

## A CRITIQUE OF THE TASK GROUP 400 REPORT-PART 2

By Richard Schulte

Part 1 of this article took a look at a report issued by the Task Group 400 committee titled *“Report to the California State Fire Marshal on Exit Travel Distance of 400 Feet”* dated December 20, 2011. Part 2 of this article will continue the discussion of this report.

### Analysis

The Task Group 400 report contains numerous technical flaws, however, the report also contains some good information. Some of the good information included in the report includes:

- Sprinkler protection and smoke/heat vent systems are two fire protection technologies which do **not** work well together.
- The activation of sprinklers delays and will often prevent the opening of automatic smoke/heat vents.
- Open smoke/heat vents may have an adverse effect on the operation of sprinklers.
- Smoke/heat vents provided in large single-story industrial and storage buildings will **not** provide additional evacuation time for building occupants if the vents do not open due to the activation of sprinklers.

Some of the flawed information included in the report includes the following:

- Interior manual fire fighting operations should be conducted in large single-story industrial and storage buildings where the sprinkler protection provided for the building performs as intended.
- Interior manual fire fighting operations should be conducted in large single-story industrial and storage buildings where the sprinkler protection provided for the building fails.

- Smoke/heat vent systems are capable of making interior manual fire fighting operations in large single-story industrial and storage buildings “safer”.
- Sprinkler systems which utilize control mode (standard spray) sprinklers are not designed to extinguish fires in rack storage arrays.
- Sprinkler systems which utilize control mode (standard spray) sprinklers only consist of ceiling sprinklers.
- Sprinkler systems which utilize ESFR sprinklers provide superior fire protection when compared to sprinkler systems which utilize control mode (standard spray) sprinklers.
- Sprinkler systems which utilize ESFR sprinklers provide superior fire protection when compared to control mode (standard spray) sprinklers with in-rack sprinklers.
- The “ganged” operation of smoke/heat vents is a viable concept which can be utilized in single-story industrial or storage buildings.
- Smoke/heat vents are capable of providing fire protection for industrial and storage buildings in the event that the municipal water supply is incapacitated due to seismic activity.
- The Fire Dynamics Simulator has been “validated” and can be utilized in any application without further “validation” by the user.

Perhaps the most prominent flaw in the Task Group 400 report is the lack of discussion on the issue of fire fighter safety. No where in the Task Group report are the NIOSH Alerts on structural fire fighting mentioned in the report. **NIOSH 2005-132, *Preventing Injuries and Deaths of Fire Fighters due to Truss System Failures***, and **NIOSH 2010-153, *Preventing Deaths and Injuries of Fire Fighters using Risk Management Principles at Structure Fires***, can be considered to be major advances in fire fighter safety and certainly belong in any discussion of fire fighter safety.

The roster of committee members which form Task Group 400 indicates that the Task Group was chaired by Chief Doug Dupree, the fire marshal for the San Bernardino City Fire Department, and included a number of fire service personnel employed by fire departments throughout the State of California. Given this fact, it seems rather odd that the Task Group report contains no discussion, or even acknowledgment of the NIOSH Alerts addressing structural fire fighting. Could it be that Chief Dupree and the other fire service members of the Task Group were unaware of these two NIOSH Alerts? Or is it that the conclusions of the Task Group were pre-ordained and that the entire Task Group discussions were just a ruse used as cover for the pre-determined conclusions of the Task Group?

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It is Schulte & Associates' opinion that fire fighter safety is indeed an important issue, particularly in buildings which are 500,000 square feet and larger and that this issue needed to be addressed in the Task Group's deliberations based upon accepted recommendations for structural fire fighting. The failure to do so should be considered to be a failure of this committee to take into consideration all of the pertinent facts.

Another major flaw in the Task Group's report is the failure of the Task Group to understand the capabilities of sprinkler systems which utilize control mode (standard spray) sprinklers. The Task Group's report reflects a common misunderstanding regarding the capabilities of sprinkler systems which utilize standard spray sprinklers to provide protection for combustibles in rack storage arrays. NFPA 13/NFPA 231C contain the following statements regarding the use of standard spray (control mode) sprinklers to protect rack storage:

*"Sprinkler protection installed as required in this standard is expected to protect the building occupancy **without supplemental fire department activity.**"*

*"During the testing program, the installed automatic extinguishing system was capable of controlling the fire and reducing all temperatures to ambient within 30 minutes of ignition."*

Further, it seems apparent from the report that members of the Task Group were unaware of the capabilities of control mode sprinkler systems which include in-rack sprinklers.

Without a thorough understanding of how control mode sprinkler systems operate to both control and extinguish fires, it is simply not possible to understand the inter-relationship between sprinkler protection and the need for interior manual fire fighting operations.

A third major flaw in the report is the lack of understanding of fire modeling used as the stated basis for the conclusions reached by the Task Group. The fire modeling analysis by Aon FPE contained numerous major flaws which apparently were not recognized by members of the Task Group.

Aon FPE's report was based upon a building which was roughly 1 million square feet in floor area and which contained Group A plastics. Based upon the commodity classifications defined in Chapter 23 of the International Fire Code (IFC), Group A plastics are considered to be a high hazard commodity, except when the quantities of Group A plastics are limited and the commodity can be classified as either a Class III or Class IV commodity.

The commodity classification is important in this discussion because Note h to Table 2306.2 in the IFC limits the floor area of buildings containing high hazard commodities to a maximum of 500,000 square feet. Hence, the Aon FPE fire modeling study was based upon a building which would not be permitted to be constructed per the International Fire Code.

A second flaw in the Aon FPE analysis/ report is that it was assumed that the building analyzed would be provided with a fire alarm system. The International Building Code does not require that a fire alarm system be provided for moderate hazard (S-1) storage occupancies.

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A third flaw in the Aon FPE analysis/report is the assumption that the fire model utilized in the analysis has been "validated" for the application for which it was used. Simply because the Fire Dynamics Simulator (FDS) was developed by the Building and Fire Research Laboratory (BFRL) at the National Institute of Standards and Technology (NIST) is an insufficient justification for assuming that the model has been "validated" for the purpose used by Aon FPE.

A draft of a document titled “*Guidelines for Substantiating a Fire Model for a Given Application*” dated September 2009 was released by the Society of Fire Protection Engineers (SFPE) on December 9, 2009. This document outlines the steps necessary in order to “validate” the use of a fire model for a particular application. It would appear that Aon FPE failed to incorporate the recommendations contained in the SFPE document in their analysis/report included in the Task Group report.

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The above does not mean to imply that Aon FPE’s conclusions are necessarily incorrect. In fact, Aon FPE’s conclusions are correct. The fact that a travel distance of 400 feet is acceptable in large one-story industrial and storage buildings is an obvious conclusion, without the need for a fire modeling analysis. The Life Safety Code has permitted a travel distance of 400 feet in storage buildings protected by a sprinkler system for decades. Obviously, the purpose of the fire modeling analysis was to confer some sort of scientific or engineering basis for the conclusion. That being the case, Aon FPE’s analysis/report should be held to accepted engineering standards—in this case, the SFPE document “*Guidelines for Substantiating a Fire Model for a Given Application*”.

Lastly, it is interesting to note that while Aon FPE’s report was utilized to document the conclusions of the Task Group, Aon FPE, formerly Schirmer Engineering Corporation, has opposed the use of smoke/heat vents in buildings protected by a sprinkler system at least since the mid-1970’s. If the firm Aon FPE was good enough to be utilized to perform the fire modeling analysis for Task Group 400, it would seem that Aon FPE’s recommendations regarding the use of smoke/heat vents in buildings protected by a sprinkler system should have been accepted by the Task Group. Instead, the Task Group conspicuously ignored Aon FPE’s recommendations regarding the use of smoke/heat vents in sprinklered buildings (and the Aon FPE report pretended that Aon FPE has taken a neutral position on the issue).

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Based upon the above, it would seem that the only conclusion which can be reached regarding the Task Group 400 report is that it is shoddy work. Whether the shoddy work was intentional, or whether the shoddy work was simply due to a lack of expertise of the committee is a question which the Task Group needs to answer. What is unfortunate is that it appears that

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the California State Fire Marshal utilized the work of Task Group 400 as a basis to amend the provisions of the International Building Code/International Fire Code for use in the California Building Code. This, of course, calls into question whether or not the California State Fire Marshal has sufficient staff expertise to critically review the Task Group's work. The flaws in the Task Group's work are so obvious that it would be difficult for anyone experienced in the field not to have seen the flaws.

It should be noted that two of the members of the Task Group, Rick Thornberry and Julie Ruth, have represented a trade association which represents the manufacturers of smoke/heat vents, the Smoke Vent Task Group, and that members of the ICC Code Technology Committee study group on roof vents, other than Thornberry and Ruth, were not invited to participate in the Task Group's deliberations. It seems reasonable to question why experts on the subject of the use of smoke/heat vents in sprinklered buildings who have participated in the CTC's study group on vents for the past 4 years were excluded from participation on the Task Group 400 committee.

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Given this last bit of information, it is my opinion that it isn't too difficult to conclude that the Task Group's recommendations to the California State Fire Marshal were pre-determined by the composition of the committee. It's my opinion that the Task Group was a "set-up" orchestrated by the lobbyist paid for by the Smoke Vent Task Group, Rick Thornberry. Did the other members of the Task Group realize that they were being "played like a Stradivarius" or were they just duped?

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