

INFORMATION PAPER

Department of the Army, G-1
19 Feb 20

SUBJECT: Defense Advisory Committee on Women in the Services (DACOWITS)
March 2020 Quarterly Business Meeting Request for Information (RFI) 8: Women in Aviation

1. Purpose: To reply to the DACOWITS Women in Aviation RFI.

Question a: What actions have been take or will be taken to accommodate the physiological differences in women verses men since aviation positions have been opened to women? Pertaining to aircraft, flight gear, training, etc.

Response a: Currently, no special actions are made to accommodate the physiological differences in women. Aircraft selection may be tailored due to height and the length of physical appendages, but that is not gender specific. There is a lack of critical science and technology information in some areas pertaining to aviation operations, which are being identified. An example of this is spinal protection for female aviators which has shown to vary enough from male aviators to warrant additional study and analysis.

Question b: What are the anthropomorphic measurement requirements for service as a pilot? Service as Air Crew? When were these requirements established?

Response b: For specific measurements and diagrams, please see "ANTHROPOMETRY (ICD 9 M700)" dated September 2004. (TAB A)

As far as Organization and Personnel Force Development could discern, research on anthropomorphic measurements of aviators has been conducted since 1989. See attached USAARL Report No 89-5, "Anthropometric Measurements of Aviators within the Aviation Epidemiology Data Register" dated March 1989. (TAB B)

Per AR 40-501, "Standards of Medical Fitness" dated 27 June 2019, para. 4-31: Linear anthropometric dimensions conditions that do not meet the standards of medical fitness for flying duty Classes 1, 2, 2F, 2P, 3, and 4 (see below) are the following:

(1) Class 1. Failure to meet linear anthropometric standards. The following are qualifying:

- (a) Total arm reach equal to or greater than 164.0 centimeters.
- (b) Sitting height equal to or less than 102.0 centimeters.
- (c) Crotch height equal to or greater than 75.0 centimeters.

(2) Class 3. Linear anthropometric measurements and body composition not compatible with aviation or crew member safety, or operational effectiveness at the Class 3 aircrew member's workstation.

Classes, 2, 2F, 2P, 3, and 4 are defined in AR 40-501 page 31 -32, para. 4-2.

Class 1 (warrant officer candidate, commissioned officer or cadet) standards apply to all initial applicants until the beginning of training at aircraft controls, to include:

- (1) Applicants for aviator training (see AR 611–110).
- (2) Applicants for special flight training programs directed by Department of the Army (DA) or National Guard Bureau (NGB), such as Army ROTC or USMA flight training programs.
- (3) Other non-U.S. Army personnel selected for training, or as determined by Chief, Army Aviation Branch.

Class 2 standards apply to:

- (1) Student aviators after beginning training at aircraft controls or as determined by Chief, Army Aviation Branch.
- (2) Rated Army aviators (see AR 600–105).
- (3) Department of the Army Civilian (DAC) pilots.
- (4) Contract pilots employed by contractors of the U.S. Army if required by the contract.
- (5) Army aviators considered for return to aviation Service.
- (6) Selected senior career officers of the Army who are medically qualified under Army Class 2 medical standards, when directed by DA or NGB under special procurement programs for initial Army aviation flight training.
- (7) Applicants to DA or NGB civilian-acquired aeronautical skills programs.
- (8) Other non-U.S. Army personnel in categories similar to those listed above.

Class 2F and 2P standards apply to physicians, medical students, nurse practitioners, and physician assistants applying for or enrolled in the Army flight surgeon (FS) Primary Course (see AR 600–105 and AR 600–106).

Class 3 standards apply to non-rated uniformed and DAC crewmembers ordered by a competent authority to participate in regular flights in Army aircraft, but who do not operate aircraft flight controls. This includes all personnel listed in AR 600–106 or not otherwise covered under the other classes of medical standards for flying.

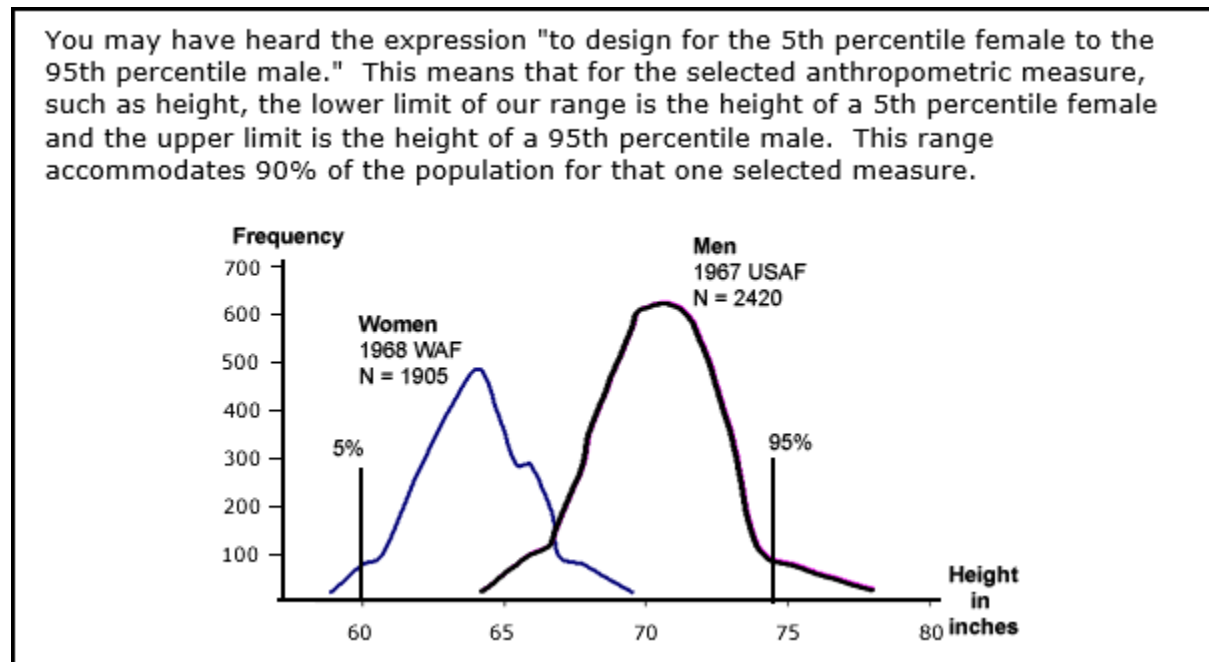
Class 4 standards apply to uniformed ATCs and UAS operators. DACs and contractor ATCs are Class 4, but follow Office of Personnel Management (OPM) standards (see para 4–34).

Question c: Approximately what percentage of Service members were disqualified from flight status based on these requirements? Provide breakdown by gender

Response c: Since 2017, there have been no men or women disqualified from flight status based on anthropomorphic requirements. 14 men and 109 women have approved waivers for total arm reach less than prescribed standards.

Question d: What are the anthropomorphic measurement requirements for each aviation platform and why?

Response d: The anthropometric measurement requirements are consistent for each aviation platform. All platforms are designed to meet 5th percentile female through 95th percentile male. Designing to this range captures 90 percent of the intended user population (see below from FAA Human Factors Design Guide). This design practice is widely used and accepted by the Department of Defense, Federal Aviation Administration, National Aeronautics and Space Administration, and SAE International, among others.



Question e: What are the anthropomorphic measurements around which flight equipment is procured?

Response e: The anthropometric requirements for Army aircrew Aviation Life Support Equipment are identified in the Air Soldier System Capability Production Document and range from 5th percentile female to 95th percentile male. The source of these anthropometric values is the 2012 Natick Technical Report TR-15/007, titled "Anthropometric Survey of U.S. Army Personnel: Methods and Summary Statistics" (See TAB C). The critical measurements used for the design of the Air Soldier System Aircrew Survival Vest are:

- Weight
- Stature
- Chest Circumference
- Waist Circumference

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- Thigh Circumference
- Waist Front Length Sitting
- Waist Back Length

The critical measurement used for the design and fit of the Air Soldier System Rotary Wing flight helmet are 1st percentile female to 99th percentile male. The design values considered include:

- Head circumference
- Head length
- Interpupillary distance

Prior to production, the Air Soldier items are subjected to fit evaluations with active duty soldiers and compatibility assessments with the host aircraft platforms.

Question f: What is the process to procure sizes of flight equipment not in a squadron's inventory? How long does the process take?

Response f: The answer to this question was broken down by Aviation Life Support Equipment (ALSE) equipment (survival vest and rotary wing helmet and flight suits).

1. The currently fielded Air Warrior Primary Survival Gear Carrier (PSGC), also known as the ALSE Vest, is a one size fits all and designed to accommodate the 5th to 95th percentile Soldier. The soft body armor that is fielded for this vest has 5 sizes (XS, S, M, L, and XL) that also accommodate the 5th to 95th percentile Soldier. This soft body armor vest is also the carrying system for the current Soft Armor Ballistic Insert (SABI) and Enhanced Small Arms Protective Insert (ESAPI) ballistic protection plates. These plates are procured by a Product Manager, Soldier Protective Equipment (PM SPE), who we maintain close coordination with to optimize the needs of all Aviators.

The HGU-56/P flight helmet is also available in 6 sizes (XXS, XS, S, M, L, and XL). If these sizes do not fit a Soldier, there are special fitting/sizing procedures available. If necessary, this procedure is accomplished when an Aviator receives their flight helmet in flight school, which they then carry with them to their subsequent units.

All of the Air Warrior equipment is available in the Army supply system.

The new Air Soldier System flight vest (Aircrew Combat Equipment) is in development and combines the vest and soft body armor into one piece of equipment. We will have 5 sizes (XS, S, M, L, and XL) to accommodate the 5th to 95th percentile Soldier.

2. Instructions for ordering an Army Aircrew Combat Uniform (A2CU or Flight Suit)
Special Measurement:

The placeholder NSN to use is the following:

A2CU Coat Special Measurement NSN is - 8415000C0T118

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A2CU Trouser Special Measurement NSN is - 8415000TRS114

The procedure for special ordering items that Defense Logistics Agency (DLA) has on contract can be done by completely filling out the DD Form 358 Men (TAB D) or a DD Form 1111 Women (TAB E), a DD Form 1348-6 (with fund code) and email the forms to DLA Troop Support Customer service branch. Also, this is the link to the DLA Special Measurement Web Page

<https://www.dla.mil/TroopSupport/ClothingandTextiles/CTCustomers/Special-measurements>.

It would take approximately 30-60 days to deliver the Special Measurement A2CU off of a current/active DLA contract.

Question g: What is the process to procure uniquely sized flight equipment not in standard issue?

Response g: Please see the response to question 8f.

Enclosures:

TAB A: Anthropometry

TAB B: USAARL Report 89-5

TAB C: Anthropometric Survey of U.S. Army Personnel: Methods and Summary Statistics

TAB D: DD Form 358

TAB E: DD Form 1111