

MINUTES OF THE MEETING

TECHNICAL CORRELATING COMMITTEE ON FIRE AND EMERGENCY SERVICES PROTECTIVE CLOTHING AND EQUIPMENT

NEW YORK CITY
13 - 14 OCTOBER 2010

13 October 2010

Agenda Items 1 -- 3: Call to Order, Introduction of Members and Guests, and Committee Procedures

TCC Chairman Les Boord called the meeting to order at 09.00 and asked everyone to introduce themselves. David Trebisacci, NFPA Staff Liaison, then read the NFPA committee operating procedures and passed out the sign-in sheets for TCC members and guests. The following members and guests were present:

Members Present:

Les Boord, Chairman;	NIOSH NPPTL
Eric Beck, Secretary;	MSA
Bruce Teele, Staff Liaison;	NFPA
David Trebisacci, Staff Liaison;	NFPA
Jason Allen	Intertek
Francine Amon	NIST
Steve Corrado	Underwriters Laboratories
Dean Cox	Fairfax, Maryland Fire & Rescue
Nick Curtis	Lion Apparel
Rich Duffy	IAFF
Cristine Fargo	ISEA
Pat Freeman	Globe Manufacturing
Pat Gleason	SEI
Bill Haskell	NIOSH NPPTL
Kim Henry	PBI Performance Products
Steve King	FDNY (retired)
Karen Lehtonen	Lion Apparel
Dan Rossos	Portland, Oregon Fire and Rescue
Robin Royster	Underwriters Laboratories
Rick Swan	IAFF; California Division of Forestry Fire Fighters
Bill Van Lent	Veridian Limited, Representing FEMSA
Bruce Varner	Santa Rosa, California Fire Department

Guests Present:

Robert Athanas	FDNY
Louis Carpentier	INNOTEX/FEMSA
Brandi Chestang	U.S. Navy
Dennis Davis	U.S. Forest Service
Charles Dunn	TenCate Protective Fabrics
Tommy Hosea	U.S. Navy
William Mandy	FDNY

Mike McKenna
Steve Nierenberg
Andrew Shapiro
Jonathan Szalajda
Harry Winer

Sacramento, California Metro Fire (retired)
Intertek
Techtrade
NIOSH NPPTL
HIP Consulting

Agenda Item 4: Approval of the Meeting Minutes

The Minutes of the TCC meeting held in Portland, Oregon, 2 - 4 June 2010, which were previously emailed to TCC members, were distributed to the TCC. The TCC was asked to review the Minutes for corrections, modifications, or deletions.

MOTION BY PAT GLEASON, SECOND BY STEVE KING

To approve the Minutes of the 2 – 4 June 2010 TCC meeting in Portland, Oregon.

MOTION CARRIED

Agenda Item 5: Chairman's Remarks

Chairman Boord reviewed the agenda and the objectives for the meeting. Les announced that this would be Bruce Teele's last TCC meeting as our Staff Liaison before Bruce's retirement. Les recognized Bruce's tremendous contribution to the success of this Project and to the safety of first responders.

Agenda Item 6: Processing ROPs, Staff Liaison

Staff Liaison David Trebisacci reviewed the TCC process for reviewing TC ROPs and the development of TCC notes to the ROP. He confirmed that TCC notes become part of the TC's ROP and therefore are available for public review. David emphasized that the TCC notes developed at this committee meeting would need to be documented by 15 October. David agreed to capture all resulting TCC notes using his PC and a projector so that the committee could efficiently agree on note language and so that David could post our notes to the ROPs by 15 October.

Agenda Item 7: ROP on NFPA 1991, Vapor-Protective Ensembles for Hazardous Materials Emergencies

TC member Karen Lehtonen provided an overview of the committee vote on the ROP. The TCC developed two notes of instruction to the TC that are documented in the ROP.

MOTION BY STEVE KING, SECOND BY PAT GLEASON

To accept the actions taken on all Proposals for NFPA 1991 and the two TCC notes on specific issues for the TC to respond to, and submit these to a letter ballot of the TCC to become the TCC's official NFPA 1991 ROP.

MOTION CARRIED

Agenda Item 8: ROP on NFPA 1992, Liquid Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies.

After reviewing the ROP the TCC developed one note of instruction to the TC that is documented in the ROP.

MOTION BY PAT GLEASON, SECOND BY STEVE CORRADO

To accept the actions taken on all Proposals for NFPA 1992 and the one TCC note on a specific issue for the TC to respond to, and submit these to a letter ballot of the TCC to become the TCC's official NFPA 1992 ROP.

MOTION CARRIED

Agenda Item 9: ROP on NFPA 1994, Protective Ensembles for First Responders to CBRN Terrorism Incidents

After reviewing the ROP the TCC developed four notes of instruction to the TC that are documented in the ROP.

MOTION BY BILL HASKELL, SECOND BY RICH DUFFY

To accept the actions taken on all Proposals for NFPA 1994 and the four TCC notes on specific issues for the TC to respond to, and submit these to a letter ballot of the TCC to become the TCC's official NFPA 1994 ROP.

MOTION CARRIED

Agenda Item 10: ROP on NFPA 1951, Protective Ensembles for Technical Rescue Incidents

Chairman Cox reviewed the TC's actions on the ROP. After reviewing the ROP, the TCC developed three notes of instruction to the TC that are documented in the ROP.

MOTION BY KIMBERLY HENRY, SECOND BY STEVE CORRADO

To accept the actions taken on all Proposals for NFPA 1951 and the three TCC notes on specific issues for the TC to respond to, and submit these to a letter ballot of the TCC to become the TCC's official NFPA 1951 ROP.

MOTION CARRIED

Agenda Item 11: ROP on NFPA 1983, Life Safety Rope and Equipment for Emergency Services

Chairman Cox reviewed the TC's actions on the ROP and provided a high level review of the standard. During the review of the ROP, Staff Liaison Teele asked TC Chairman Cox his opinion regarding a proposed change in the NFPA number for this standard from NFPA 1983 to an NFPA "1950" series number. Chairman Cox said that this had been discussed and it is his opinion that confusion could be created in the user community and that the NFPA 1983 number should remain intact.

MOTION BY KIMBERLY HENRY, SECOND BY STEVE KING

To accept the actions taken on all Proposals for NFPA 1983, with zero TCC notes, and submit these to a letter ballot of the TCC to become the TCC's official NFPA 1983 ROP.

MOTION CARRIED

Chairman Board recessed the meeting for the day at 17.00.

14 October 2010

Chairman Boord reconvened the TCC meeting at 08.30, 14 October 2010

Agenda Item 12: ROP on NFPA 1971, Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting

Chairman King reviewed the TC's actions on the ROP and all 63 comments that were received. During the review, the TCC developed nine notes of instruction to the TC that are documented in the ROP.

MOTION BY NICK CURTIS, SECOND BY PAT FREEMAN

To accept the actions taken on all Proposals for NFPA 1971 and the nine TCC notes on specific issues for the TC to respond to, and submit these to a letter ballot of the TCC to become the TCC's official NFPA 1971 ROP.

MOTION CARRIED

Agenda Item 13 was removed from the agenda.

Agenda Item 14: TC Chairpersons' Reports

TC on EMSPCE

Chairman Haskell gave the update. Bill reported that the next TC meeting is scheduled for 16 - 17 November 2010 at NFPA's Quincy Headquarters. Bill expressed concern over the small number of users on the committee and said that user recruitment would continue to be a priority for this Technical Committee. Bill advised that no Public Proposals had been received by the TC to date.

TC on ESE

TC Chairman Varner reported that several errors were discovered in the recently published NFPA 1801 standard. Bruce said that the TC will provide recommendations regarding the best way to correct the errors. Chief Varner reported that there would be a meeting to discuss this in late October at Intertek's facilities in Cortland, NY.

Chairman Varner provided an update regarding the NFPA 1982 PASS standard. A task group has been formed to investigate the appropriate level of intrinsic safety for this standard. Bruce commented that the TCC will likely need to take action in the future regarding the standardization of Intrinsic Safety levels for product standards within the project. The TC ESE's Task Group on Intrinsic Safety will make recommendations in this regard for the TCC's consideration. Bruce reported that the TC accepted a proposal regarding the establishment of a specified sound pattern for all compliant PASS devices. The objective is to minimize confusion on the fire ground when a PASS device is activated.

The TC on ESE has begun work on the electronic safety "umbrella document." The discussions regarding the product scope for this standard continue. A recommendation will be made regarding the revision cycle for this proposed document.

Chairman Varner reported that the last full TC meeting was held in June, 2010 and that TGs met in San Diego during the first week of October. The next TC meeting would likely be scheduled for February 2011 at a location to be determined.

TC on HMPCE

TC member Karen Lehtonen provided the update. The TC met 15 - 17 March 2010 and that the next TC meeting will be scheduled to work on ROCs. Karen also reported that a TG is in the process of developing a Selection, Care, and Maintenance Document and that a recommendation will be forthcoming regarding that document's processing cycle.

TC on RPE

TC Chairman Rossos reported that the TC met twice since the last TCC meeting in Portland, OR. ROPs were processed at the June meeting for NFPA 1981. A motion was passed to slip the cycle for NFPA 1981 by one year so that additional research could be conducted in the areas of SCBA thermal performance, emergency breathing devices and communications performance. The Committee is investigating restructuring NFPA 1981 to reflect the differing needs of various first responder user segments, such as law enforcement and fire service. In that regard the TC intends to work closely with organizations such as DoD, TSWG, and DOJ.

Chairman Rossos provided additional detail regarding the work of four TGs within the TC:

SCBA Facepiece Lens Issues

A number of TC members, including Dan, attended the Emergency First Responders Respirator Thermal Characteristics Workshop hosted by NIOSH, NIST, and the NFPA Fire Protection Research Foundation on 27 - 28 July 2010 at NIOSH NPPTL. The results from that workshop are being reviewed by the TG.

Buddy Breathers

This TG continues their work in the development of performance and test criteria for these devices. Dan also reported that NIOSH will be hosting a stakeholders meeting in December and that these devices will be one of the agenda items at this NIOSH meeting.

SCBA Communications

The TG continues their work to establish performance criterion for both mechanical and electronic communications systems. The TG believes that minimum communications performance levels should be established with the assumption that electronic systems may fail.

Escape Systems

A motion was passed by the TC to establish the EOSTI activation level at 33 percent of cylinder capacity.

Les Boord commented on behalf of NIOSH that the stake holder's workshop that Dan referenced would be held on 9 December 2010 at the Hyatt Hotel at Pittsburgh Airport. Les reported that three items would be covered in that meeting's agenda, including: 1. Buddy Breathing, 2. Regulatory Schedules, and 3. Combination Respirators. Chairman Boord also reported that NIOSH is acting on the recommendation for modification of the EOSTI activation level through the Public Rulemaking Process.

Dan reported that TC on RPE Task Groups met in San Diego during the first week of October. The TC reviewed Public Proposals received for NFPA 1989 and NFPA 1852 and concluded that these standards would maintain their current Revision Cycle. The TC also discussed the new High Air Flow PAPR standard, and will make TG assignments at the February 2011 meeting. The location for the February meeting is to be determined.

NIOSH's John Szalajda provided information regarding NIOSH certification for Air Purifying Respirators in coordination with the requirements of NFPA 1984. John reported that there are provisions in the current 42 CFR Part 84 for appropriate NIOSH certification without the need for additional rulemaking. John said that there is a

need to slightly modify the NFPA 1984 to include the gas and vapor test table, which has already been developed. It is felt that the addition of this table can be accomplished by processing a TIA through the NFPA process. A manufacturer seeking NIOSH certification for their product would reference the performance table from NFPA 1984. NIOSH will publish a communication in the Federal Register subsequent to the first application as a means to inform all interested parties of the process.

The TC will process the required TIA to add the recommended table to the standard, and nothing else in the current standard will be changed.

TC on SOPCE

Chairman Cox provided an update on the TC's work on NFPA 1855, NFPA 1858, and NFPA 1953. Dean informed the TCC that there is considerable and increasing user interest regarding the establishment of performance criterion for SCUBA used in contaminated water operations.

Dean commented that there are currently 30 members on the TC and that the Committee is examining that roster for appropriate make-up and balance.

Dean reviewed the revision cycles for each of the standards being developed within the TC.

The next TC meeting will be held in March 2011 at a location to be determined. The primary objective of this meeting will be to process ROCs for NFPA 1951 and NFPA 1983.

TC on SPFFPCE

Chairman King provided the update. Steve reported that the TC was very busy at their June 2010 meeting processing the 190+ Proposals that had been received.

Steve informed the TCC that NFPA 1851 will be pushed back by one year.

The next meeting is scheduled for 5 - 7 April 2011 in New Orleans. The primary objective of that meeting is to process NFPA 1971 ROCs.

TC on WFFPCE

Chairman Swan reported that the TC meeting has not met since the last TCC meeting. Rick reported that a new Selection, Care, and Maintenance document for Wildland Personal Protection Equipment will be requested, and that much of the foundational work for this proposed standard has already been completed by the TC.

Agenda Item 15: Report of TCC Task Group to evaluate and standardize existing MIST and permeation tests, and evaluate the inclusion of a standard TIL test to NFPA 1951, NFPA 1971 and NFPA 1994, Task Group Chairman Stull.

TG Chairman Stull joined the meeting via telephone conference. Jeff referenced two handouts during his report. Copies of these two handouts were provided to all committee members. The handouts, marked "TG on CBRN Test Methods, Attachment 1", and "TG on CBRN Test Methods, Attachment 2" are attached to these meeting Minutes. After a detailed review of the TG's work, the Committee agreed to use the documentation that TG Chairman Stull provided as the basis for three TCC notes pertaining to the MIST permeation resistance and total inward leakage tests that would apply to the NFPA 1994, NFPA 1951, and NFPA 1971 ROPs.

Agenda Item 16: Old Business

Chairman Boord sought any old business to be brought forward at this time; no old business was forthcoming.

Agenda Item 17: New Business

Rich Duffy requested that the Project, and all of the TCs within the Project, consider changing the term "CBRN" to "All Hazards", or perhaps a term similar to that. Rich suggested that CBRN is being viewed by many as a hazard related to terrorism and is even being considered by some to be a "luxury" requirement." Rich's point is that these types of hazards are being faced by fire fighters on a daily basis, independent of any terrorism incident.

Rich Duffy also provided the following information:

1. The Canadian Government is soliciting input from stake holders regarding performance requirements for chemical protective clothing. They are considering the adoption of ISO Standards.
2. The Institute of Medicine (IOM) will be releasing a report in November regarding PPE Conformity Assessment and Assurance. The IAFF has seen preliminary work from the IOM regarding this report and has expressed concern regarding its direction.
3. Rich reported that a Southern California Study shows losses from fires to be much greater than what is typically reported.

The TCC discussed the time and location for our next TCC Meeting. The next TCC meeting will be held 26 February – 02 March 2011 in San Diego.

Chairman Boord again recognized NFPA's Bruce Teele for his enormous contribution to the safety and health of First Responders.

Having no further business, Chairman Boord sought a motion to adjourn.

Agenda Item 18: Adjourn

MOTION BY STEVE KING, SECOND BY KIM HENRY

To Adjourn

MOTION CARRIED

Chairman Boord adjourned the meeting at 16.00 on 14 September 2010

Respectfully submitted,

Eric Beck, Secretary
TCC on FESPCE

**NFPA Technical Correlating Committee on
Fire and Emergency Service Protective Clothing and Equipment
Task Group Report for CBRN Test Methods**

October 11, 2010

Participants:

Jeff Stull, International Personnel Protection, Inc.
Jason Allen, Intertek Testing Services
Steve Corrado, UL (represented by Amanda Newsome)
Karen Lehtonen, Lion Apparel
Phil Mann, Kappler, Inc. (represented by John Langley and Jason Cole)
Joe Staudenmeyer, W. L. Gore & Associates (also represented by Mike Kienzle)
Don Thompson, North Carolina State University (represented by Shawn Deaton)
Jim Zeigler, Dupont (not available)

Minutes:

Jeff Stull convened a task group teleconference at 11:00 am EDT on 11 October 2010. A handout was provided with the objective and recommended approach for the task group. These included:

Objective: To standardize (harmonize) MIST and permeation resistance test methods and consider the inclusion of a total inward leakage test for current project standards addressing CBRN protection – NFPA 1951, NFPA 1971, and NFPA 1994.

Recommended Approach: The task group will investigate potential changes to the MIST and permeation resistance test methods that provide greater consistency in test results and reflect industry practices for testing. The recommended initial output of the testing would be a series of notes that would be presented to the TCC for adoption in their review of the ROP actions for the respective standards. The longer term goal would be the development of specific public comments for submission during the public comment period for each standard.

An outline of topics was further provided, which addressed each of the test method areas under consideration, including Man-in-Simulant Testing (MIST), permeation resistance, and total inward leakage (TIL) testing as a new consideration. Both MIST and permeation resistance affect current methods provided in each of the standard. TIL is a new consideration to address an industry concern. The task group agreed to recommending specific notes that could provide as part of the TCC notes for each standard. These recommended notes are attached.

The task group understands that the notes serve as recommendations to each of the respective technical committees. Nevertheless, the task group agreed to undertake the review of information and investigations of these tests in the period prior to the public comments whereby public comments could be submitted for each standard to both provide harmonization of the CBRN test methods in each standard in addition to ensuring consistency in test approaches for ensuring improved test precision and interpretation.

Recommended Notes for TCC Review of ROP for NFPA 1951, 1971, and 1994

1. Pertaining to the criteria provided in paragraph {¶7.3.1.1 in NFPA 1951, ¶7.20.1.1 in NFPA 1971, and ¶7.1.1.1 and ¶7.2.1.1 in NFPA 1994} and test method in section {§8.44 in NFPA 1951, §8.66 in NFPA 1971, and §8.2 in NFPA 1994}, the TCC directs the TC to undertake the following actions:
 - a) Provide detailed specifications for the PADs that meet test requirements for the uptake rate as set in the standard. These specifications should go beyond the current and proposed edition of ASTM F2588, which have not been validated to meet the uptake rate of 3.5 cm/min, ±1.0 cm/min.
 - b) Establish specific methodology for the determination of uptake rate.
 - c) Provide a method for a pre-assessment of the exposure concentration in the chamber as determined by the measured uptake rate of the PADs.
 - d) Remove the conflict in the test method for the exposure of the exterior PADs (15 minutes as indicated in the apparatus section versus 30 minutes in the procedure section)
 - e) Provide more detailed specifications for the placement of PADs for measurement of chamber concentrations and for the placement of PAD on individual test subjects.
 - f) Determine an approach to consistently set the inside Ct value for the determination of local protection factors.
 - g) Establish limits for the time of analysis of exposed PADs.
 - h) Investigate the accuracy and appropriateness of the body region hazard analysis as applied in the determination of systemic physiological protective dosage factor.
 - i) Consider using the average systemic physiological protective dosage factor to determine pass fail performance for specific ensembles.

The TCC informs the TC that it has a task group that is working on these issues.

Permeation Resistance Test Method

2. The TCC directs the TC to update and permeation resistance test method in section {§8.45 in NFPA 1951, §8.67 in NFPA 1971, and §8.7 in NFPA 1994} consistent with the latest research and laboratory test practices by undertaking the following actions:
 - a) Remove the reference to ASTM F 739
 - b) Base revised test procedures on recommendations provided in Technical Support Working Group (TSWG) report, *Risk-Based Protective Clothing Material Permeation Criteria*, dated March 31, 2010 that follow in the attached table.

Table of Recommended Changes to Permeation Resistance Test Method

Test Parameter	Current Specification	Proposed Change
Referenced standards	ASTM F 739	ASTM D 1777 for thickness measurement; ASTM D 3776 for unit area weight measurement
Test environment	None; however, testing to be performed at $32 \pm 1^\circ\text{C}$	All testing to be performed in separate test chamber that will be maintained at test conditions; specimens, chemicals, and test apparatus will be placed in chamber and required to be in place 24 hrs prior to testing
Test cell	Per ASTM F 739, alternative test cells permitted; no requirements for determining equivalency	Modified TOP 8-2-501 test cell with drawing specification for modified specimen plate to accommodate control of exposed surface area in saturated surface exposure tests; test cap to contain fitting for measuring integrity of test cell after specimen is mounted
Air flow requirements in collection side	Filtered air at rate of 1 ± 0.1 Lpm at $80 \pm 5\%$ RH	Balance air flow with challenge side for consistency and absence of pressure drop; measure temperature and relative humidity at test cell inlet; principal air flow system to be positioned inside environmental chamber
Specimen size	Varies with test cell	Standardized for TOP 8-2-501 test cell
Permeation specimen conditioning	$21 \pm 3^\circ\text{C}$ and $65 \pm 5\%$ RH (standard textile conditioning)	$32 \pm 1^\circ\text{C}$ and $80 \pm 5\%$ RH to be conducted inside test chamber; tolerance on temperature to be relaxed to $\pm 2^\circ\text{C}$
Test cell sealing	None	Alternative gasketing material to be specified; O-rings and fittings must be assessed for compatibility with test chemical; Specific torque to be applied in sealing test cell
Test cell integrity check	None	Using fitting in test line cap, test cell to be pressurized with air to 2 psig with specimen in place with pressure drop measured after 1 minute (only 10% pressure drop permitted)

Test Parameter	Current Specification	Proposed Change
Liquid challenge conditions	Liquid applied at surface density of 10 g/m ² using appropriate number of 1- μ L droplets uniformly dispensed on material specimen surface	For each liquid chemical (including chemical warfare agents), nine (9) 1- μ L droplets will be applied in specific pattern on exposed specimen surface; time of 30 seconds will be required for opening test cell cap, dispensing droplets, and closing test cell cap.
Air flow on challenge side for open top test cell configuration	Filtered air at rate of 0.3 \pm 0.03 Lpm at 80 \pm 5% RH	Filtered air at rate of 0.3 \pm 0.03 Lpm at 80 \pm 5% RH, temperature conditioning with environmental chamber
Volatile liquid toxic industrial chemical challenge	None	Chemicals with vapor pressures of 5 mm Hg or greater at 25°C will be tested as vapors at the corresponding gas concentration in the respective standard
Collection technique	Combination of analytical technique and collection medium shall be selected to maximize sensitivity for the detection of the test chemical and represent actual occupational conditions as closely as possible	Test system collection efficiency evaluated using procedure to determine total test chemical collected; evaluation must be performed for each test chemical and verified periodically by laboratory
Analytical sensitivity	Test system must have detection limit that is one order of magnitude lower than prescribed permeation end point	Specification to be based on each individual chemical; good laboratory practice standards will be referenced for correct analytical procedures
Results reported	Breakthrough time Permeation rate (optional) Test parameters as part of report	Cumulative permeation Test parameters as part of report
Interpretation of results	Average of all results	Average of all results; however, if one or two test cells show no cumulative permeation, the standard-defined minimum detection limit will be used for no detectable permeation test results for purposes of averaging results

Total Inward Leakage

3. The TCC directs the TC to create criteria for determining the effect of the ensemble on the performance of the CBRN respirator by undertaking the following actions:
 - a) Determine basis for applying a total inward leakage test to evaluate the ensemble-respirator interface.
 - b) Investigate approaches for conducting inward leakage test that accommodates both SCBA and APR respirators.
 - c) Investigate specific use of MIST evaluation test for monitoring inward leakage of MeS into facepiece during an abbreviated exercise protocol.