



**EMERGENCY RESPONSE TECHNOLOGIES**  
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## **Operational Test and Evaluation Report**

# **Climatec HeatShield Cooling Vest**

## **Preliminary Flashover Simulator Test Report**

**Conducted on 10, June 2002 by the  
Virginia Task Force 1 Urban Search and Rescue Team  
at the Virginia Beach Fire Training Center**

**Testing managed by the Emergency Response Technology (ERT)  
Program**

The ERT Program is authorized by Congress, sponsored by the Department of Homeland Security (formerly FEMA) and is recognized by the Department of Defense as a principal program for transferring DOD technology in cooperation with the seven principal U.S. Fire Associations. The ERT Program is administered by the West Virginia High Technology Consortium Foundation.



### Background

These tests were conducted as part of a much larger, nationwide series of tests under the direction of Dr. Kari Babski-Reeves and the US Army National Protection Center, Soldier, Biological & Chemical Command. These summary results are not to be used in isolation, as sample size is too small to be statistically reliable as a sole source. A comprehensive test report on this and other cooling vests will be available late 2003 from the Natick National Protection Center.

### Description

This test involved firefighters in a flashover simulator training session and was comprised of test subjects wearing the HeatShield cooling vest and control subjects without the vest. Each firefighter was fully outfitted in his/her standard issue turnout gear for the training session including SCBA.

### Environment

This flashover simulator is of the Swedish design and during the 40-minute test evolution heat measured approx 1200° F at the ceiling level and 400° F at the midpoint height. Test evolution generated numerous rollover and flashover episodes according to protocols.

### Summary Preliminary Test Results

Subject core temperatures were measured with ear canal infrared scan after donning bunker gear, prior to insertion into flashover simulator and after exit from flashover simulator prior to removal of bunker gear. Both test subjects and control subjects had normal core body temperatures before the test evolution and exhibited elevated core temperature readings after 38 minutes exposure in the simulator.

Group Tests		
Temperature	with HeatShield	w/o HeatShield
Before	98.62	98.34
After	98.92	100.30
	0.30 degrees	1.96
<b>Improvement</b>	<b>87%</b>	



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In addition to the aforementioned comparisons between test and control subject another comparison was made between the same subject in two separate evolutions in the flashover simulator. This same subject testing was undertaken in an effort to minimize response and temperature differences ascribable to the individual's personal physiology.

Same Subject		
Temperature	with HeatShield	w/o HeatShield
Before	99.00	98.40
After	100.60	102.30
	1.6 degrees	3.9 degrees
<b>Improvement</b>	<b>41%</b>	