

## **Briefing Paper** - Firefighters concerned about fire shelter length

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**Background:** An e-mail was widely circulated recently in the firefighter community warning firefighters that people taller than 5'8" should probably carry a large size, New Generation Fire Shelter. A firefighter had reportedly tried a regular size fire shelter and found it to be "nearly a foot shorter" than the regular size practice shelter he had used. This raised the concern that if practice shelters are longer than real shelters, it could lead people to carry the wrong size shelter. MTDC contacted the district and requested that both the New Generation Fire Shelter and the practice fire shelter be sent to MTDC for examination.

New Generation shelters and practice shelters have the same size patterns for construction. The pattern size of the floor from end to end for both shelters is 86 inches.

Both fire shelters were received at MTDC on March 27 and inspected. The shelters were constructed according to the specifications and drawings at the time of manufacture. No visible nonconformities could be found with the construction of the shelters. With minimal applied tension, the practice shelter floor measured 85 inches. With similar tension applied to the New Generation shelter floor in question, it measured 83 inches. For comparison, six other (4 monthly lot inspection and 2 previously carried) shelters were measured the same way and lengths of these shelters measured between 84 and 85 inches. In a separate experiment, a 36-inch piece of shelter material was crumpled, flattened, and measured; final measurement was 35½ inches. There appears to be a small percentage (1 to 3%) of "shrinkage" or "memory" of the shelter after it is folded, bagged, and carried.

The fire shelter training materials, *The New Generation Fire Shelter* booklet and video, (booklet – NFES 2710, video – NFES 2712) instruct firefighters to push out the sides of the shelter after they enter the shelter (don't push too hard). This helps to straighten folds

and maximize the volume of the shelter. Wind and turbulence associated with past shelter deployments have caused shelters to bellow (fall down on the firefighter, and then reinflate). Firefighters are instructed to wear flame-resistant clothing, gloves, boots, and a hardhat inside their shelter to provide an additional layer of protection between hot shelter material and their skin.

**Recommendations:** As stated in the 2005 Tech Tip, *Large New Generation Fire Shelter Now Available*, firefighters taller than 6' 1" should definitely carry the large size fire shelter and those shorter than 5' 7" should carry the regular size. For those firefighters in between, it is their choice of which size to carry. It is important to recognize that shorter people have much more difficulty deploying and holding down the large size fire shelter, especially in high winds. While extra air space does provide more protection, being unable to hold down a large shelter could result in catastrophic injury or death. For more information, firefighters should review the entire Tech Tip.

Some firefighters may be concerned about the dimensions of the New Generation Fire Shelter because they may be accustomed to the old-style fire shelter. Firefighters concerned about the fit of the New Generation fire shelter should review the 2006 Tech Tip, *What's New With the New Generation Fire Shelter?*, especially the sections titled "Reduced Airspace" and "Touching Shelter Material."

Concerned firefighters should also review the equipment report from the 2007 *Alabaugh Fire Shelter Deployment Report*. In this deployment, two firefighters shared one regular size New Generation Fire Shelter. Before entering the shelter both firefighters were receiving burns. After entering the shelter they received no further burns even though they had extensive direct contact with the shelter material. Both firefighters felt that the fire shelter saved their lives.

Firefighters should also review the 2005 *Little Venus Fire Shelter Deployment Report*. The report shows photos of the deployment with firefighters inside both old-style and new shelters. The firefighters, varying in height and weight, reported contact with shelter material in both old-style and new shelters. This translated into a burn injury for only

one firefighter; the firefighter who carried an old-style shelter with a 43-inch tear received a ½ inch blister where his elbow pressed against the material. The firefighters credited the fire shelters with saving their lives. Whichever shelter (old-style or new) or size (regular or large), there will be contact with shelter material while a firefighter is deployed in a shelter.

One of the recommendations from the *Alabaugh Fire Shelter Deployment Report* was that firefighters do practice deployments with an actual New Generation Fire Shelter in order to become as proficient as possible. This would also give firefighters the most realistic expectations and training for a potential shelter deployment.