above instructions are proposed so that the certification organizations can consistently provide samples for verification of seam repair

Committee Meeting Action: Accept in Principle

Add new text to read as follows:

11.3.7.3.3 For outer shell and thermal barrier seam repairs, the certification organization shall damage the sample seams by cutting multiple stitches to a distance of 75 mm (3 in.) + 12.5 mm /-0.00 mm (+1/2 in/-0 in).

Committee Statement: The technical committee accepted the proposal in principle, and added new clarifying text to this section.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-42 Log #46 FAE-SPF **Final Action: Accept in Principle**
(11.3.7.4)

Submitter: Jason L. Allen, Intertek Testing Services
Recommendation: New text to read as follows:

11.3.7.4 For repairs to moisture barrier seams, the certification organization shall create defects in sample seams by cutting multiple stitches through the seam tape such that the seam would no longer be compliant in terms of its seam strength.

Substantiation: No instructions are currently provided in NFPA 1851 for how and who creates the seam samples for verifying the repair capabilities of the organization or ISP. The above instructions are proposed so that the certification organizations can consistently provide samples for verification of seam repair.

Committee Meeting Action: Accept in Principle

Add new text to read as follows:

11.3.7.3.2 For moisture barrier seam repairs, the certification organization shall damage the sample seams by cutting multiple stitches and the seam tape to a distance of 75 mm (3 in.) + 12.5 mm /-0.00 mm (+1/2 in/-0 in).

Committee Statement: The technical committee accepted the proposal in principle, and provides the new text in this section to address the issue.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-43 Log #41 FAE-SPF **Final Action: Reject**
(Table 11.3.7(a))

Submitter: Jason L. Allen, Intertek Testing Services
Recommendation: Revise text to read as follows:

In Table 11.3.7(a), insert “(Major A)” after “5 ft felled seam” and “(Minor)” after “5 ft overedge seam.”

Substantiation: Clarification of the appropriate seam requirements is required in the table on Outer Shell Repairs. An overedge seam is a hem type seam, sometimes used in pockets, and does not result in immediate danger to the wearer when it ruptures.

Committee Meeting Action: Reject

Committee Statement: It was the intent of the technical committee to evaluate overedge seams to the Major B performance requirements.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-44 Log #40 FAE-SPF **Final Action: Reject**
(Table 11.3.7(b))

Submitter: Jason L. Allen, Intertek Testing Services
Recommendation: Revise text to read as follows:

In Table 11.3.7(b), insert “(Major B)” after “5 ft felled seam” and “(Minor)” after “5 ft overedge seam.”

Substantiation: Clarification of the appropriate seam requirements is required in the table on Thermal Liner Repairs. An overedge seam is a hem type seam and does not result in immediate danger to the wearer when it ruptures.

Committee Meeting Action: Reject

Committee Statement: It was the intent of the technical committee to evaluate overedge seams to the Major B performance requirements.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-45 Log #19 FAE-SPF **Final Action: Reject**
(11.3.10)

Submitter: Rick Mansfield, Apex Fire Services
Recommendation: Revise text to read as follows:

All repair categories that are verified in accordance with this standard shall undergo verification on an annual basis; whenever a revised NFPA 1851 standard is issued, the physical facility of the verified ISP is moved to a new location, and/or the named ISP changes its business name.

Substantiation: Current annual certification is an economic burden on ISPs and end users. Requiring ISPs to re-certify driven upon logical events would make providing services to end users more affordable as well as make it more cost effective for larger end users to become an ISP.

Committee Meeting Action: Reject

Committee Statement: The technical committee rejected the proposal because it believes that annual retesting is necessary in order to verify ongoing compliance.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-46 Log #47 FAE-SPF **Final Action: Accept in Principle**
(11.4.3.1)

Submitter: Jason L. Allen, Intertek Testing Services
Recommendation: New text to read as follows:

11.4.3.1 If the ISP changes the designated person, the ISP shall notify the certification organization of the change and provide information to demonstrate that the person’s understanding of the ISP’s quality system.

Substantiation: The current language appears to imply that the verification in contingent on a single individual as responsible for the quality system and does not account for changes made by the ISP for this responsibility.

Committee Meeting Action: Accept in Principle

Add new text as follows:

11.4.3.1 If the Verified ISP or Verified organization changes the designated person, the Verified ISP or Verified organization shall notify the certification organization.

Committee Statement: The technical committee accepted the proposal in principle and agrees with the intent of the proposal. However, the TC offered alternative language to clarify the issue.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-47 Log #CP5 FAE-SPF **Final Action: Accept**
(12.1.5.3)

Submitter: Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment,

Recommendation: Revise 12.1.5.3. Delete “advanced” and add “complete liner.”

Substantiation: This change is being proposed to correct an error. Correct reference should be to a complete liner inspection.

Committee Meeting Action: Accept

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-48 Log #28 FAE-SPF **Final Action: Reject**
(12.2.4.2)

Submitter: Jeffrey O. Stull, International Personnel Protection, Inc.

Recommendation: Add new item (x) after (3) in 12.2.4.2:

(x) Use light clamps or other means to help stabilize and position the tested area on the bucket.

Substantiation: This item is suggested as a means for improving the practicality and precision of the test.

Committee Meeting Action: Reject

Committee Statement: The technical committee rejected the proposal. This is intended to be a simple and quick field test not requiring the use of clamps.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

Comment on Affirmative:

STULL, J.: This information could be made advisory by placing it in the annex. Organizations that have not routinely performed these tests could use whatever advice makes the test easier and clamps could assist organization in more consistently carrying out this test.

1851-49 Log #27 FAE-SPF **Final Action: Reject**
(12.2.5.1)

Submitter: Jeffrey O. Stull, International Personnel Protection, Inc.

Recommendation: Revise text to read as follows:

12.2.5.1 The liner shall be visually inspected for leakage on the thermal barrier side after 3 $\frac{1}{2}$ minutes.

Substantiation: Some experimentation has shown that a one minute dwell time can show leaks that would result in exposure of the wearer under actual use conditions. A one minute test time makes it easier to provide a more efficient evaluation of the garment. In addition, a similar proposal has been put forward in the inspection of liners for technical rescue garments.

Committee Meeting Action: Reject

Committee Statement: The technical committee rejected the proposal because no technical data was submitted in support of the change in test time.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

Comment on Affirmative:

STULL, J.: A decision will be made for pursuing this proposed change with the provision of existing data.

1851-50 Log #29 FAE-SPF **Final Action: Reject**
(12.2.5.3)

Submitter: Jeffrey O. Stull, International Personnel Protection, Inc.

Recommendation: Add new 12.2.5.3, renumber and re-title current 12.2.5.3 as "12.2.6 Returning Garment to Service."

12.2.5.3 It shall be permitted to use blotting to aid in the detection of wetting on the face cloth side of the thermal barrier. If blotting is used, a soft tissue shall be used and lightly presses against the thermal barrier for 5 seconds. If wetness appears on the tissue, the thermal barrier shall be considered to have been wetted and the liner shall be removed from service and repaired or replaced.

Substantiation: In some cases, wetting of the thermal barrier can be difficult to detect. The current 12.2.5.3 is not related to the results of the testing.

Committee Meeting Action: Reject

Committee Statement: The technical committee rejected the proposal. This is intended to be a simple and quick field test for the end user. The TC also believes that the paragraph is appropriate as written.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-51 Log #CP11 FAE-SPF **Final Action: Accept**
(A.4.4.2)

Submitter: Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment,

Recommendation: Asterisk 4.4.2, and add an Annex paragraph as follows: A.4.4.2* It should be noted that the intent of this requirement is not to allow manufacturers to dictate which ISP an organization must use. The organization is allowed a choice in service providers for repairs, cleaning and inspection.

Substantiation: The technical committee is proposing this Annex paragraph to clarify its intent to allow the organization to choose its service providers for repairs, cleaning and inspection.

Committee Meeting Action: Accept

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-52 Log #26 FAE-SPF **Final Action: Accept in Principle**
(A.6.3.5.1(9))

Submitter: Tim J. Gardner, 3M Occupational Health and Environmental Safety Division

Recommendation: Add new text at the end of the last paragraph in the section:

With proper care, visibility markings on turnout gear can provide long service, often as long as the service life of the ensemble itself. Attention during inspection should be paid to sections which show evidence of damage, abrasion, or stains/discoloration. With proper maintenance, the performance of visibility markings on the ensemble can be maintained at a high level.

Substantiation: This statement is consistent with findings of the recent in-use garment study performed by the University of Kentucky.

Committee Meeting Action: Accept in Principle

Add new text to the end of Annex item:

A.6.3.5.1(9):

Attention during inspection should be paid to sections which show evidence of damage, abrasion, excessive soiling, or stains/discoloration. With proper care, visibility markings on turnout gear can provide long service, often as long as the service life of the ensemble itself.

Committee Statement: The technical committee accepted the proposal in principle, and added "excessive soiling" to the list of sections.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-53 Log #37 FAE-SPF **Final Action: Accept in Part**
(A.6.3.5.1(9))

Submitter: Stacy Trenkamp, University of Kentucky Textile Testing Laboratory

Recommendation: A.6.3.5.1(9) Visibility markings can appear to the human eye to be undamaged when actually they have lost much of their ability to reflect. Retroreflective properties can be checked with the following simple flashlight test:

(1) Stand approximately 12 m (40 ft) from a sample of the trim being tested and a sample of new trim.

(2) Hold a bright, focused flashlight at eye level, either next to the temple or on the bridge of the nose, and aim the light beam at the samples.

(3) Compare the brightness of the reflected lights. If the reflected light from the trim being tested is substantially less than the light reflected from the new trim, the trim should be replaced.

This field evaluation test provides effective and timely results while allowing the evaluator to physically view the reflective trim as it is seen by the naked in

eye in real, working situations.

While this simple test provides a practical evaluation of trim retroreflective performance, it does not evaluate trim fluorescence or mean that the trim will provide adequate fire fighter visibility. Trim can lose fluorescence (daytime visibility) and still remain retroreflective. Trim can also appear to be retroreflective and not have sufficient intensity for nighttime visibility at far distances. Only testing under laboratory conditions can provide an accurate determination of trim visibility properties.

Substantiation: The Fire Fighter Durability Study Phase I completed at the University of Kentucky completed this field evaluation test on 67 garments used in the study. All garments passed the field evaluation test, and it was noted that some of the samples that did not perform as well had soiling or thermal damage visible to the eye. This information supports that the field evaluation on trim is effective and gives the fire fighter confidence that their gear will perform the way it's supposed to.

Committee Meeting Action: Accept in Part

Revise A.6.3.5.1(9) as follows:

A.6.3.5.1 (9) Visibility markings can appear to the human eye to be undamaged when actually they have lost much of their ability to reflect. Retroreflective properties can be checked with the following simple flashlight test:

(1) Stand approximately 12 m (40 ft) from a sample of the trim being tested and a sample of new trim.

(2) Hold a bright, focused flashlight at eye level, either next to the temple or on the bridge of the nose, and aim the light beam at the samples.

(3) Compare the brightness of the reflected lights. If the reflected light from the trim being tested is substantially less than the light reflected from the new trim, the trim should be replaced.

This field evaluation test provides effective and timely results while allowing the evaluator to physically view the reflective trim as it is seen by the naked eye.

While this simple test provides a practical evaluation of trim retroreflective performance, it does not evaluate trim fluorescence or mean that the trim will provide adequate fire fighter visibility. Trim can lose fluorescence (daytime visibility) and still remain retroreflective. Trim can also appear to be retroreflective and not have sufficient intensity for nighttime visibility at far distances. Only testing under laboratory conditions can provide an accurate determination of trim visibility properties.

Committee Statement: The technical committee accepted the proposal in part, and deleted the proposed text "in real, working situations." The TC believes that this sentence better states the proposal.

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-54 Log #CP4 FAE-SPF **Final Action: Accept**
(A.6.4.3.1)

Submitter: Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment,

Recommendation: Add new Annex text as follows:

A.6.4.3.1* The two year requirement for the complete liner inspection after moisture barrier replacement is to ensure that the thermal barrier – which has not been replaced but has remained in service – continues to be inspected in a timely manner, as opposed to going another three years without being inspected.

Substantiation: The technical committee is proposing to add explanatory text to the Annex for 6.4.3.1.

Committee Meeting Action: Accept

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-55 Log #CP6 FAE-SPF **Final Action: Accept**
(A.6.4.5.1)

Submitter: Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment,

Recommendation: Asterisk 6.4.5.1 and add an Annex paragraph A.6.4.5.1:

A.6.4.5.1 The ability to inspect the interior sides of the liner for the moisture barrier and thermal barrier may be accommodated by the presence of an inspection opening designed by the manufacturer that is built into the protective element. The location and method for securing this opening will vary with the manufacturer's design. However, the intent of this feature is to permit the organization conduct the inspection to invert the liner so that the interior sides of the moisture barrier and thermal barrier can be readily inspected. If the protective element is not provided with an inspection opening, the organization conducting the complete liner inspection may be required to remove a portion of the seam in the lining to permit opening the lining and allow its inversion for inspecting the interior sides of the moisture barrier and thermal barrier. The procedures used for removing the lining seam should conform to those procedures specified by the manufacturer of the protective element and should account for practices that minimize the damage and allow for ease of reconstructing the seam of the liner to limit any decrement of protective element performance or integrity.

Substantiation: The proposed Annex language provides additional details for how the complete liner is inspected.

Committee Meeting Action: Accept

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

Comment on Affirmative:

STULL, J.: The tentative acceptance of this suggested information by the committee is appreciated.

1851-56 Log #35 FAE-SPF **Final Action:** Accept
(A.7.1.1)

Submitter: Stacy Trenkamp, University of Kentucky Textile Testing Laboratory

Recommendation: Revise text to read as follows:

A.7.1.1 The importance of maintaining the cleanliness of ensembles and ensemble elements should not be underestimated. Studies have shown that soiled or contaminated ensembles and ensemble elements are a hazard to fire fighters because soils and contaminants can be flammable, toxic, or carcinogenic. Additionally, soiled or contaminated ensembles and ensemble elements can have reduced protective performance. Clean ensembles and ensemble elements offer the emergency responder better protection and can add to the life of the ensemble and ensemble elements. Ensembles and ensemble elements should be cleaned whenever they have become soiled.

In everyday use, personal protective equipment becomes dirty by absorbing sweat from the wearer and soils, soot, and so forth from the outside environment. Cleaning of ensembles and ensemble elements removes those substances. Ensembles and ensemble elements can also become contaminated with other substances, principally hazardous materials, particulates, and body fluids. The removal of these substances is most often referred to as *decontamination*. In structural and proximity fire fighting, both general cleaning and decontamination of ensembles and ensemble elements might be necessary.

Health risks of soiled or contaminated ensembles and ensemble elements.

Soiled or contaminated ensembles and ensemble elements can expose fire fighters to toxins and carcinogens that enter the body through ingestion, inhalation, or absorption. Repeated small exposures to some contaminants can add up over time and cause health problems.

Although great emphasis is placed on safety to avoid injury or inhalation hazards to personnel working on the fire ground, many of the toxins that lead to health risks are being carried away from the fire scene on personal protective equipment used by the fire fighter.

Toxins that a fire fighter will come into contact with can be trapped in the fibers of soiled ensembles and ensemble elements or absorbed into the materials themselves. Contact with the soiled ensembles and ensemble elements increase the risk of the toxic contaminants being introduced into the body.

Ensembles and ensemble elements contaminated with body fluids presents a potential risk of a communicable disease being transmitted to the person coming into contact with the contaminated ensembles or ensemble elements.

Reduced performance hazards of contaminated ensembles and ensemble elements. When ensembles or ensemble elements become laden with particles and chemicals, other problems are faced in addition to being exposed to toxins, such as the following:

(1) Soiled ensembles and ensemble elements typically reflects less radiant heat. After materials are saturated with hydrocarbons, they will tend to absorb rather than reflect the radiant heat from the surrounding fire.

(2) Ensembles and ensemble elements heavily contaminated with hydrocarbons are more likely to conduct electricity, increasing the danger when entering a building or vehicle where wiring can still be live.

(3) Ensembles and ensemble elements impregnated with oil, grease, and hydrocarbon deposits from soot and smoke can ignite and cause severe burns and injuries, even if the materials are normally flame resistant.

Even though the number of specialized hazardous materials response teams is growing, individual fire fighters can still encounter various chemicals in their normal fire-fighting activities. Exposures to oils, gasoline, and lubricants can occur around fire station vehicles. During responses, exposures to liquids ranging from pesticides to acids to chemical solvents can occur, knowingly or unknowingly. These contaminants, in addition to being hazardous, can also degrade ensembles and ensemble elements as follows:

- (1) Clothing fabrics can become weakened and tear more easily.
- (2) Thread or seam sealing tape can become loose.
- (3) Flame-retarding or water-repelling treatments can be removed.
- (4) Visibility markings can lose reflective properties or markings, becoming less visible.
- (5) Helmet shells, helmet faceshields, or goggles can pit or craze.
- (6) Ensemble and ensemble elements hardware can become corroded.

Substantiation: The added statement supports the information that is already present in the annex (like the list of degradation that may occur from negligence of cleaning and maintenance), yet adds emphasis on the importance of making sure that garments are properly cleaned and maintained in order to extend their life cycle. Studies completed and in progress at the University of Kentucky have shown the importance of cleaning and maintaining fire fighting garments.

The Fire Fighter Durability Study Phase I completed at the University of Kentucky found that 66% of the sixty-seven garments tested showed leakage during the Water Penetration Barrier Evaluation. Questionnaires used for purposes of the study found that 30% of respondents replied that cleaning of their garment was voluntary.

Furthermore, the Firefighter Durability Study Phase II in progress at the University of Kentucky has so far found that 9 of 12 garments tested showed leakage during the Water Penetration barrier Evaluation. The questionnaire in accordance with Phase II showed that 55% of respondents answered that the cleaning of their garments was voluntary.

Committee Meeting Action: Accept

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

Comment on Affirmative:

STULL, J.: It would be instructive to cite the referenced studies and other literature in the appendix so that others could view this information if interested.

1851-57 Log #25 FAE-SPF **Final Action:** Accept
(A.7.3.6)

Submitter: Vicki Smith, LION Apparel

Recommendation: Revise text to read as follows:

Machine cleaning is the most effective method for cleaning ensemble elements such as coats, trousers, coverall, and hoods. It is the most effective means of loosening and removing dirt, soot, and other debris. Presently there are two basic types of automatic washing machines are commonly available for use by end-users: top-loading agitator style machines and front-loading washer/extractors. New technologies are emerging every day in the cleaning industry that will affect options available to both the enduser as well as the ISP for all ensemble elements. At this time, it is generally accepted that front-loading machines are more appropriate for protective ensemble and ensemble elements, where allowed by the element manufacturer...

Substantiation: There are several new technologies that are close to being brought to market that may not use washing machines and could theoretically clean all ensemble elements. Although the standard does mention “emerging technologies” it implies these technologies are applicable to machine washing of fabric elements. If new cleaning technology that is proven effective and safe for all elements is introduced, the standard should contain language that would make it eligible for compliance.

Committee Meeting Action: Accept

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

1851-58 Log #CP7 FAE-SPF **Final Action:** Accept
(A.7.3.7(5))

Submitter: Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment.

Recommendation: Asterisk 7.3.7 (5), and add an Annex paragraph A.7.3.7 (5) as follows:

A.7.3.7(5) The pH for the product can be indicated on the product (detergent) container and should be the pH for the product in an undiluted form, if it is a liquid. If the detergent is a powder, the pH will be reported at a specific concentration of the solid on a weight basis in water. If the pH is not listed on the product container, then request the Material Safety Data Sheet (MSDS) from the product supplier. Most suppliers will normally provide the MSDS for their respective products as part of the shipment and it may also be possible to obtain a copy of the MSDS on line from the supplier’s website. The pH for the product is typically listed in Section 9 of the MSDS for the product physical and chemical properties.

The selection of the detergent should include a consideration of several factors in addition to the pH range. Foremost amongst these is the demonstration by the supplier that the detergent is safe to use with firefighter protective clothing. This demonstration consists of two parts – (1) the effectiveness of the detergent in removing soils and other contaminants as indicated later in this section, and (2) the impact of the detergent through multiple washings on the protective element as described in A.7.1.9. This information may be available from the supplier of the detergent, the manufacturer of the protective element, or fabric suppliers. If there is uncertainty about a particular detergent or cleaning agent, contact the manufacturer of protective element.

Organizations should be cautious about detergent or chemical suppliers that offer you several different chemicals for cleaning your protective elements. Many chemical suppliers will provide the organization with an automated dispenser that can feed liquid chemicals into the washer/extractor at no cost on the requirement that you purchase chemicals from that supplier. Certain types of chemicals, such as alkali builders and sour should be avoided. Alkali builders are used to significantly increase the pH of the wash water for enhancing the cleaning performance of certain detergents. These chemicals typically have pH values that are greater than 10.5. When alkali builders are used, the pH is usually brought to a lower level using a “sour”, which is an acid based agent that is used to bring the wash water back to a neutral pH. Sour

cleaning agents are added towards the end of the wash formulation and almost always have pH values that are much lower than 6.0. The combination of alkali builders and sours are most often used in institutional laundering facilities but are not appropriate for protective elements, unless the manufacturer of the respective protective element has indicated that these types of products can be safely used.

In general, mild domestic laundry detergents may be used, if applied consistent with the instructions provided for the laundry in terms of the amount of detergent added for the wash water volume used in the suds (detergent addition step) for the specific washing machine or washer/extractor. A single detergent may be viable for washing both the shell and liners for structural fire fighting protective garments; however, some suppliers might offer specialty detergents that have been formulated for either heavier duty cleaning of outer shells or gentler cleaning of linings. In addition, spot treatment agents are usually required for removal of specific heavy soiling and some common fireground contaminants.

Substantiation: The proposed Annex language provides guidance to organizations involving in cleaning protective elements on determining if the selected detergent falls within the specified range of pH and other factors related to the selection of an appropriate detergent.

Committee Meeting Action: Accept

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

Comment on Affirmative:

OLIVER, A.: Revise 3rd paragraph, 5th sentence: “These chemicals typically have pH values that are greater than 10.5 and are used in high temperature cleaning greater than 130 degrees Fahrenheit.”

STULL, J.: The tentative acceptance of this suggested information by the committee is appreciated.

1851-59 Log #CP8 FAE-SPF **Final Action: Accept**
(A.7.3.7(5))

Submitter: Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment,

Recommendation: Add an Annex paragraph as follows:

A.7.3.7 (5) Cleaning agent or detergent effectiveness. The effectiveness of a cleaning agent or detergent may be ascertained by performing testing in which the soiling is applied to the material of interest and an assessment is made to determine if the application of the cleaning process removes the soiling. While there are no established methods for evaluating the effectiveness of laundry processes in removing soils in protective clothing, the procedures are suggested:

A suitable method for modification was identified in American Association for Textile Chemists and Colorists (AATCC) Test Method 123-2000, Carpet Soiling: Accelerated Soiling Method. This test method provides procedures for determining the propensity for soiling of carpet samples using synthetic soil and a tumbling method. This method offers a means for reproducibly soiling outer shell fabrics. The synthetic soil formulation and its method of application for contacting outer shell fabrics must be made since some aspects of the AATCC procedures do not uniformly soil fabrics as intended for carpet samples. The recommended ingredient list for the synthetic soil is provided in Table A.7.3.7(5):

Ingredient	% by Weight
Peat Moss (dark)	38
Portland Cement	17
Kaolin Clay	17
Silica (200 mesh)	17
Carbon black	1.75
Red iron oxide	0.50
Mineral oil	8.75

All dry ingredients are mixed together thoroughly before adding mineral oil. The mixture is then baked at 122°F (50°C) for 8 hours before use. Sample fabrics to be used in the evaluation are preconditioned by washing using the procedures in AATCC 135, Dimensional Changes in Automatic Home Laundering of Woven and Knit Fabrics, using Machine Cycle 1 (sturdy/cotton), Wash Temperature V (160oF), and Laundering Condition Ai (tumble drying/high heat), to remove some of the finishes that applied to the fabrics during their processing. These finishes retard the wetting of fabric and the adhesion of soils. Nevertheless, the effects of these finishes are generally reduced by both washing and wear of the garment. Some preconditioned (washed) fabric outer shell samples should be retained as a laundered “control” since washing reduces the brightness and causes some color changes in fabrics, even without soiling.

The preconditioned fabric soiling is accomplished using a Launder-Ometer (specified in AATCC 61-2003, Colorfastness to Laundering, Home and Commercial: Accelerated). A Launder-Ometer is a special washing machine that is typically used in the testing of fabrics for colorfastness. It consists of a machine that rotates closed canisters in a thermostatically controlled water bath.

For the fabric soiling, 150 mm (6-in.) square specimens of preconditioned fabric are placed inside lined canisters with 100 grams of synthetic soil and 50 stainless steel balls measuring 6 mm (¼ in) in diameter. The steel balls are used to provide physical rubbing of the soil against the fabric specimen inside the canister to help increase the level of soiling. The fabric specimens are tumbled inside the Launder-Ometer without using the water bath but at a rotational speed of 40 rpm for a period of 45 minutes. This process is repeated for each set of specimens to be evaluated.

Following the conclusion of soiling period, the soiled samples are removed from the canister and any loosely adhering soil is removed by light brushing. The samples are then subjected to the laundering process to be evaluated using the detergent according to the supplier’s instruction and the overall washing process according to the selecting wash formulation for the specific washing machine or washer/extractor being used. Additional serve as samples soiled, but not laundered.

The removal of soiling can be determined in one of three different ways:

1. A visual comparison can be made between the soiled and unsoiled (control) specimens
2. A gray scale change can be assigned to each specimen (a gray scale is a way of quantifying the change in a material color relative to its original color) and is performed in accordance with AATCC 61-2003, Colorfastness to Laundering, Home and Commercial: Accelerated. Both color changes and staining ratings should be applied to the control, soiled, and laundered outer shell fabric specimens. These semi-quantitative ratings should be made using two different observers.
3. Spectrophotometric measurements can be made comparing the soiled and unsoiled (control) specimens. Spectrophotometric measurements are made on control, soiled, and test outer shell fabric specimens using principles described in AATCC Evaluation Procedure 6, Instrumental Color Measurement. The color of fabric specimens is measured using reflectance methods consistent with procedures in ASTM E 308, Standard Test Method for Comparing the Colors of Objects by Using the CIE System, and Publication CIE No. 15.2(1986), Colorimetry [2nd Edition, Commission Internationale de l’Eclairage (CIE), Vienna, Austria]. Comparisons can be made using the color intensity and the color coordinates, which include: L* – color intensity (ratio of luminance to incident luminance); a* – color coordinate representing red-green axis, positive changes indicate a shift to red; and b* – color coordinate representing blueyellow axis, positive changes indicate a shift to yellow. Since specimen color is affected by the type of illumination, an illumination source of D65 should be used, which is representative of average outdoor sunlight. A viewing angle of 10 degrees should also be used for all color measurements.

Substantiation: The technical committee is proposing Annex language which may provide information on cleaning agent and detergent effectiveness, and including it to solicit public input during the comments stage.

Committee Meeting Action: Accept

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.

Comment on Affirmative:

STULL, J.: The tentative acceptance of this suggested information by the committee is appreciated. These procedures were developed by the University of Alberta. Additional supporting information will be provided during the public comment period.

1851-60 Log #CP2 FAE-SPF **Final Action: Accept**
(A.10.1.1)

Submitter: Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment,

Recommendation: Delete the text of A.10.1.1, and replace with text as follows:

A.10.1.1 Retirement criteria should be based on a number of factors, including, but not limited to, the following:

- (1) Overall condition of the item
- (2) Specific deterioration of materials or components beyond their economic repair
- (3) Ability to adequately remove hazardous materials and other contaminants
- (4) Age of structural or proximity ensemble or ensemble elements
- (5) Excessive soil buildup that could impact performance of the ensemble or ensemble element

Physical damage from use, detrimental effects from improper cleaning procedures, and fabric failure of an ensemble and ensemble elements that can make repairs impossible are other factors that can affect when an item should be retired.

Where ensembles and ensemble elements are worn, damaged, or contaminated, organizations should determine if it would be more appropriate for them to be repaired, decontaminated, or replaced. One general guideline is if the cost of the repair or decontamination is greater than 50 percent of the replacement cost

of the ensemble or ensemble elements, replacement should be considered. A typical guideline that can be used involves the use of a matrix that takes into account the current age of the gear and the cost of the repair versus the replacement cost of the item. (See A.10.1.4.)

Experience suggests that ensembles and ensemble elements that are approaching 10 years since the date of their manufacture have a high likelihood of performance deficiencies in multiple areas that can often be detected only by destructive testing. Additionally, experience suggests that the reflective outer shell of proximity elements that are approaching 5 years since the date of their manufacture have a high likelihood of performance failures that can be detected only by destructive testing. Such performance failures could compromise fire fighter safety.

It is important to understand that the actual service life of ensembles and ensemble elements varies depending on the amount of their use and the care they receive. Factors such as the size of the department, area covered, types of exposures, and the aggressiveness of the individual fire fighter are all considerations in how long any ensemble element will last. It is possible that a protective element could be exposed to circumstances that totally destroy it the first time it is utilized. Since the purpose of fire fighters' protective elements is to protect the wearer, if the element has saved a life or prevented serious injury, even just once, it has done its job. In many cases, an ensemble or ensemble element will need to be retired sooner than 10 years (or 5 years for the proximity reflective outer shell component).

An additional consideration that can influence the decision to repair or replace an ensemble or ensemble element centers on the advances in technology that occur through each revision of NFPA 1971, *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*. These technological advances might be deemed important enough by an organization to influence its criteria for replacement of ensembles or ensemble elements.

In the 2013 revision process, the technical committee spent considerable time on the issue of mandatory retirement. The technical committee reaffirmed its position based on the following factors:

(1) Since the NFPA standards are revised every five years, the ten years represents two revisions cycles which incorporate significant performance enhancements in ensembles and ensemble elements to warrant retirement of PPE 10 years from the date of manufacture.

(2) In the absence of scientifically-validated test methods that would support modifying or eliminating the current mandatory retirement of 10 years, the technical committee reaffirmed the existing 10 year requirement for all PPE.

(3) In the absence of a non-destructive test or evaluation method that can conclusively and reliably determine PPE remains compliant with the performance requirements in place at the time of manufacture, the committee continues to support the existing retirement criteria.

Organizations should use members who have received training in the inspection of ensembles and ensemble elements, who understand the limitations of each ensemble and ensemble element, and who recognize the signs of failure to help make decisions as to the integrity of an ensemble or ensemble element. Revise A.10.1.2 as follows:

A.10.1.2 After discussion of the concept of mandatory retirement for protective elements, the consensus of the technical committee, led by the fire service segment, is that the life of a turnout suit is generally less than 10 years. Regardless of when the element was originally produced, it is imperative that the protective elements be routinely inspected to ensure that they are clean, well maintained, and still safe. Just knowing the age of the elements cannot do that. In the 2013 revision cycle the technical committee, led by the fire service, again reaffirmed this position.

Substantiation: The technical committee spent considerable time discussing the issue of mandatory retirement, and is providing amended text to A.10.1.1. and A.10.1.2.

Committee Meeting Action: **Accept**

Number Eligible to Vote: 33

Ballot Results: Affirmative: 29

Ballot Not Returned: 4 Barker, R., Davis, R., Doan, S., Ford, II, R.