

ISRP 1999 abstract

Presenter/author	Title	Abstract
Weis, R. A. Moss, L. L. C. Cherry, G. A. <i>Army Research</i> <i>Laboratory</i> <i>APG, MD</i> <i>USA</i> <i>And</i> <i>Eric Hanson</i> <i>Air Techniques</i> <i>International</i> <i>Owings Mill, MD</i> <i>USA</i>	Comparison of Protective Mask Leakage Tester Equipment to Enhance Soldier Survivability	<p>Human physiological variables, such as body weight, height, strength, and aerobic capacity, can affect the results of such exercise tests as that used for Man Test 4 (MT4), a U. S. respirator certification test described in Title 42, Code of Federal Regulations, Part 84. The size and weight of current military respirator quality assurance test devices make them difficult to deploy to forward elements who must be able to test and maintain respirators in a state of operational readiness. The Air Techniques International Model TDA-99M Mask Leakage Tester performs all the capabilities of the current M14, Q179, Q204, and M4A1 mask components testers in one portable, suitcase-sized container. The main objective of this evaluation was to determine if the TDA-99M Protective Mask Leakage Detector performed as well as, or better than, the currently used standard set of mask testing instruments. The Army Research Laboratory was asked to develop the test protocol and conduct an analysis of the data collected by the Marine Corps NBC Test and Evaluation Unit. Two each of the currently used instruments were tested against two TDA-99M instruments. Four operators utilized each of these machines in random order twice each day for five consecutive days. Each operator tested their assigned 20 masks in random order on each machine every day. 80 M40 and 80 MCU2/P masks were tested with respect to overall leakage, outlet valve leakage, drink tube flow, and drink seat valve integrity. The experimental design matrix was set up for a statistical analysis of variance comparing differences between equipment types, differences within equipment types, differences between operators, and differences within operators using the same machine. The test data collected and the in-depth statistical analyses performed clearly show the TDA-99M equaled and exceeded the ability to detect and identify leakage sources and defective components in both the M40 and MCU2/P series of masks. The TDA-99M consistently failed a mask in the location whereas the current test instruments did not necessarily do this.</p>