

INFORMATION PAPER

SFAE-SDR-SPE
19 August 2016

SUBJECT: Female Personal Protective Equipment

1. Purpose: To provide the Defense Advisory Committee on Women in the Services (DACOWITS) information on the development, collaboration, procurement, and issuance of protective equipment sized for female Army Soldiers.

2. Background:

a. In January 2009, a Request for Information (RFI) was issued by the Combined Joint Task Force 101 (CJFT 101). This RFI indicated interface issues with respect to form and fit of the Improved Outer Tactical Vest (IOTV) and the impact on female Soldier performance. Because of this RFI, the Army began a series of female fit studies. Key findings from the studies highlighted the need to improve sizing and attributes of the IOTV to better fit the female form.

b. In 2010, the Generation II (Gen II) IOTV was fielded. The Gen II IOTV was a short-term solution as the design focused on incremental improvements in sizing, form, fit, and function over the Gen I IOTV. This version provided more adjustability, and conformed to female Soldiers better than the original IOTV.

c. In Fiscal Year 2011 (FY11) through FY12, Natick Soldier Research Development and Engineering Center's (NSRDEC) Anthropometric Team, continued to assess the operational need to tailor body armor fielded to female Soldiers. The NSRDEC Anthropometric Team conducted fit studies with female Soldiers at Fort Benning, GA, West Point, NY, and the Massachusetts National Guard, using female-sized prototypes fabricated from NSRDEC developed patterns.

d. The Army collaborates with other Services primarily through the Cross Service Warfighter Equipment Board (CS-WEB). CS-WEB is a joint advisory group originally chartered on 13 July 2007 to improve Cross-Service information sharing, establish multi-service requirements and programs, and coordinate joint Warfighter investments in order to ensure that the most effective and efficient solutions are acquired, fielded, and sustained. The specific focus area of the group, which meets quarterly, is on developing common solutions for Organizational Clothing and Individual Equipment (OCIE), which includes uniforms and personal protective equipment.

3. Facts: The Army continues to address the issues of properly fitting female Soldiers in combat. The following paragraphs outline the status of program efforts relating to specific/sized systems for deploying female Soldiers, as well as the status of ongoing development efforts.

a. Female Improved Outer Tactical Vest (FIOTV). The FIOTV is a variant of the Gen III IOTV. The sizing system for the FIOTV accommodates the female population across eight new sizes with a weight of 27.5 pounds for a size medium with the accompanying ballistic plates (this is an average of about 13 percent (%) lighter than the GEN III IOTV). Currently, deploying female Soldiers being issued body armor can choose either the FIOTV or the GEN IV IOTV at fielding events. In addition to the eight new sizes, the FIOTV incorporates a darted front panel, which directs the soft armor ballistic package more effectively around the female form. The vest is also shorter in length which enables female Soldiers to sit without the vest riding up and it

provides more shoulder and waist adjustments. Finally, the FIOTV offers a re-designed collar to better accommodate female Soldiers who wear their hair in a bun at the nape of the neck, offering those female Soldiers a more comfortable fit and increased range of motion. In July 2016, 10 female Airmen from the 711th Human Performance Wing (medics, aerospace medicine specialists, etc.) participated in a FIOTV evaluation at Wright-Patterson Air Force Base. In this evaluation, the female Airmen, were sized in the FIOTV, executed simulated medical tasks and rated the FIOTV based on interference/restriction on performing mission, overall performance, fit, comfort, and general acceptability. The final report on this evaluation is expected in September 2016. At the end of the evaluation, an extra 21 FIOTVs were left with the 711th Human Performance Wing so that the unit can fit and issue FIOTVs to additional deploying female medical personnel. As of 16 August 2016, the Rapid Fielding Initiative has issued approximately 9,000 FIOTVs to deploying female Soldiers.

b. Protective Insert Size Improvements. To better accommodate the stature of female Soldiers, the Army has already added one new size to the Enhanced Small Arms Protective Insert (ESAPI) and the X-Small Arms Protective Insert (XSAPI) as part of the Soldier Protection System (SPS) Vital Torso Protection (VTP) subsystem. The primary objective of the VTP subsystem is to develop lighter weight ESAPI/XSAPI with the same protective capability as legacy systems. In addition to the SPS program, the Defense Logistic Agency (DLA) Troop Support's contract for the current design for ESBI has been modified to incorporate two smaller size variants (6" X 6" / 6" X 8"). The Hard Armor team is also working on obtaining feedback from users on the additional alternate sizes for hard armor plates, specifically an Extra Small-Short and a Small-Short. Prototype plates were 3-D printed and Soldiers are using them during Human Factors Evaluations (HFE).

c. Family of Concealable Body Armor (FoCBA). The FoCBA provides concealable ballistic and stab protection and is intended to be worn by Soldiers in corrections, confinement, law enforcement, and intelligence operations. Sizes for the FoCBA include eight specific sizes and enhanced fit for female and smaller stature Soldiers, which optimizes area of protective coverage to improve overall vest functionality and comfort.

d. Pelvic Protection System. The Protective Under Garment (PUG) and Protective Outer Garment (POG) provides protection against ground-based Improvised Explosive Device threats. The PUG is worn next to the skin and the POG is a ballistic system that is worn over Flame Resistant Army Combat Uniform trousers. Female PUG enhancements include seven new female specific sizes for an improved fit, lighter weight, and more breathability. The female PUG sizing system is now based on hip circumference, as opposed to male PUGs, which uses waist circumference. The female PUG offers the exact ballistic protection and area of coverage as the male PUG. Fielding of female PUG sets to deploying female Soldiers began in the second quarter of FY15, and as of 16 August 2016, the Rapid Fielding Initiative has issued over 2,000 female PUGs

e. Female Sizing for SPS. From January 2013 through April of 2015, several Soldier HFEs were conducted to obtain Soldier feedback. As a result, the Army developed five SPS Torso and Extremity Protection (SPS-TEP) designs. In April 2015, after six formal Soldier evaluations, male and female Soldiers selected a final design. With a successful Milestone C decision in June 2015, the Army awarded multiple contracts to Industry for the production of the Government's Design. The design consists of the Modular Scalable Vest (MSV), the Ballistic Combat Shirt (BCS), the Blast Pelvic Protector, and the Load Distribution System. Based on feedback from over 15 independent SPS-TEP Evaluations and Studies, the Army identified improvements to the SPS-TEP to enhance the fit for female Soldiers. For the MSV, additional

vest sizes, side chest ballistics, and expanded side plate carriers are being incorporated. For the BCS, shorter arm lengths, hair bun cut-out on the collar, and a wider sweep to accommodate female hips are being incorporated. In October 2015, a large-scale fit study was conducted at Ft. Bragg, NC with 224 Soldiers including 72 female Soldiers. Results from the fit study indicate that with the improvements identified and new plate sizes the SPS-TEP should accommodate the 3% female to the 98% male size range. Currently, SPS-TEP accommodates the 5% female to the 95% male range. PM SPE is pursuing multiple efforts to continue to adjust and improve sizing with formal Soldier evaluations of the SPS-TEP system. These evaluations are scheduled throughout the Low Rate Initial Production and Full Rate Production timelines with a follow-on fit study planned for the first quarter of FY17. Feedback from these events contribute to improvements to the system, better fit, and identify when adjustments are required.

4. Conclusion: The Army will continue to improve functionality, fit, and comfort of the Personal Protection Equipment portfolio for all Soldiers.

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INFORMATION PAPER

15 August 2016

Subj: DACOWITS RFI #8: COMBAT EQUIPMENT AND GEAR

1. Purpose. To provide response to DACOWITS RFI via DON Tracker Tasker #2300

2. Background.

- a. On 7 July 2016, the Marine Corps issued a policy which changes the current fit attribute from the 5th - 95th percentile Marine to the 2d percentile female - 98th percentile male Marine to capture a population of small-stature male and female Marines previously lost below the 5th percentile. The Marine Corps is adjusting the sizing of its combat equipment to align with this updated policy.

3. Key Points

- a. In support of the expanded fit attribute, fit studies were conducted through FY15/16 and will be continuing through FY17 with the objective of assessing the adequacy of sizes and fit of body armor and load bearing equipment to update current sizing criteria, develop fit guidance, and identify any remaining sizing or fit issues.
- b. Comparative blast testing is being conducted in September 2016 to support the complete transition from the Improved Modular Tactical Vest (IMTV) to the Plate Carrier (PC) as the standard body armor vest of the Marine Corps. This transition reduces the system weight by 5.5 lbs and provides a better fit for female Marines.
- c. Plate Carrier Generation III (PC Gen III) reduces weight by an additional 23% compared with the current PC, is 1.25" shorter providing greater mobility to short stature Marines, eliminates shoulder bulk to improve aiming of the rifle, and will accommodate new sizes of smaller-stature hard armor protective inserts. Several user evaluations are planned for FY17 with various communities within the Marine Corps. Some of these user evaluations are being conducting with the Army who is also evaluating the system. Procurement of the PC Gen

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III is subject to out-year funds availability and prioritization within the service.

- d. The Marine Corps, in conjunction with the Army, is assessing three new smaller-stature sizes of hard armor protective inserts to determine suitability of the sizes.
- e. A capability is being developed that will integrate with current USMC Pack Frame and Main Bag to provide adjustability for varying torso lengths. Improvements also include a redesigned hip belt and shoulder harness to improve the fit, comfort, and ergonomics of the USMC Pack. The Adjustable Pack Frame will include an easy frame adjustment to accommodate smaller stature torso lengths and a redesigned hip belt that comes in multiple sizes to better fit smaller waist sizes.
- f. Seven female-specific sizes of the Pelvic Undergarment (PUG) are currently in the inventory and will be submitted to DLA for sustainment in 2nd Quarter FY17.

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