



AFOTEC and Alamo Research Laboratory Operational Utility Evaluation (OUE)

November 1997

Purpose:

Air Force Operational Test & Evaluation Center (AFOTEC) to determine utility of the exothermic type phase change cool vest for sole source inclusion in the Air Force Firefighting Equipment Tables of Allowance for procurement worldwide.

Recommendations:

- 1.** Add the exothermic type cool vest to the firefighter's table of allowances. The Cool Vest system has value and enhances mission response for operations in high-heat environments not involving first alarm firefighting operations as it was determined that assembling and donning the vest properly (utilizing the ice & water method) required as much as 90 seconds. To reduce the donning time, it was agreed the cool vests should be previously charged and assembled and stored in a cooling medium.
- 2.** Prior to inclusion of the vests into equipment tables' of allowance, develop and publish a concept of employment/operation. Ensure the concept of operations and tables of allowance addresses the support equipment required for charging, storage, and transportation of the Cool Vest system
- 3.** Make the Cool Vest available to all support personnel who are required to perform duty in high-heat environments. Notably, explosive ordnance disposal, hazardous material abatement, and security force personnel could use the system to enhance mission response capabilities

Conclusions:

- A 22% increase in the firefighter's work time was noted. Work time before rise in core body temperature from an average of 33.1 minutes to 40.4 minutes.
- No significant change in core body temperatures, blood pressure or heart rates.
- They felt the constant heat exchange rate enhanced the body cooling effects by minimizing thermal shock generally felt by the vests that use ice or gel as an exchange medium.
- Test participants' comfort levels, primarily influenced by the vest maintaining lower back and chest skin temperatures were rated higher.
- Slower build up of core body temperature while wearing this cool vest.
- Test participant comments and survey responses (qualitative data) indicated that they felt their recovery was enhanced when they wore the vests during and after test events.
- Test participants commented that the vest would be useful, provide additional comfort, and enhance mission accomplishment, when performing any duties requiring long exposure to high-heat environments. Use of the exothermic type cool vests during hazardous material abatement operations was the most common recommendation.