Federal Fire Working Group Meeting
Federal Emergency Management Agency/U.S. Fire Administration
16825 South Seton Avenue, Emmitsburg, Maryland 21727
November 5, 2015 Time: 9:30 a.m. – 11:30 a.m.
Call in#: 1-800-320-4330, PIN#: 578242

ATTENDEES	ORGANIZATIONS
Carl Glover	Navy
John Staub	Army
James Fortner	Forest Service
Peter J. Collins	Bureau of Prisons
Julian Castenada	Bureau of Prisons
Rik Khanna	CPSC
Tim Merinar	NIOSH
Ross Mowery	EPA
Chuck March	DNFSB
Tim Butters	FAA

PRESENTERS
Dennis Gentzel, USFA
Nelson Bryner, NIST
Bruce Hensler, USFA
Arthur Lee, CPSC

USFA ATTENDEES

Ernest Mitchell	Administrator, U.S. Fire Administration
Alex Furr	Director, National Fire Program Division/USFA
Sandy Facinoli	Chief, Prevention & Information Branch (P&I), National Fire Programs Division (NFPD), USFA
Rebecca Ryan	Fire Program Specialist, P&I/NFPD

Opening

Ernest Mitchell, Administrator, U. S. Fire Administration, welcomed all to the meeting and expressed his interest and appreciation to the members for their participation in this group.

Roll Call was taken followed by the first of several presentations.

The following presentations were provided:

Dennis Gentzel, Fire Program Specialist
Prevention & Information Branch
National Fire Programs Division
U. S. Fire Administration
Presentation: *Overview of Sprinklers in FEMA Manufactured Housing Units*

Mr. Gentzel opened his presentation by explaining that FEMA provides manufactured homes to disaster survivors in certain situations under the authority of the Stafford Act. The USFA has been working with FEMA, our parent agency, for several years to make Manufactured Housing Units (MHUs) as safe as possible. Part of this work has recognized the need for residential sprinklers to be added to the MHUs with NFPA 13D being the minimum requirement.

Since disasters can occur anywhere in the United States, FEMA needs to be able to provide MHUs on short notice throughout the contiguous 48 states. Due to wide and unpredictable variations in the available water supply at disaster sites, it was decided to standardize the water supply requirements for all of the sprinklered MHUs. In addition to standardizing the water supply, it was necessary that all system components be capable of being deployed in climates where winter temperatures can reach -35° F. All of these issues created technical design challenges. FEMA decided to provide an external tank and pump system (TPS) for each sprinklered MHU. Since there was not an existing product that fulfilled all of the performance requirements, FEMA developed requirements for a TPS which could meet the project needs.

Mr. Gentzel mentioned that the TPS is being manufactured by several vendors, and the MHUs are manufactured by several other vendors, coordinating details such as pipe size, thread pitch, location of points of connection for water and electrical power, type of insulation, heating systems, and a myriad of other details and components not typically encountered in a residential sprinkler installation often required extensive research and coordination with industry.

Dennis stated that all of this work resulted in contract awards early this Fall. Multiple companies received contracts to build sprinklered MHUs and several companies received contracts to build the TPS. FEMA is currently conducting “first item” inspections at the plants where the sprinklered MHUs and the TPS are being built. Sprinklered MHUs are expected to be delivered to FEMA later this year and the new TPS should be delivered by February of 2016.

Nelson Bryner, ChE
Fire Research Division
Engineering Laboratory
National Institute of Standards and Technology
Presentation: *Update on Fire Research at NIST*

Nelson Bryner provided an update on fire research including flow path related line-of-duty-deaths and wind-driven fire studies. In the first update flow patterns during several

fire incidents were simulated using NIST's Fire Dynamic Simulator (FDS). FDS is a computational fluid dynamics software that is designed to transport heat and smoke from fire. Important scenario parameters that need to be collected include building geometry, ventilation openings, and a detailed timeline. In FDS reconstructions of fires in San Francisco (2011) and Chicago (2012) fires demonstrated that sudden changes in flow patterns can expose fire fighters to untenable conditions. In the San Francisco multi-story fire, the failure of rear windows on a lower level caused a "chimney" effect with hot gases moving rapidly up a stairway exposing multiple fire fighters. In the Chicago residential incident, an attic fire extended down and through the structure when a barrier door failed and exposed fire fighters in the hallway. A change/development of a flow path can lead to rapid, high hazard changes to the fireground and leave fire fighters with little time to react. Increased understanding of fire dynamics and boundary conditions can allow the development of improved tactics that will provide fire fighters with the opportunity to work safely and effectively.

Following the update on flow path related fatalities, Mr. Bryner provided an update on research related to wind-driven embers. NIST uses a series of wind tunnels to identify vulnerabilities of structures at full-scale and to develop test methods at reduced-scale. Embers, which are a major cause of ignitions during wildland-urban interface fires, are being studied at a large wind tunnels at Insurance Institute for Business and Home Safety (Richburg, SC) and Building Research Institute (Tokyo, Japan) and at a smaller facility at the National Research Institute for Fire and Disaster (Tokyo, Japan). Entire structures or sub-sections of structures are exposed to wind driven embers at the large tunnels to identify what features of a structure are most vulnerable to embers. Once the vulnerability of components, such as tile roofs or decks, have been identified, then a representative test method is developed in the small wind tunnel for inclusion in building and fire codes.

After the research updates, Nelson highlighted a number of other fire related activities. These included the Fire Chiefs White House Summit on Climate Change Impacts at the WUI (11/9/2015), the 2015 National Fire Service Research Needs Symposium (11/16-11/19), the Single Vision for First Responders (ongoing), and the Next Generation Wildland Fire Fighter Shelter (ongoing). If you would like additional details on the research details or other fire related activities, please feel free to contact Mr. Bryner at nelson.bryner@nist.gov or 301-975-6868.

Bruce Hensler, Fire Program Specialist
Emergency Response Support Branch
National Fire Programs Division
U.S. Fire Administration
Presentation: *Getting to Lessons Learned*

Mr. Hensler provided a presentation on Operational Lessons Learned in Disaster Response which is a USFA study of after action reviews from major disasters of the past decade to gain insight into lessons learned.

Bruce pointed out that while after-action reviews produce valuable lessons, lessons alone are not the end of the story. In fact, lessons learned should rightly be the beginning of a new chapter in a fire department's operational behaviors. Lessons without a corresponding change in operational behavior are not lessons learned.

The report identifies gaps and needs in first responder training and resources and presents solutions that serve to better prepare local-level fire services for all-hazard events and to interact with federal resources. The disasters studied were weather-related events that required responding firefighters to assume duties for which they were unprepared or for situations they never anticipated.

Topics covered include:

- Resource and logistics management
- Training, testing and exercising
- Warning and notification
- Assessing staffing requirements
- Mutual aid
- Large-scale event incident command issues
- Critique and evaluation methods for organizational learning

Download "Operational Lessons Learned in Disaster Response"

Arthur Lee, Directorate for Engineering Sciences
Division of Electrical Engineering
U. S. Consumer Product Safety Commission

Mr. Lee made it clear that the views expressed in his presentation were those of the CPSC staff, and they have not been reviewed or approved by, and may not necessarily reflect the views of, the Commission.

Mr. Lee began his presentation by explaining that a new cooking nuisance resistance, the Polyurethane flaming and smoldering foam tests, would be added to UL 217, Single and Multiple Station Smoke Alarms. The Polyurethane (PU foam) flaming test, which is most challenging for photoelectric type smoke alarms, shall produce an alarm signal at or before an obscuration limit of 5%/ft (15.47 % per meter). The polyurethane (PU) smoldering test, which is most challenging for ionization type smoke alarms, shall produce an alarm signal prior to the smoke obscuration exceeding 12.0%/ft (34.3% per meter). The addition of the Nuisance Resistance Test, which centers on cooking nuisances, would be challenging for all smoke alarms.

Mr. Lee advised that a few items were deleted from UL217: flammable liquid fire test which had similar profiles as the new PU Flaming Test; and the Smoldering Smoke Test-maximum obscuration without alarm test which reduces false alarms will be covered by the new nuisance resistance test.

So, what do the changes to UL217 mean?

- no effective date, but estimate that the standard with the new tests would take effect 3-5 years from now.
- most single-sensor ionization smoke alarms and some photoelectric smoke alarms will not pass the new PU foam tests
- smoke alarm may need a microprocessor, may need to incorporate multiple sensors and processing of the environment
- increased cost for smoke alarms: payback on R&D; tighter tolerances on sensors to satisfy nuisance resistance and PU foam tests

Mr. Lee mentioned that in FY16, CPSC and NIST will be testing current smoke alarms (approximately 50 different models) to the new PU foam and nuisance resistance tests. These tests will help determine if there are categories of smoke alarms that perform well or poorly to the new tests; help understand how far or close smoke alarms are in passing the tests; and determine if there is a need to change smoke alarm messaging for the public between now and the effective date when smoke alarms that meet the new standard will be available.

In reference to coordinating the smoke alarm messaging, they will continue to stress that the KEY in safety is a WORKING smoke alarm…not having a working smoke alarm is the worst possible option. Using both types of sensor technologies (ionization and photoelectric) provides the best protection. Between now and the new effective date, based on the NIST data, does the smoke alarm messaging need to be modified? Such as, "If (or when) you plan on replacing or buying a smoke alarm, consider these types."

**No date has been scheduled for the next meeting; we will notify the FFWG members when a timeframe has been established.