Capital Fire Mutual Aid System

(CFMAS)

Barre City, Alumni Hall, 2nd floor

January 15, 2025

Meeting Minutes

Meeting was in person and virtual

CFMAS members present

J. Aldsworth (P), W. Knott, H. Knott, K Cushman, J. Matthew, P. Cerutti (1st VP), G. Dillon, S. Dillon, A. Petretta, S. Pratt, J. Cambell, J. Young, E. Metivier, J. Koonz, M. Gervia, J. Quinn, M. Sutton, G. Perkins, P. Demasi, W. Bothfeld, B. Morse, K. Wheatly, J. Staab

CFMAS members On-line

Guests

Sid Pollock (VEM), Chris Matheson (MSA Safety), Ian Kilburn (Vtrans), Sam Dillner (VEM), S. Bagg, and Carrie McCool (Capital Dispatch)

District 1 Berlin, Middlesex, Montpelier, Northfield, Roxbury

District 2 Bolton, Moretown, Stowe, Waitsfield, Warren, Waterbury

District 3 Cabot, East Montpelier, Marshfield, Plainfield, Walden, Woodbury, Worcester

District 5 Groton, Peacham, Ryegate, Topsham

District 6 Barre City, Barre Town, Chelsea

I. Meeting to order – 19:03

II. Roll Call by Town (**P**=Present, **Blank**=Not Present,)

Barre City	P	Groton	P	Plainfield	P	Washington	
Barre Town	P	Marshfield		Roxbury		Walden	
Berlin	P	Middlesex	P	Ryegate		Waterbury	P
Bolton		Montpelier	P	Stowe		Williamstown	
Cabot	P	Moretown	P	Topsham		Woodbury	P
Chelsea		Northfield	P	Waitsfield		Worcester	
E. Montpelier	P	Peacham		Warren	P		

III. Addition or deletions to the agenda - J Aldsworth would like to move section XI. Training - Flow Testing & Fit Testing to VI, c.

IV. Public comments – No one from the public to make comments

V. Vermont Emergency Management (VEM) (https://vem.vermont.gov/) update – Sid Pollock (not present)

a. J. Aldsworth forwarded Sid's update (see attachment)

i. River Ice Spotter training - https://youtu.be/ylylz_tXzTw

b. For information on upcoming trainings and seminars see the VEM Newsletter (https://vem.vermont.gov/contact-us/newsletter). VEM maintains several email lists, and if you are

not on their email list you can sign up by visiting their email-list page (https://vem.vermont.gov/email-lists)

VI. Introduction of Guest speaker –

a. Sam Dillner, (VEM) VT-Alert Administrator, (Dan.Dillner@vermont.gov) Presented on VT-Alert. *(pdf and PowerPoint presentation attached)*

b. Ian Kilburn, (Vtrans) TMC Supervisor, (ian.kilburn@vermont.gov) Presented on VTrans Transportation Management Center (TMC), what it is , how it works and what they can do for first responders. *(pdf and PowerPoint presentation attached)*

c. Training - Flow Testing & Fit Testing

i. Brad Morse (bmorse@reynoldsandson.com) (Reynolds & Sons),

ii. Chris Matheson (chris.matheson@msasafety.com) (MSA rep)

Brad's focus was on the annual flow testing of SCBAs and fit testing of your responders. Chris's focus was on the NEW NFPA standards for turnout gear and SCBA *(pdf attached)*

VII. Approval of Meeting Mintes for 11/20/2024 **- Motion was made to approve the November 20, 2024, minutes** by G. Dillon and seconded by J. Campbell. There was no discussion, the **motion passed**.

VIII. Approval of Treasurer report – S. Bagg reported out on the financials and spoke on the CD that would be maturing. J. Aldworth requested a motion to move money from the saving to the CDs when the CD matures. G. Dillon made the **motion to move money from the saving to the CDs when the CD matures**, seconded by J. Campbell. With no further discussion, the **motion passed**. P. Cerutti made a **motion to accept the Treasurers report as presented**, seconded by J. Quinn. With no further discussion, the **motion passed**. S. Bagg also apologized for issues with the post office which affected mailings / invoicing.

IX. Old Business

a. Communications – opportunity for State fund and will be meeting with the Governor.

b. Fireground Accountability Working Group Update (Chief Libby, Pratt, Cushman, Campbell and Shwartz) Chief Cushman gave a presentation on accountability. No policy or SOG was able to be found, so the group drafted a policy for CFMA (attached). The draft will be sent out to CFMA for review and comments as well as websites for purchasing accountability tags. Accountability tags, accountability board and a tactical board (attached) were out for display.

X. New Business

a. Request to meet with the Randolph Fire Departments to discuss them joining the CFMAS. They do have a tower that would work with our current system. J. Aldsworth asked for a **motion to move forward with extending welcome those folks**. The **motion was made** by W. Knox and seconded by J. Campbell. Discussion on the three departments, will there be three departments or will they be counted as one? **An amendment was made to the motion, allowing the three departments to be counted as a singular dues option**. With no further discussion, the **motion passed**.

XI. Training – Was moved to (VI, c.)

XII. Reports

a. Committee reports – no reports

XIII. Good of the Order –

a. P. Cerutti – spoke on Rookie coarse.
b. S. Pratt – asked if there was any interest in a Wildland fire training module? S. Pratt would submit the request. W. Knott announced that the Twin State fire school would be holding a Wildland Fire class. Discussion moved to, would the Fire Academy accept the class as a certification? This will be discussed further with the Fire Academy.
c. J. Aldworth asked if anyone would like to host an Incident Safety Officer course. J. Staab had submitted the request to the Fire Academy to host and will not happen until after October of 2025.
d. J Aldworth announced
    i. that the NOA for a flooding update is coming in March.
    ii. Tri-Village will be attending the meetings starting after April.
    iii. Trying to reach out to Ryegate and Peacham.
e. J. Staab spoke on the new attendance sheet - Your contact information is listed; you just need to check the box. The old sign-in sheet is for guests/visitors or fire department members not listed. NO NEED TO SIGN IN ON BOTH.
f. J. Staab announced that Sally Dillon was awarded Officer of the Year at the Waterbury Annual Dinner.
g. J. Aldworth announced W. Knott's retirement as Groton Chief. Retired Chief Knott received a congratulatory applause for his years of service from the CFMA body.
h. H. Knott announced that the Twin State fire school will be held on May 3rd & 4th. The registration deadline is April 15. https://www.twinstatefire.org/twin-state-regional-fire-school-about

XIV. Executive session – *Not Needed*

XV. Adjournment – **Motion to adjourn was made** by J. Cambell and seconded by S. Pratt. With no further discussion, the **motion passed**. Meeting adjourned at 20:47

Here are my updates from VEM for the good of the order.

Spring Flood Seminar Q&A Session

Municipal officials and emergency responders will have a chance to ask questions about the spring flood outlook and emergency resources available from the state on Thursday, February 13th from 12-1 pm.

Registration is required and is available by following this link.

https://events.gcc.teams.microsoft.com/event/bc13bc45-1fdf-4a0d-ad1c-904ba6f7af62@20b4933b-baad-433c-9c02-70edcc7559c6

The Q&A will follow the release of a series of VEM's annual Spring Flood Seminars. The videos will be available on January 24th on the Vermont Emergency Management website and YouTube page.

These videos will provide information that assists local officials in preparing for, responding to, and recovering from seasonal flooding. Videos will include presentations from:

- National Weather Service
- Agency of Transportation District Maintenance and Fleet Division
- Agency of Natural Resources/Department of Environmental Conservation Rivers Program
- Division of Fire Safety – including Urban Search & Rescue and State HAZMAT Team
- Vermont National Guard/Vermont Military Department
- Regional Planning Commissions
- Vermont Emergency Management (Preparedness, Response, Recovery & Mitigation)

The live virtual Question and Answer session VEM will allow those who have follow-up questions regarding information on the videos. The National Weather Service will also provide a 30-minute update on the spring flood outlook and take questions on that forecast.

New Regional Coordinators

VEM recently hired three additional regional coordinators, bringing the total up to six. This means that Sid's territory has now shrunk from 5 counties (Washington, Lamoille, Essex, Orleans and Caledonia) to just two, Washington and Lamoille. As part of this transition,

the RPCs will no longer be assisting with LEMPS nor will they be reviewing them. All LEMPs should be submitted directly to the Regional Coordinator. Anyone who would like assistance with their LEMP is encouraged to email or call Sid to set up a meeting. As an additional reminder the LEMP format has changed, and the regional coordinators are hoping to sit down with each town/city to review their LEMP in person or virtually prior to submission.

Family Reunification Training

This half-Day seminar describes the types of events that might require a formal reunification of students with parents and guardians. It introduces the concepts and functionality of the Standard Reunification Method, the key principles and roles involved in the process, and the role that Incident Command plays in reunification. Participants gain a detailed overview and can apply the concepts to their own campus, analyze the physical and personnel resources available, and begin to design and develop an effective reunification plan for their own school or organization.

This may be a good course for fire chiefs as the reunification efforts following a school emergency or any major emergency are also overlooked in the planning phase.

This will be hosted at the VA Medical Center in White River Junction on January 31st from 1000-1400.

If you would like to register, please email Sunni Eriksen sunni.eriksen@vermont.gov

ICS 300 – Intermediate ICS for Expanding Incidents

This will be hosted at Bennington Rescue Squad March 7-9th 0800-1630

Registration is through the LMS, anyone who does not have an LMS account and would like one should reach out to Sid.

Signup for our email lists!

Also please plug signing up for VEMs email lists, of particular use for fire chiefs would be our newsletter, training, and funding lists.

https://vem.vermont.gov/email-lists

As always if anyone has any questions or concerns, please don't hesitate to reach out to me.

That's all!

VEM Watch Officer: 800-347-0488

User Contact Access: http://vtalert.gov (Register / Log in)

Administrator/Help Email
DPS.VTAlert@vermont.gov

VT-ALERT
www.VTALERT.gov

Vermont Emergency Management

everbridge

Presented by Sam Dillner

Program Overview

- Launched in 2013 VT-Alert is the state's public safety notification program
- It is used for messages about:
  - Disasters
  - Missing people
  - Storms
  - Road issues
- The system allows subscribers to sign up and choose which alerts they receive, how they receive them, and for which specific geographic areas.
- Subscribers can receive alerts via text, email, mobile or landline phones.
- Vt-Alert uses the Software company Everbridge to provide this service. Use of this software is paid for by the State of Vermont and provided **free of cost to all municipalities**.

Delivery Methods & Publishing Options

Everbridge can make 300,000 simultaneous phone calls

- Everbridge App
- E-mail
- SMS Text
- Mobile/ Landline Phone
- TWITTER FACEBOOK
- IPAWS WEA
- IPAWS EAS

Messages for people who have signed up for VT-Alert.

Messages for the public, signed up or not!

Life Safety

By default, VT-Alert escalates through various means until contact acknowledges notification.

Alert Examples:

VT-511 Traffic Alert: Windham County

Please click here to confirm receipt

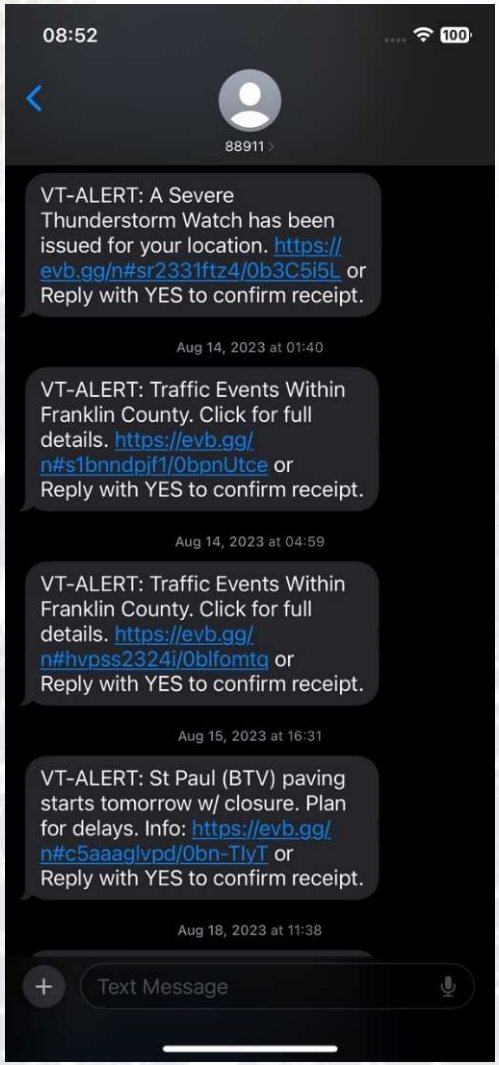
VT-511 Traffic Alert - Windham County

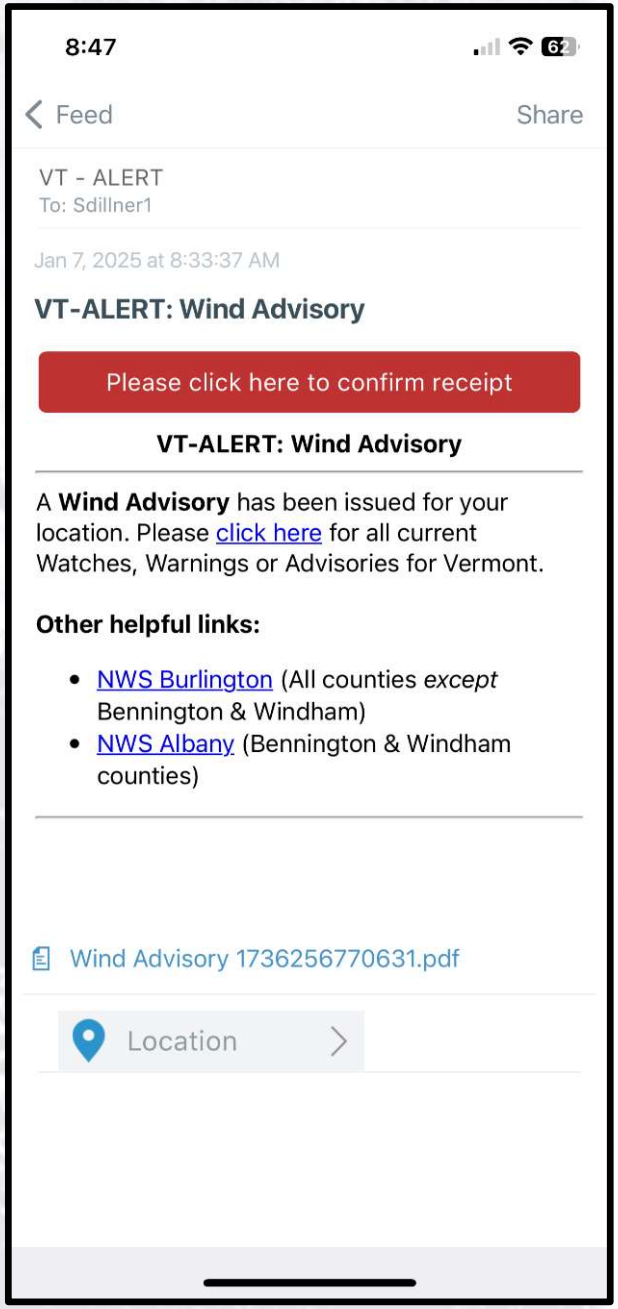
Traffic Description: Incident - New
TRAFFIC ALERT: A rolling roadblock will be employed between 10:00 a.m. and 2:00 p.m. on I-91 southbound Westminster between exits 6 & 5. Motorists should expect minor delays.

Traffic Alert Start Time: Nov 10 2023, 10:00 AM

Anticipated End Time: Nov 10 2023, 2:00 PM

Note: Anticipated End Time will not always be known.
Click here for all State of Vermont road closures





How to sign up

Receive emergency, weather, traffic, and other alerts from state and local responders.

Two easy steps!

1 Scan QR code or go to VTALERT.GOV

Scan here!

2 Create an account to receive alerts by app, phone, text, email, or TTY/TDD devices.

Alert examples:

- *Evacuation information*
- *Chemical spills*
- *Shelter-in-place orders*
- *Severe weather*
- *Boil water advisories*
- *Roadway interruptions*

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What do you need to do to be able to send alerts?

- Requirements
  - Municipality must complete VT-Alert adoption form and assign a primary admin.
  - Appointment as a VT-Alert Manager
  - Be a representative for your agency

Contact Information

DPS.VTAlert@Vermont.gov

Sam Dillner, VT Alert Administrator

Samuel.dillner@vermont.gov

VEM Watch Officer

800-347-0488

VERMONT
AGENCY OF TRANSPORTATION

Transportation Management Center (TMC)

Around the clock contact for the Agency of Transportation

Who we are:

We are your primary resource for all things mobility related on AOT's roadway network.

What we do:

- Managing our state's traveler information website newengland511.org
- Providing real-time road closure information to VT-Alert
- Issuing traffic advisories to Vermont's media outlets
- Facilitating updates to navigation apps like Google Maps and Waze
- Posting relevant information about road closures and traffic congestion information to VTrans' social media platforms

We request to hear from you:

- Any unplanned incident on the Interstate requiring closure of one or more lanes
- Road closures **and** re-openings of any state highway, whether town or state-maintained, due to events such as crashes, fallen trees, downed wires, flooding, etc.
- Any abnormal congestion, crash, event, or delay expected to last longer than 15-minutes
- Any asset damage, such as washouts, guardrails, road signs, traffic signals, pavement, or bridges
- Hazmat incidents, regardless of type or volume
- When in doubt, please reach out!

Contact us!

AOT.TMC@vermont.gov | 802.828.2648 or 802.828.5663

We look forward to working with our Public Safety partners to ensure safe travel at safe speeds

TMC Supervisor | Ian.Kilburn@vermont.gov | 802.760.0901 cell

What you **NEED TO KNOW NOW** about the **NFPA 1970** consolidations

How changes in the new NFPA standards for turnout gear and SCBA will affect the fire service

WRITTEN BY
Jeff Stull (International Personnel Protection, Inc.) and
Matt Cox (Battalion Chief, Fairfax County Fire and Rescue Department)
June 2024

This white paper provides an overview of the upcoming changes that will affect the NFPA 1971 and NFPA 1981/1982 standards that address requirements for both structural firefighting protective clothing (including garments, helmets, gloves, footwear and hoods) and self-contained breathing apparatus (SCBA) that will be part of the updated editions for these standards when released. Based on this white paper, you will be able to:

- Understand how the new consolidated standard NFPA 1970 will replace NFPA 1971 and NFPA 1981/1982 for the structural firefighting personal protective equipment (PPE) requirements.
- Get a sense of when the new standard will be promulgated, the likely introduction of new products certified to this standard, and general impact on your purchasing decision for updated PPE.
- Identify key changes in requirements for structural firefighting PPE that can potentially affect design, performance, and documentation.

The new consolidated structural firefighting PPE standard

The new NFPA 1970. A new standard is being created that consolidates four individual standards (see figure below):

- NFPA 1971 (2018) – *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*
- NFPA 1975 (2019) – *Standard on Emergency Services Work Apparel*
- NFPA 1981 (2019) – *Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services*
- NFPA 1982 (2018) – *Standard on Personal Alert Safety Systems (PASS)*

The new standard will have the title, *Standard on Protective Ensembles for Structural and Proximity Firefighting, Work Apparel and Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services, and Personal Alert Safety Systems (PASS).*

NOTE – This white paper focuses on NFPA 1971 and NFPA 1981 portions of NFPA 1970.

Figure 1 Consolidation of four PPE Standards into New NFPA 1970

This new standard is the result of a process by the National Fire Protection Association to reduce the over 130 original fire service standards into a smaller, more manageable number of standards that are easier to maintain into the future of its standards development process. Additional reasons provided for the consolidation include:

- Allowing for related products and topics to benefit from "synergism" in terminology, general requirements and criteria.
- Ensuring that related products remain aligned and benefit from concurrent advancements.
- Permitting future harmonization of requirements for consistency of protection including the advancement of overall systems approaches.

NFPA 1970 organization. The new standard is structured to help preserve the existing identity for being able to still reference the older standards numbers (e.g., NFPA 1971):

- In the first consolidation, overall introduction is a "roadmap" to the standard that is provided in the first chapter.
- Common chapters are provided for referenced documents, terminology, and general certification requirements (Chapters 2 through 4).
- The principle requirements in successive chapters group the original content of the existing standards collectively addressing scope/certification requirements, labeling and information requirements, design requirements, performance requirements and test methods.
  - Chapters 5 to 9 apply to NFPA 1971
  - Chapters 10 to 14 apply to NFPA 1975
  - Chapters 15 to 19 apply to NFPA 1981
  - Chapters 20 to 24 apply to NFPA 1982
- Several non-mandatory annexes are provided for clarifying information and other specific purposes. Notably, Annex G provides a number of supplemental test methods primarily aimed at conducting full ensemble testing to evaluate different relevant, but not required, performance properties.

KEY FACT

Because the main requirements for each existing standard have been kept together along with specified product labeling, it will still be possible to refer to the older referenced standards number as part of product specifications and other industry documentation.

NFPA 1970 implementation schedule and impact. *It is currently unclear when the new standard will issue:*

- The earliest the new standard can be adopted is *August 2024*.
- This acceptance date could become later because a number of special appeals have been made where individuals have challenged different parts of the proposed new standard.
- Two specific requests have asked to have the standard be delayed by having the standard sent back to the respective committees working on the different parts, which could push out the promulgation much more than a year depending on the stage selected to repeat development work.
- No certainty for when the standard will be introduced will be available until June to August 2024.

Consequences of the new NFPA 1970

When the new NFPA 1970 does come out, there are several consequences:

- No new products can be certified to the older editions of the standards that are part of the consolidated standard. New products will have to be certified to the new NFPA 1970.
- Manufacturers will be permitted to maintain the certifications of existing products to the older standards for a period of up to 18 months following the effective date of the standard. This grace period effectively permits manufacturers to get products ready for the new standard by going through their certification laboratory for demonstrating that they can meet the new criteria. This applies to all products, even if the product has not changed to meet the new standard.
- Typically, manufacturers take some time to have their products certified to a new edition of a standard because of a backlog of testing that rapidly develops once the new standard issues. While manufacturers can try to undertake some preliminary testing ahead of the issue date, certification to a new edition cannot occur until the new edition becomes effective.

KEY RECOMMENDATION

Given the uncertainly in the issue date for NFPA 1970, many fire departments may have their PPE purchasing decisions affected for existing or new orders. It is suggested that you speak directly with your manufacturer representative to find out what you can expect in terms of product availability.

Current label on certified garment that is likely to change based on NFPA 1970 consolidation, but will still reference NFPA 1971.

Proposed Revisions to NFPA 1971

Overview and key changes.
Multiple areas of the standard were changed through public inputs and comments coupled with work by a balanced technical committee in affecting the NFPA 1971 requirements for structural and proximity firefighting protective clothing. The main objectives of these changes were to:

- Address emerging protection needs or fire service concerns.
- Account for new technology in products and testing.
- Update criteria and methods.
- Fix errors or clarify existing requirements.
- Address consolidation.

Since there are a multitude of changes, this white paper focuses on what the authors believe to be the most important.

Key Changes

#1	Mandate particulate blocking capabilities for structural hoods.
#2	Provide basis for manufacturer to make PFAS-free claims and address restricted substances in clothing.
#3	Establish new criteria to ensure that turnout gear maintains performance properties over expected service life.
#4	Examine ability to effectively clean clothing materials to remove fireground contaminants.
#5	Add new test method and requirement for clothing breathability.
#6	Create new set of optional criteria to address "systems" performance of complete firefighter protective ensembles.

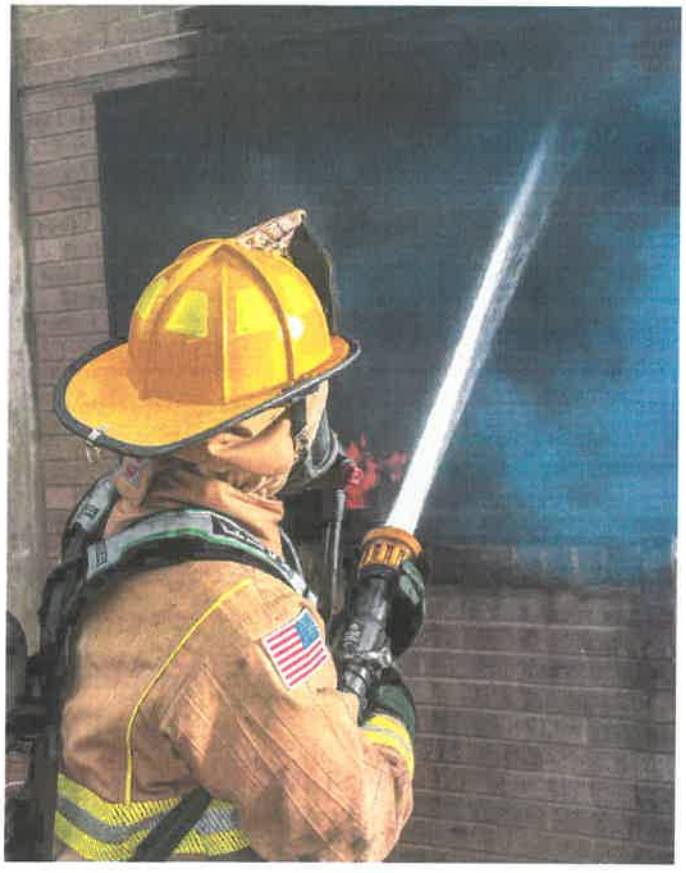
A description of these changes and their potential impact are provided in the sections below.

Key gear change #1

Mandate particulate-blocking capabilities for structural hoods.

In the new NFPA 1970, new structural firefighting hoods can only be certified if they meet particulate-blocking capabilities. Proximity firefighting hoods will be exempted but can become particulate blocking if optional requirements are applied. In addition to becoming mandatory for structural firefighting, the criteria for particulate-blocking hoods were modified to include:

- Full coverage of the particulate-blocking layer inside the hood, with the exception of the hood opening and hems.
- The application of particulate-blocking test requirement to hood seams.
- More rigorous preconditioning of materials and seams prior to particle testing.
- The introduction of sizing requirements related to fit (applies to both structural and proximity hoods).



The implications of these proposed changes include:

- Particulate-blocking hoods require barrier layer that imparts different characteristics, potentially affecting both insulation and comfort.
- Hoods may need to be offered in different sizes.
- Current breathability requirements will not permit certain multi-layered hoods often used by instructors (see below).
- New particulate-blocking capabilities might be harder to meet (some existing products will need to be updated).
- Hoods will no longer be considered a commodity.

Impact of layers on key hood performance attributes

North Carolina State University (NCSU) investigated the impact of multiple layers on hood protective performance. For this testing, NCSU selected both certified and non-certified hood material composites for testing, changing the number of layers in different products.

Based on data from the research:

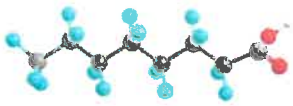
- Many 2-layer hoods will not meet NFPA insulation requirements
- All 3-layers hoods will not meet NFPA breathability requirements

Key gear change #2

Provide basis for manufacturers to make PFAS-free claims and address restricted substances in clothing.

In the proposed new edition, attempts are being made to address the use of per- and poly-fluorinated alkyl substances (PFAS) in turnout gear by providing optional labeling requirements and a means of verification. Broader criteria related to testing other restricted substances in these products have also been proposed in reaction to concerns raised by several regulatory authorities and organizations within the fire service. The new requirements recognize the following:

- Many states now require that manufacturers disclose whether firefighter clothing contains PFAS.
- A key challenge is how the absence of PFAS can be verified where claims of PFAS-free can be made subject to certain caveats.
- Analytical techniques for measuring specific PFAS compounds exist but are limited in the number that can be quantified (two of these compounds include "PFOA" and "PFOS," which were the initial focus of research on PFAS, although that focus has significantly expanded). This change could affect how manufacturers comply with future restricted substance reporting requirements.
- "Total PFAS" has to be measured indirectly, generally as "total fluorine" where methods exist but have not been standardized for textiles.
- Other restricted substances warrant consideration to limit clothing as a source of human exposure or contamination of the environment.



PFOA

PFOS

The proposed method of implementation for "PFAS-free" and restricted substance requirements in NFPA 1971 includes:

- Identifying acceptable test methods for measuring total fluorine (for the purpose of defining how to determine if PFAS are present for making a "PFAS-free" claim).
- Determining which materials must be tested for determining levels of specific restricted substances (which include different kinds of PFAS) along with the methods to be used for quantifying these substances.
- Requiring that manufacturers can only use materials that are tested and meet restricted substance limits.
- Mandating that this testing be performed independently and as part of certification.

Key gear change #3

Establish new criteria to ensure that turnout gear maintains performance properties over expected service life.

Addition of preconditioning criteria have been proposed that entail repeated washing, heat exposures, UV light exposure and flexing/abrasion for key performance tests. Some existing testing for garment moisture barriers has been modified to allow for alternative technologies. Based on these changes, it is expected that:

- Some materials may not provide the same levels of durability and will be affected by new requirements (this is a way of ensuring that tradeoffs are properly addressed).
- Information will become available as to how some textile fabric properties are now being affected by the increase of applied cleaning and expected use conditions.
- Adjustments in some test methods might encourage alternative moisture barrier technologies and specifically allow new materials that do not require PFAS.

Many of these changes have been incorporated as mandatory revisions while others are provided in a "report only" format to inform the fire service.

Basis of restricted substance limits

The committee responsible for NFPA 1971 has proposed that the requirements be modeled after the international OEKO-TEX 100 standard along with the criteria from PPE Supplement. This organization generally chooses the most rigorous requirements for hazardous substances in products that are found in global regulations and other prohibitions.

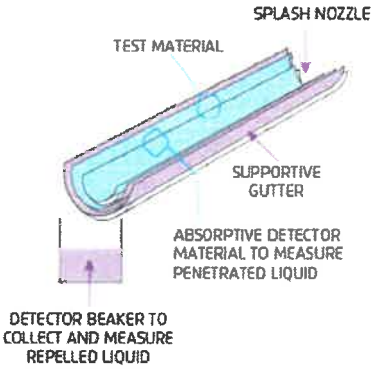
Key gear change #4

Examine ability to effectively clean clothing materials to remove fireground contaminants.

Measurement of a "cleaning index" on specific protective clothing material for reporting purposes using procedures similar to NFPA 1851 has been proposed for verifying ability to remove

Proposed chemical runoff test for garment outer shells

One test historically used in Europe for turnout gear has been proposed for use with diesel fuel to show how easily material can repel, absorb, or allow the penetration for a small volume of the liquid. The data below, provided by the Fire Protection Research Foundation, illustrate the differences between two materials with and without PFAS-based finishes both in a new condition and after the materials have been washed and dried 25 times. In the new standard, this data will be reported after multiple wash cycles with the contaminated shell being subjected to an advanced cleaning per NFPA 1851 before being tested for flame resistance.



ISO 6530-based Runoff Test

Material	Finish	Condition	Penetration	Repellency	Absorption
80/20 Nomex/Kevlar	No PFAS	New, unwashed	14.9	42.1	43.1
		25 washes	8.8	30.1	61.1
	C6 PFAS	New, unwashed	0.9	91.1	8.0
		25 washes	2.8	55.4	41.8
70/30 PBI/Kevlar	No PFAS	New, unwashed	16.5	39.7	43.8
		25 washes	14.2	27.4	58.5
	C6 PFAS	New, unwashed	1.7	86.8	11.5
		25 washes	15.5	31.7	52.8

semi-volatile organic chemicals and heavy metals from garment and hood materials. These new requirements are intended to:

- Provide information on decontamination efficiency from advanced cleaning procedures that may induce material suppliers to improve fabrics for contamination resistance or provide improved cleaning protocols.
- All fire departments to consider cleanability as factor in selecting clothing materials.

Key gear change #5

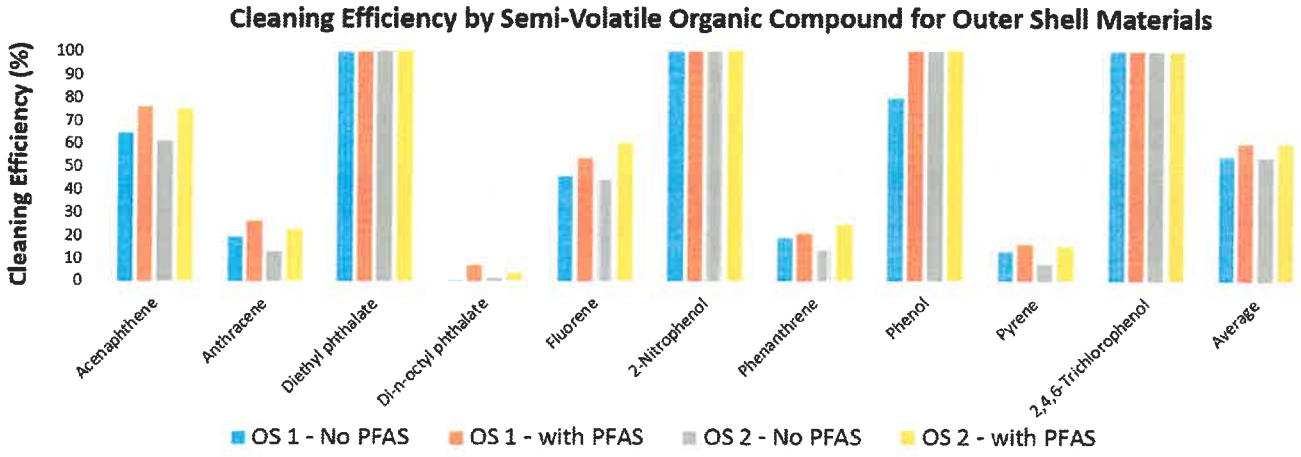
Add new test method and requirement for clothing breathability.

An evaporative resistance test (referred to as "Ret) is being added for characterizing garment composites. Like total heat loss (THL), this new property characterizes the breathability of the composite, which has been related to reducing the likelihood of heat stress impact

Example of outer shell cleaning efficiencies

The chart below shows differences in the removal rates as applied to specific semi-volatile organic chemicals (that include common fireground contaminants) based on standard advanced cleaning procedures in NFPA 1851. These data show differences for outer shell (OS) fabrics with and without PFAS after 30 launderings (chosen to represent 6 gear cleanings over 5 years). Most differences were small. It is expected that the differences would be greater for new fabrics.

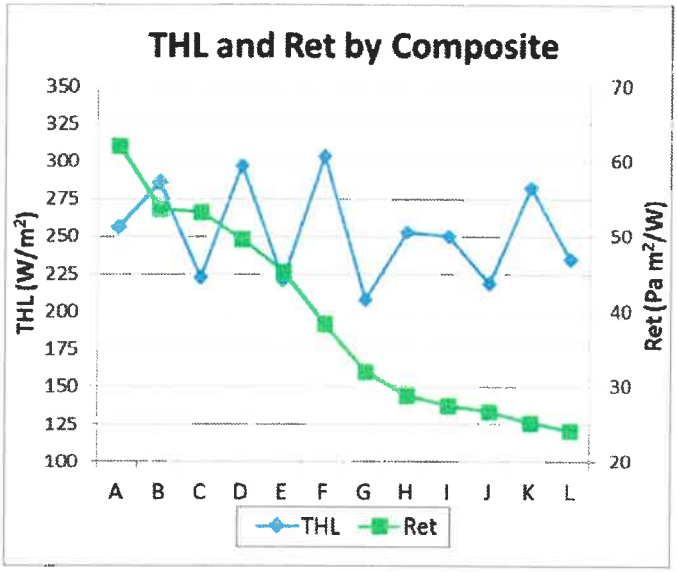
Additional proposed test for NFPA 1971 – proposed for report only



Testing performed according to NFPA 1851 procedures on outer shells laundered 30 times

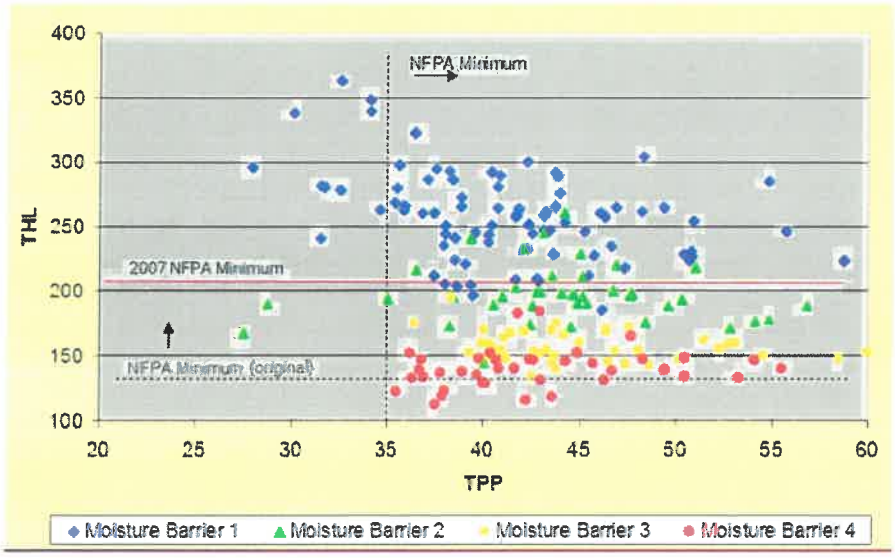
from firefighter clothing. However, Ret measures garment material breathability under entirely different conditions and thus provides new information in predicting the physiological impact of clothing on firefighters. While there could be a burden for adding a new test to address the hundreds of composites available for protective garments, the Ret procedures were established in a way where testing results could be obtained efficiently by using a combined testing and modeling approach.

Also, in contrast to THL where higher numbers indicate more comfortable, less stressful clothing, lower numbers for Ret mean the material system provides better breathability. The chart above reinforces that there is no direct relationship between the two different breathability measurements. Nevertheless, as the result of adding this new test, the new metrics may add complexity for deciding balance between garment composite insulation and breathability.



THL and Ret rank garment

RELATIONSHIP BETWEEN INSULATION AND BREATHABILITY



Performance Tradeoffs

- Chart shows insulation (TPP) and breathability (THL) for over 100 material composites
- Presented data show materials available in 2001
- Moisture barriers in yellow (square) and red (circle) no longer available

FIRE RESCUE

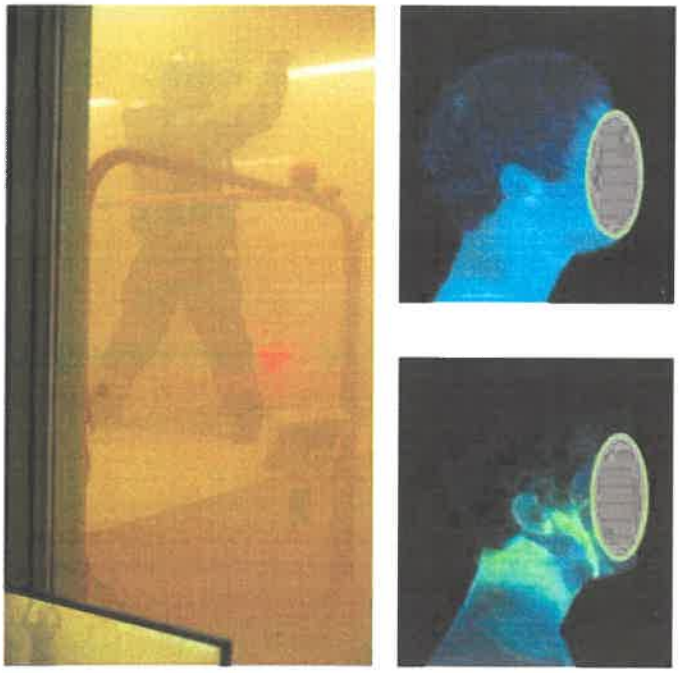
Early assessment of performance tradeoffs

The chart above shows insulation (TPP) and breathability (THL) for over 100 material composites (combination of outer shell, moisture barrier, and thermal barrier) for four different moisture barriers that existed in 2001 right after the addition of the THL criterion of 130 W/m2 in the 2000 edition of NFPA 1971. When the THL requirement was later raised to the IAFF recommended minimum of 205 W/m2 in 2007, composites for two of the moisture barriers – represented in yellow (square) and red (circle) could no longer comply.

Key gear change #6

Create new set of optional criteria to address "systems" performance of complete firefighter protective ensembles.

A new annex will include different test methods for measuring overall ensemble performance for thermal protection, heat stress impact, protection from smoke particulates and fire gases, and functionality. The optional test methods are set up for use by PPE manufacturers and test laboratories as well as by fire departments. No specific criteria are set for these tests, but instructional information is provided for how to interpret and apply results.



Fluorescent particulate chamber exposure test to address smoke penetration of ensembles; separate images show side of test subject face and neck before and after exposure with yellow tinted areas indicating particles depositing on wearer's skin.

The newly proposed full ensemble and other specialized tests are intended to provide the following benefits:

- New test methods will place more emphasis on interfaces and gear interoperability.
- Procedures will standardize claims for areas of performance not addressed in current requirements that can be applied to full products, which include ensembles of turnout clothing with and without SCBA or complete elements (e.g., gloves, boots, etc.).
- Fire service will be able to assess how different PPE works together and affects firefighters.

Other changes. A number of other changes were made in the standard that were not described above. For example, new criteria and test methods were added to address the safety and continued performance of electronic components, such as radio frequency identification (RFID) chips integrated into clothing. The test to assess the deployment of and access to Drag Rescue Devices ("DRDs") in protective coats was made more difficult to better simulate field use.

Proposed Revisions to NFPA 1981 for SCBA

Overview and key changes.
A number of changes have also been proposed for improving SCBA. As with gear, some changes are primarily to clarify existing requirements, but several are expected to be consequential; these changes include:

#1	Update intrinsic safety criteria.
#2	Better integrate other electronic devices.
#3	Modify End-of-Service-Time Indicator (EOSTI) and Heads-Up Display (HUD) remaining volume indications based on cylinder pressure.
#4	Mandate ease of removal of SCBA soft goods for more effective cleaning.

Key SCBA change #1

Update intrinsic safety criteria.

Intrinsic Safety is an approach to the design of equipment going into hazardous areas. The idea is to reduce the available energy to a level where it is too low to cause ignition. That means preventing sparks and keeping temperatures low. For the upcoming NFPA 1970 requirements, this change is important given that more functions for SCBA have become electronic in nature.

Specific changes include:

- Careful scrutiny of criteria to ensure that the electronics and related connections of electronic or electrical SCBA components can be rated for explosion environments in at least one of five defined explosion protection categories.
- Criteria address both non-incendive (electrical/electronic circuitry that is incapable, under normal operating conditions, of causing ignition of a specified flammable gas-air, vapor-air, or dust-air mixture due to arcing or thermal means) and system intrinsic electrical safety as defined by Underwriters' Laboratory standards.

Key SCBA change #2

Better integrate other electronic devices.

Portable radios may be tied into SCBA and facepieces via a wireless connection. Working with the new technology to develop muscle memory is paramount, but understanding when a connection is lost, or the system isn't working should be readily apparent to the firefighter. Communication failures are often listed by NIOSH investigators as a key contributing factor in line-of-duty firefighter deaths. While contributing factors can also include a lack of training or infective procedures, addressing equipment failures was the objective of this change particularly in making wireless technology to connect with new SCBA and allow firefighters to communicate more

efficiently and effectively. Changes to address this need include:

- SCBA that include a wired connection to portable radio components complying with NFPA 1802 will be required to include appropriate radio frequency device connectors that are specified in NFPA 1802 design criteria.
- SCBA that include a wireless connection to portable radio components complying with NFPA 1802 will be required to include wireless status indication in the Heads-Up-Display (HUD).
- Additional criteria are established for wireless interfaces in SCBA to other devices, where used. SCBA will require wireless status indication in the Heads-Up Display (HUD) or other location on the SCBA discernible by the end user when the facepiece is worn.
- The indicator has to show both when the device is paired with the SCBA and when the connection is lost.

Key SCBA change #3

Modify End-of-Service-Time Indicator (EOSTI) and Heads-Up-Display (HUD) remaining volume indications based on cylinder pressure.

Historically, EOSTI requirements have been set by the National Institute for Occupational Safety and Health (NIOSH) where NFPA 1981 has specified that two different forms of alarm should be used to notify the firefighter that 35% of the air pressure remains. Remaining air is also displayed in the HUD. New criteria have been established to define EOSTI and HUD indication pressures that are proportional to the rated cylinder volume as shown in the following table. The new criteria accounts for the compressibility of air and recognition that the relationship between remaining cylinder pressure and remaining cylinder volume is not linear.

As a consequence of these changes:

- The EOSTI and HUD indicated air levels are consistently related to the cylinder volume.
- The alarm activation is unique to each pressure where different rated pressure

Indication		EOSTI / HUD Activation Pressure			
		2216 psig SCBA	3000 psig SCBA	4500 psig SCBA	5500 psig SCBA
EOSTI	35% remaining volume	34% service pressure	33% service pressure	31% service pressure	29% service pressure
HUD	100% remaining volume	100% service pressure	100% service pressure	100% service pressure	100% service pressure
	75% remaining volume	74% service pressure	73% service pressure	70% service pressure	67% service pressure
	50% remaining volume	49% service pressure	48% service pressure	45% service pressure	42% service pressure
	35% remaining volume	34% service pressure	33% service pressure	31% service pressure	29% service pressure

cylinders will activate at their own unique pressures.

- This may change the amount of time available for a firefighter in an IDLH environment.
- The rate of air consumption is still dependent on the fire conditions, the physical condition of the firefighter, and the physical activity on the fireground.
- Fire departments will need to train their firefighters for understanding and applying the new EOSTI and HUD air level indications.

IMPORTANT INFORMATION

Understanding how far and how long you and your crew may operate in a structure will allow a proper risk assessment by unit officers and command. Crew integrity and unity during a firefight is paramount and must only be superseded by life safety.

Key SCBA change #4

Mandate ease of removal of SCBA soft goods for more effective cleaning.

As with apparel, the new NFPA 1981 requirements will place requirements on manufacturers to make it easier for end users for removing harness straps, padding, and other soft goods in the design of their SCBA so that these items can be separately cleaned, if deemed necessary as the result of fireground exposures. This change will further enable easier future replacement.

The implications for this change include:

- The removable soft goods components of the new standard is a step towards cancer prevention and assistance with gross decontamination and clean cab technology.
- Soft goods may be removed, decontaminated or washed and replaced on the SCBA.
- Departments may consider purchasing additional sets of soft goods. Once gross decontamination is completed on the fireground and the frame portion of the SCBA is dry, a fresh set of soft goods may be placed back on the pack. The pack may then be placed back on the apparatus (whether it's in a cab or compartment) knowing it's ready for the next incident.

Additional changes.

Some testing technology in the NFPA 1981 standard has been updated to more modern techniques. For example, the specifications for the breathing machine that uniquely evaluates how the SCBA maintains positive pressure inside the facepiece was updated. In addition, more robust instructions for cleaning and disinfection of SCBA will now have to be provided by manufacturers. Finally, the requirement for indicating a low battery has been changed from 2 hours to 1 hour.

Final Takeaways

This white paper has attempted to address the new NFPA 1970 standard and how it will affect future fire service PPE.

- NFPA standards that impact available PPE for firefighters during structural firefighting are subject to periodic change. The new edition of NFPA 1971 standard for turnout gear and NFPA 1981 for SCBA are going through a transformative change while also being consolidated into one standard.
- The new versions for both NFPA 1971 and NFPA 1981 will include significant changes that will affect product offerings on new purchases. Understanding those changes will help departments determine replacement or new gear/ equipment priorities.

- While the new standard is slated for an August 2024 release date, there is uncertainty as to if it may be delayed as some of the more controversial changes are debated. There is a possibility that the standard could be sent back to the committee resulting in a relatively long delay in becoming approved.
- The acceptance of the new standard does not affect current already-certified gear. When the new standard is promulgated, manufacturers will have 18 months to get existing new gear certified to the new requirements. Any new product will have to be certified to the requirements in the new NFPA standard.
- Despite the consolidation of multiple standards into a new NFPA 1970 standard, the individual products will retain their "identity" to the historical NFPA 1971 and NFPA 1981 designations.

It is important that fire departments look at the NFPA 1970 standard once it is issued to become familiar with the new requirements. This is especially true since additional changes could still be made leading up to its promulgation.

Costs for 15 Firefighters:

PAT's:

1. **Aluminum Tags**
    - Cost per person: $15
    - Total cost: $15 × 30 = **$ 450**

Add-On Items:

1. **Tactical Board**: $79.00
2. **Accountability Board**: $108.00

Grand Total (with Add-Ons):

$450 (Tag Total) + $79 (Tactical Board) + $108 (Accountability Board) = $637.00

Optional Item's:

1. **Picture Aluminum Tags**
    - Cost per person: $19
    - Total cost: $19 × 15 = **$285**

Examples for tags:

IDLP001 - Laminated Plastic Accountability Tag
SKU IDLP001
$11.00

IDAL500 - Printed Aluminum Tag
Trigger Snap Included.
SKU IDAL500
$15.00

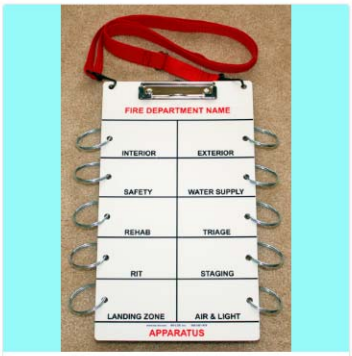
IDAL001 - Anodized Aluminum ID Tag
SKU IDAL001
$13.00

IDAL002 - Two Sided Anodized Aluminum ID Tag
SKU IDAL002
$15.00

IDAL200 - Picture Aluminum Accountability Tag
SKU IDAL200
$19.00

Source: www.My-lor.com

Examples of Accountability Boards:



IC610 - Ten Segment Aluminum Command Board
SKU IC610
$108.00

IC606 - Six Segment Aluminum Command Board
SKU IC606
$90.00

IC200 - Customized Aluminum Command Board - 12" x 16"
SKU IC200
$180.00

Source: www.My-Ior.com

Examples of Tactical Boards:

Command Board

$79.00

1 ADD TO CART

Take control and maintain strong organization on incidents with this simple, powerful tool. High-quality, rigid, light weight dry-erase board made of durable pvc material, measuring 11" x 17". FRONT: Tactical command worksheet BACK: Quick action guides for MAYDAY events & offensive to defensive transitions (withdrawals).

PLUS a free course on how to get the most out of this effective tool coming soon.

Magnetic Writeable Command System with Quick Action Guidebook

$347.00

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