MILITARY PERSONNEL TESTING PROGRAM OVERVIEW

for

CANDIDATES AND NEW MEMBERS OF THE DEFENSE ADVISORY COMMITTEE ON MILITARY PERSONNEL TESTING

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Executive Summary

The purpose of this document is to provide an overview of the Department of Defense (DoD) testing programs and research and development projects that come under the technical review of the Defense Advisory Committee on Military Personnel Testing (DACMPT). The primary focus of the overview is on the Armed Services Vocational Aptitude Battery (ASVAB), the existing aptitude assessment used to select and classify enlisted personnel. The testing programs that use the ASVAB are summarized, as well as initiatives to explore alternatives to current operations and the content of the tests. Additionally, a general review of the complementary tests used to supplement the ASVAB is included. References to more detailed information on various topics are provided.

The officer accession testing instruments will also be discussed as part of the DACMPT deliberations. For officers and warrant officers, no single test or instrument, such as the ASVAB, is used as an aptitude requirement for appointment. Therefore, officer testing instruments are under the authority and discretion of the Military Services, and specific information will be provided by the individual Services during the appointed DACMPT sessions.

Table of Contents

Military Personnel Testing Program Overview

Organizational Roles in the Military Personnel Testing Program

Defense Advisory Committee on Military Personnel Testing (DACMPT)

The DACMPT was established in 1980 in response to the ASVAB miscalibration. The DACMPT provides advice and recommendations on matters relating to military personnel testing. As noted in the charter, the DACMPT will:

- Provide advice on issues related to the research, development, implementation, and maintenance of enlisted and officer accession tests and career exploration programs
- Address technical issues such as processes and policies related to administration and security of testing and theoretical development of constructs, measurement precision, validity, reliability, equating, efficiency, fairness, and other operational and policy considerations

The DACMPT reports to the Secretary of Defense and the Deputy Secretary of Defense (the DoD Appointing Authority), through the Under Secretary of Defense for Personnel and Readiness (USD(P&R)), who has the delegated authority to act upon the DACMPT's advice and recommendations. The Committee consists of nationally recognized experts in testing. Members must have expertise in one or more of the following: psychometrics, test development, statistical measurement, big-data analytics, industrial/organization psychology, selection and classification, educational measurement, career development and counseling, and diversity and inclusion. The Committee is responsible for producing a biennial report that describes the military personnel testing program's progress and status and contains recommendations for future program enhancements.

Policy Oversight

Within the Office of the Secretary of Defense (OSD), responsibility for personnel matters is assigned to the Deputy Under Secretary of Defense for Personnel and Readiness (DUSD(P&R)). The Accession Policy (AP) Directorate responsible for the testing programs is located within the office of the Deputy Assistant Secretary of Defense (DASD) Military Personnel Policy (MPP)/Assistant Secretary of Defense for Manpower and Reserve Affairs (ASD(M&RA))/OUSD(P&R).

The AP Director is TBD. Recommendations for policy revisions are coordinated by the office of Accession Policy with each of the three Military Departments (Department of the Army, Department of the Air Force, and Department of the Navy), six Services (Army, Navy, Marine Corps, Air Force, Space Force, and Coast Guard), United States Military Entrance Processing Command (USMEPCOM), and the Defense Testing and Assessment Center (DTAC) and submitted for decision to the office of the USD(P&R), as applicable.

Dr. Sofiya Velgach is the Assistant Director for Testing in the Accession Policy Directorate. She has the responsibility for testing program policy oversight and serves as the Designated Federal Officer for the DACMPT.

Service input on testing matters is obtained via the Manpower Accession Policy Working Group (MAPWG), which consists of policy and technical representatives from each of the Services. The MAPWG provides a forum for joint-Service review and discussion of ongoing work pertaining to 1) research, development, implementation, and maintenance of accession tests, including the ASVAB, special purpose tests used during enlistment, and applicable officer accession tests, and 2) military personnel selection and classification processes and policies. Voting members of the MAPWG include one policy and one technical representative each from the Army, Marine Corps, Navy, Air Force, Space Force, and Coast Guard. Voting members are appointed by their individual Military Service. Nonvoting members of the MAPWG include one policy and one technical representative from USMEPCOM, plus representatives from DASD(MPP)/Accession Policy (AP) and Office of People Analytics/Defense Testing and Assessment Center (OPA/DTAC). Nonvoting members are appointed by their individual Agency. Dr. Mary Pommerich, Director of DTAC, is the current chair of the MAPWG. DTAC is a center within OPA, which is a directorate within the Defense Personnel Analytics Center (DPAC), responsible for ASVAB research and development (R&D). More information on the role of DTAC in the military personnel testing program is provided below.

Other MAPWG participants may include additional representatives from the Military Services and Agencies for the purposes of 1) providing support to MAPWG members or 2) observation. Participation by representatives of military recruiting commands is not allowed (particularly when technical aspects of the ASVAB are to be discussed), unless approved by the MAPWG chair.

Military Personnel Testing Program Development and Operations

USMEPCOM, direct report to the Director of Accession Policy, under executive agency of the Army, is responsible for conducting testing operations and applicant processing, including administration of the ASVAB in the Enlistment Testing Program and Career Exploration Program. USMEPCOM is headquartered in Chicago, Illinois.

In 1989, the Personnel Testing Division of the Defense Manpower Data Center (DMDC) became the Executive Agent for ASVAB research and development. In 2016, the Personnel Testing Division was moved to be under the Office of People Analytics, and subsequently renamed as the Defense Testing and Assessment Center (DTAC). Dr. Mary Pommerich is the Division Chief in charge of DTAC, headquartered in Seaside, California, and manages research and development for the ASVAB, as well as for special purpose tests, where applicable. DTAC is responsible for ensuring the provision of fair and accurate measurement of examinees' abilities and interests, efficient delivery of tests, and high-quality career exploration and planning tools.

Each of the DoD Services maintains a personnel research unit that conducts research on new types of tests and on different Service-specific uses of the existing tests. These organizations are:

- The Army Research Institute for the Behavioral and Social Sciences (ARI) in Ft. Belvoir, Virginia
- The Naval Research Lab (NRL) in Washington, DC
- The Air Force Personnel Center, Strategic Research and Assessment branch (supporting both the Air Force and Space Force), at Randolph Air Force Base, Texas

- The Marine Corps Manpower Studies and Analysis branch within Manpower and Reserve Affairs (M&RA) in Quantico, Virginia

The ASVAB

The Armed Services Vocational Aptitude Battery (ASVAB) is the sole aptitude test battery authorized for determining enlistment and induction eligibility across the Military Services. The ASVAB consists of 10 subtests designed to measure aptitudes in four domains: Verbal, Math, Science and Technical, and Spatial. Table 1 describes the general content of the ASVAB subtests. The subtests are presented in the order in which they are administered.

The ASVAB is administered via three separate personnel testing programs:

1. **The Enlistment Testing Program (ETP)** is used to screen applicants for enlistment eligibility and enlisted technical fields in each of the Services and components (including Coast Guard, National Guard, and the Reserves).
2. **The Career Exploration Program (CEP)** is used to provide students with information about themselves for use in career exploration and counseling.
3. **The In-Service Testing Program** is used by each of the Services to evaluate enlisted individuals for possible reclassification opportunities in Service. The in-Service assessment is called the Armed Forces Classification Test (AFCT). Note that retired ASVAB forms are utilized and renamed as the AFCT.

The ASVAB and AFCT are administered as both computer-based and paper-and-pencil tests. The computer version of the ASVAB is a computerized adaptive test (CAT), called the CAT-ASVAB, that adapts to the ability level of each individual examinee. The CAT-ASVAB is administered to military applicants at Military Entrance Processing Stations (MEPS) and at most Military Entrance Test (MET) sites via a web application called iCAT (short for Internet Computerized Adaptive Test). The CAT-ASVAB can also be taken via an unproctored administration at home or at a place of the examinee's choosing. The unproctored version is called the PiCAT (short for Pending Internet Computerized Adaptive Test). Applicants taking PiCAT verify their ASVAB scores by taking a proctored Verification Test (VTest) that is a shortened version of the ASVAB. VTest must be taken at a MEPS or MET site within 30-days[1] of taking the PiCAT. Applicants failing to verify their scores with the VTest are automatically administered the full-length ASVAB to retest. Additionally, the ASVAB is administered via paper and pencil (P&P-ASVAB) at a handful of remote MET sites and overseas testing locations, such as American Samoa and Saipan, which do not have sufficient internet capabilities to administer the CAT-ASVAB. About 90% of the schools participating in the CEP administer the P&P-ASVAB; the other 10% utilize CAT-ASVAB. One of the key reasons for continued use of P&P-ASVAB administration is insufficient network capabilities and bandwidth at the participating schools. In the future, CAT-ASVAB will be increasingly rolled out to participating CEP schools that have sufficient infrastructure to support computerized delivery via the internet. The AFCT is almost exclusively administered via CAT administration, except when service members are deployed on watercraft and on disconnected operations. In the latter case, the AFCT is provided via P&P administration. More information is provided later regarding the three separate personnel program uses and administration for ASVAB.

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[1] Due to COVID, this window has been temporarily extended to 45 days.

Each examinee completes the CAT-ASVAB at his/her own pace (i.e., when a subtest is completed, examinees can move on to the next section without waiting for everyone else in the test session to move on). The number of questions and time limits for the subtests on the CAT-ASVAB vary depending on whether tryout questions (also called seeded questions) are administered (refer to Table 2). Tryout questions are new questions that do not count toward the examinee's score. Tryout questions are evaluated to make sure they are performing as expected and in a fair manner prior to future use in determining applicant scores. They are also used to make sure that scores of future applicants can be compared to scores of current applicants. Each examinee receives tryout questions in 2 to 4 of the ASVAB subtests, with 15 tryout questions randomly dispersed throughout each of the selected subtests. Extra time is given to complete a subtest when tryout questions are administered. On average, it takes about 2 hours to complete the CAT-ASVAB. More information on ability estimation procedures, item selection rules, and other psychometric decisions can be found in Computer Adaptive Testing: From Inquiry to Operation (Sands, Waters, & McBride, 1997).

Table 1: Summary of ASVAB Content

Subtest	Description	Domain			
		V	M	T	S
General Science (GS)	Knowledge of physical and biological sciences			×	
Arithmetic Reasoning (AR)	Ability to solve arithmetic word problems		×		
Word Knowledge (WK) [a]	Ability to select the correct meaning of words presented in context and to identify best synonym for a given word	×			
Paragraph Comprehension (PC) [a]	Ability to obtain information from written passages	×			
Math Knowledge (MK)	Knowledge of high school mathematics principles		×		
Electronics Information (EI)	Knowledge of electricity and electronics			×	
Auto Information (AI) [b]	Knowledge of automobile technology and auto shop practices			×	
Shop Information (SI) [b]	Knowledge of tools and shop terminology and practices			×	
Mechanical Comprehension (MC)	Knowledge of mechanical and physical principles			×	
Assembling Objects (AO) [c]	Ability to figure out how an object will look when its parts are put together				×

Note. Domains measured are Verbal (V), Math (M), Science and Technical (T), and Spatial (S).
[a]A verbal composite score (VE) is formed from an optimally weighted composite of unrounded WK and PC standard scores.
[b]AI and SI are administered as separate subtests in the computer administration but are combined into one single score (labeled AS). AI and SI are combined into one subtest (AS) in the P&P administration.
[c]AO is not administered in the ASVAB CEP.

Table 2: Summary of CAT-ASVAB Time Limits

Subtest	Number of Scored Questions	Number of Possible Tryout Questions	Subtest Time Limit (in minutes) **Without** Tryout Questions	Subtest Time Limit (in minutes) **With** Tryout Questions
General Science (GS)	15	15	10	20
Arithmetic Reasoning (AR)	15	15	55	113
Word Knowledge (WK)	15	15	9	18
Paragraph Comprehension (PC)	10	15	27	75
Mathematics Knowledge (WK)	15	15	23	47
Electronics Information (EI)	15	15	10	21
Auto Information (AI)	10	15	7	18
Shop Information (SI)	10	15	6	17
Mechanical Comprehension (MC)	15	15	22	42
Assembling Objects (AO)	15	15	17	36

Examinees take 3 to 4 hours to complete the P&P-ASVAB, including administrative tasks and instructions. In P&P-ASVAB, each subtest has a fixed number of questions and time limit, and there are no tryout questions (refer to Table 3).

Table 3: Summary of P&P-ASVAB Time Limits

Subtest	Number of Questions	Time Limit (in minutes)
General Science (GS)	25	11
Arithmetic Reasoning (AR)	30	36
Word Knowledge (WK)	35	11
Paragraph Comprehension (PC)	15	13
Mathematics Knowledge (MK)	25	24
Electronics Information (EI)	20	9
Auto & Shop Information (AS)	25	11
Mechanical Comprehension	25	19
Assembling Objects (AO)	25	15
Total	**225**	**149**

More information on the nature and contents of the ASVAB can be found in the following sources:

- CAT-ASVAB Forms 1 & 2 (Technical Bulletin No. 1) [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_1.pdf]
- CAT-ASVAB Forms 3 & 4 (Technical Bulletin No. 2) [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_2.pdf]
- CAT-ASVAB Forms 5–9 (Technical Bulletin No. 3) [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_3.pdf]
- P&P-ASVAB Forms 23–27 (Technical Bulletin No. 4) [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_4.pdf]
- ASVAB Career Exploration Program Overview [available at https://prod-media.asvabprogram.com/CEP_PDF_Contents/ASVAB_CEP_Overview_2020.pdf]
- The ASVAB Career Exploration Program: Technical Summary [available at https://prod-media.asvabprogram.com/CEP_PDF_Contents/ASVAB_CEP_Technical_Chapter.pdf]

ASVAB Administration in the Enlistment Testing Program

Administration of the ASVAB is managed by USMEPCOM, whose personnel administer the ASVAB in the MEPS. Contract test administrators hired and managed by USMEPCOM generally handle test administration in MET sites.

There are several ASVAB administration options available to applicants:

- CAT-ASVAB with proctored administration at a MEPS or MET site (iCAT)
- CAT-ASVAB with unproctored administration at a site of the examinee's choosing (PiCAT), followed by proctored verification testing at a MEPS or MET site (VTest)
- P&P-ASVAB with proctored administration at a select few MET sites where internet connectivity is absent or highly unreliable

PiCAT differs from the proctored version in that it doesn't need to be taken at a MEPS or MET site, there are no time limits for the individual subtests, and no tryout items are administered. If an applicant's scores on PiCAT suggest they may be eligible for military service, they will be required to visit a MEPS or MET site to take a proctored VTest to confirm the legitimacy of their PiCAT scores. In the past, an applicant would have 30 days to take the VTest after completing the PiCAT. Due to Covid-19, this window has been extended to 45 days and will resume back to 30 days once deemed feasible to do so.

The VTest is much shorter than the PiCAT or ASVAB and generally takes 25 to 30 minutes to complete. Applicants are not provided a specific score on the VTest. Instead, it is simply used to validate the accuracy of an applicant's PiCAT scores. If an applicant's PiCAT scores are validated by the VTest, then those scores will become their official ASVAB scores of record. If an applicant's PiCAT scores are not validated by the VTest, the applicant will re-take the full-length ASVAB in a proctored setting, and those scores will become their official ASVAB scores of record.

As of FY 2019 (and prior to the COVID-19 pandemic), the ASVAB was administered annually to over 375,000 applicants for military service. Since the impact of the pandemic, annual counts have declined (approx. 325,000 annually). About 30% of applicants take PiCAT and later verify their ASVAB scores via VTest in a proctored setting, 56–58% of applicants take the CAT–ASVAB at one of 65 Military Entrance Processing Stations (MEPS), and 12–14% take the ASVAB at 178 Mobile Examining Team (MET) sites, which are temporary sites that are geographically dispersed throughout the regions served by the individual MEPS.

ASVAB retest policy requires a one-month wait between administration of the initial ASVAB and a retest. To retest on the ASVAB a second time, another one-month wait is required. For any additional retests, a six-month wait is required between retests. The retest policy is the same, regardless of whether the initial test is a student test or an enlistment test, but the retest policy for a student test is enforced only if the examinee attempts to enlist on the basis of the CEP ASVAB score. Examinees with large score gains on retesting (i.e., gain of 20 or more points on the Armed Forces Qualification Test [AFQT] in a 6-month period) are required to take a confirmation test to determine the validity of the apparent score gains. AFQT scores are addressed in the following section.

Two paper-and-pencil forms of the ASVAB, currently 27F and 27G, are used in enlistment testing at the few, remote MET sites. Four additional forms are being prepared for use on an as-needed basis in the event of test compromise or to support continuity of operations. Future form development efforts will focus on the CAT-ASVAB, in accordance with the goal to phase out P&P testing entirely.

Currently, a total of four CAT-ASVAB pools (also referred to as CAT-ASVAB *forms*) are used for all operational testing in the MEPS and MET sites. Almost all MET sites administer iCAT. Only a few sites are permitted to use P&P-ASVAB Forms 27F/G due to inadequate internet capacities (0.06% of sites in FY 2022).

The AFQT Predictor Test (APT) was developed in FY 2018 to help predict what an applicant's Armed Forces Qualification Test (AFQT) score would be when taking the ASVAB. AFQT scores are addressed in the following section. The APT is similar to the PiCAT in that it is also unproctored and may be taken in any location that has a computer and internet connectivity. However, it is much shorter than the PiCAT and does not contain all 10 ASVAB subtests. Instead, it contains only the four subtests that are used to compute an applicant's AFQT score: Arithmetic Reasoning, Math Knowledge, Word Knowledge, and Paragraph Comprehension. There are a total of 20 items on the APT, and it generally takes 15 minutes to complete. Like the CAT-ASVAB, the APT is an adaptive test, with items selected to match the ability level of the applicant. Despite its short length, the APT can be a useful tool. Specifically, it is very effective at predicting an applicant's full-length AFQT score, and thus their potential eligibility for military service.

ASVAB Use in the Enlistment Testing Program

The Armed Forces Qualification Test (AFQT), a composite of the ASVAB verbal and quantitative tests, is the primary measure used by all of the Services to determine general eligibility and also to monitor and report applicant and recruit "quality."

AFQT scores are reported on a percentile scale (relative to the youth aged 18–23 in 1997); norms are addressed later in this document. This scale is divided into five distinct aptitude categories (see Table 4). Category V examinees are excluded from service, but each of the Services generally sets a higher standard for enlistment eligibility. Quality is monitored by tracking the proportion of accessions (new recruits) who score at or above the 50th percentile (Categories I to IIIA) and are high school diploma graduates.

Table 4: AFQT Categories

	Percentile
AFQT Category I	93–99
AFQT Category II	65–92
AFQT Category IIIA	50–64
AFQT Category IIIB	31–49
AFQT Category IV	10–30
AFQT Category V	1–9

Each Service uses a distinct set of occupational composites to determine eligibility for specific occupational specialties. Table 5 lists examples of the current Service-specific occupational composites and their definition in terms of specific ASVAB tests. Each Service combines

subtest standard scores and then converts to its own metric (i.e., percentiles, standard scores). The Services review and update their occupational composites and minimum line scores as needed.

More information on the use of ASVAB and applicable scores for the purpose of enlistment can be found in the following sources:

- Department of Defense Instruction 1145.01, "Qualitative Distribution of Military Manpower," December 12, 2013—incorporating Change 2, of May 4, 2020
- Department of Defense Instruction 1304.12, "DoD Military Personnel Accession Testing Programs," September 20, 2005
- Department of Defense Instruction 1304.26, "Qualification Standards for Enlistment, Appointment, and Induction," March 23, 2015—incorporating Change 3, of October 26, 2018
- Validity Argument 1.0 for the Armed Forces Qualification Test (AFQT) CAT-ASVAB Forms 1 & 2 (Technical Bulletin No. 1) [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_1.pdf]
- CAT-ASVAB Forms 3 & 4 (Technical Bulletin No. 2) [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_2.pdf]
- CAT-ASVAB Forms 5–9 (Technical Bulletin No. 3) [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_3.pdf]
- P&P-ASVAB Forms 23–27 (Technical Bulletin No. 4) [available at [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_4.pdf]
- Population Representation in the Military Services: Fiscal Year 2019 [available at https://www.cna.org/pop-rep/2019/index.html]

Table 5: Examples of Current Service-Specific Occupational Composites

	Career Fields	Composites
All Services	AFQT*	2 VE + AR + MK
Air Force/Space Force[2]*	Mechanical	AR + 2VE + MC + AS
	Administrative	VE + MK
	General Aptitude	VE + AR
	Electronics	AR + MK + EI + GS
Army[3]†	General Technical	VE + AR
Navy[4]‡	Admin	VE + AR
Marine Corps†	Mechanical	AR + EI + MC + AS
	Clerical	VE + MK
	General Technician	VE + AR + MC
	Electrical	AR + MK + EI + GS

*Percentile Scores
†Standard Scores (Mean = 100; SD = 20)
‡Sum of Subtest Standard Scores

ASVAB Administration in the Career Exploration Program

ASVAB testing, as part of the ASVAB Career Exploration Program (CEP), is offered free to high schools and post-secondary schools. The CAT-ASVAB (iCAT) and P&P-ASVAB are administered in the CEP by trained testing personnel and school personnel including teachers and school counselors who have signed an education service agreement with USMEPCOM. Coordination with the schools is handled by Educational Service Specialists (ESSs) assigned to each MEPS.

Over 700,000 students in nearly 13,000 schools typically participate in this program each year. ASVAB scores from this program may be used by students to qualify for enlistment for up to two years after testing. Approximately 15–20% of DoD accessions have taken the CEP ASVAB at some point in high school.[5]

In School Year 2022 (July 2021 through June 2022), of the students who participated in the ASVAB CEP, approximately 18% participated in CEP P&P-ASVAB administrations, and 82% participated in CEP iCAT administrations. This is in stark contrast to the historical 10% participating in CEP iCAT and 90% participating in CEP P&P-ASVAB.

Four different P&P-ASVAB forms, Forms 23F and 23G, and 24F and 24G, together with CEP iCAT Forms 03E and 10E, are currently used in the CEP.

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[2] In addition to those shown in the table, Air Force and Space Force are in the process of developing hybrid ASVAB/Tailored Adaptive Personality Assessment System (TAPAS) composites.

[3] In addition to General Technical, the Army has nine composites that are fractionally weighed sums of standardized subtest scores. All possible composites are available on request.

[4] Navy uses an alternative composites structure that allows applicants to qualify for a rating using more than one composite. All possible composites are available on request.

[5] Estimates are based on the program scope in pre-COVID years.

ASVAB Use in the Career Exploration Program

The purposes of the ASVAB in the Career Exploration Program or are to (a) provide students with career exploration and skill development information—the program helps students assess their capabilities relative to post-secondary educational opportunities and civilian and military careers, and (b) provide recruiters with access to schools and leads to students who are aptitude-qualified for enlistment.

After administration of the ASVAB, students are provided with grade-specific standard scores and percentile scores for the ASVAB subtests and three Career Exploration Composites: measures of Verbal Skills, Math Skills, and Science and Technical Skills. Student scores on these three ASVAB composites can be viewed as snapshots of their current knowledge, skills, and abilities (KSAs) in the verbal, math, and science/technical domains. These KSAs, in turn, can be linked to the KSAs required for successful performance of tasks in different occupations. Students should consider their Career Exploration scores when reviewing the Skill Importance Ratings in the OCCU-Find (a career database designed for high school students that contains detailed information on over 1,000 occupations). The Skill Importance Ratings were generated by analysts who reviewed the job descriptions of each of the OCCU-Find occupations. The analysts used the job descriptions to assess the importance of Verbal Skills (reading, writing, oral communication), Math Skills (computation, data analysis, pattern recognition), and Science/Technical Skills (experimental research, technology, equipment use and maintenance) for each occupation.

The CEP includes an interest inventory, called the Find Your Interests (FYI). The FYI was developed by DTAC and is based on Holland's theory of vocational preference. Students can take the FYI electronically or via paper and pencil. The paper version is self-administered and self-scored and is included in a workbook designed to help students understand their ASVAB results. The workbook includes the OCCU-Find that links individual FYI results to appropriate occupations for further exploration. The electronic version of the FYI can be taken online at the ASVAB Career Exploration Program web site, www.asvabprogram.com. The CEP also includes supporting materials for use by counselors and parents.

More information about the ASVAB Career Exploration Program can be found in the following documents on the CEP website:

- ASVAB Career Exploration Program Overview [available at https://prod-media.asvabprogram.com/CEP_PDF_Contents/ASVAB_CEP_Overview_2020.pdf]
- The ASVAB Career Exploration Program Counselor Guide [available at https://prod-media.asvabprogram.com/CEP_PDF_Contents/ASVAB_CEP_Counselor_Manual.pdf]
- Exploring Careers: The ASVAB Career Exploration Guide [available at https://prod-media.asvabprogram.com/CEP_PDF_Contents/ASVAB_CEP_GUIDE_2016_online.pdf]
- The ASVAB Career Exploration Program: Technical Summary [available at https://prod-media.asvabprogram.com/CEP_PDF_Contents/ASVAB_CEP_Technical_Chapter.pdf]

ASVAB Administration in the In-Service Testing Program

In the In-Service Testing Program, retired forms of the ASVAB are repurposed as tests called the Armed Forces Classification Test (AFCT) and are administered to enlisted personnel who are currently in one of the Military Services. Within each Service, test administration is provided by test control officers or education and training personnel.

Most people take the web-version of the AFCT. However, two P&P forms of the AFCT are also available for Service use, Forms A and B—for those who don't have access to the internet to take the web-version. The in-Service retesting policy for the AFCT is generally 6 months between tests.[6] Waivers and exceptions to policy are available based on Service-specific guidance.

ASVAB Use in the In-Service Testing Program

Approximately 14,000 military personnel take the AFCT every year through the In-Service Testing Program. AFCT scores are used to make personnel decisions on reclassification and retraining. In addition, some of the Services use the AFQT score from the AFCT as a prescreen for officer qualification. Reclassification and retraining decisions are based on the same standards as the occupational standards for enlistment.

ASVAB Item Development

There is an ongoing need for continual new item and form development. This process ensures ASVAB (ETP, CEP) and AFCT test content is relevant and aligned to evolving academic subject matter and techniques. This section describes the content development, item seeding, calibration and parameter rescaling, and psychometric review processes for CAT-ASVAB.

Content Development

DTAC employs contractors to write and edit item content, while government staff, considered item development experts, serve as final content editors and reviewers. Government staff provide contractors with subtest taxonomies for item writers to develop test items against and a set of ASVAB bias and sensitivity guidelines to adhere to. In order to mirror P&P-ASVAB forms, the development of each taxonomy/sub-taxonomy is weighted to match. For example, if 10% of the anchor P&P-ASVAB form contained items about reciprocals in the Mathematics Knowledge subtest, 10% of the newly developed items will focus on reciprocals.

Item writers develop ASVAB items either through manual or semi-automatic processes. In either case, items are developed per ASVAB specifications and are edited by contractor staff before being delivered to DTAC. Once delivered to DTAC, the items are once again reviewed and edited by DTAC staff to ensure the items meet ASVAB criteria in the areas of style, format, content accuracy, and bias/sensitivity. For various reasons, a new item may be returned to the contractor to be reworked or replaced at the discretion of DTAC staff. Once approved by DTAC, the contractor schedules and conducts a content review of the items by subject matter experts (SMEs).

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[6] The Navy allows sailors to retest on the AFCT after 30 days, after completion of an academic improvement program.

Once all contracted items have been approved by DTAC and SME content review has been completed, government staff prepare the items for seeding onto the operational CAT-ASVAB administration platform.

Item Seeding

DTAC has taken a number of steps to investigate methods that could expedite the process by which items are developed and tried out, as well as to increase the proportion of items developed that successfully meet statistical criteria and become part of the operational instrument. The goal is to introduce new CAT-ASVAB item pools every two years. The current practice is to seed 800 Word Knowledge items, 400 General Science, Mathematics Knowledge, Paragraph Comprehension, and Arithmetic Reasoning items, and 200 Mechanical Knowledge, Auto and Shop Information, Electrical Information, and Assembling Objects items into test administrations. These numbers will be adjusted following the tryout of items already in queue. Note that 5,000 Assembling Objects items have already been developed via automated item generation techniques, and ongoing item development for such items has ceased. These new items are still being seeded onto ASVAB administrations. More information about ASVAB automatic item generation research can be found later in this document.

The seeding design consists of randomly administering tryout questions across 2–4 subtests for each examinee, with 15 tryout questions administered per subtest. Seeded items are not administered in PiCAT, VTest, or APT, nor in P&P-ASVAB.

Calibration and Parameter Rescaling

Following completion of item tryouts, a concurrent calibration across the seed-item set is conducted using Bilog-MG. Simulation studies of this process identified a need for at least 1,000 examinees per seed item for optimal parameter recovery. To place items on the same scale as the operational items, parameter rescaling is necessary. The means and standard deviations are computed from the latent distributions for the group on the operational items and the seed items using a maximum likelihood procedure in order to obtain the slope and intercept transformation constants to carry out the rescaling.

Psychometric Review

Following the seeding designs in place for the new content, tryout items are further reviewed for psychometric and differential item functioning performance. Items are checked for appropriate difficulty and discrimination level and for differential item functioning (DIF) within groups that have sufficient item-level sample sizes, namely, females, Non-Hispanic Blacks, and Hispanic Whites.

Items may get flagged for a variety of reasons, including for:

- Failing desirable criteria on multiple fit measures (e.g., Bilog-MG χ^2, Q1 statistic, regression of parameters on classical statistics, comparison of expected and observed ICCs, etc.)
- Low information
- Guessing parameter at upper bound
- A negative or low positive biserial correlation for the keyed response
- A very low percentage of correct responses or an overly attractive distractor

- A DIF flag of considerable concern (e.g., Category C using the ETS system of categorizing the severity of DIF) in any subgroup comparison

Statistics and/or content for questionable items are reviewed by a team of psychometricians and/or content editors prior to making decisions regarding inclusion in the ASVAB Item Bank. Additionally, items are tagged with enemy groupings to control for possible local dependence and redundant content.

ASVAB Form Development

New forms (or pools) are assembled from available items in the ASVAB Item Bank. Statistical controls on difficulty, discrimination, and DIF are used to ensure roughly parallel CAT-ASVAB and P&P-ASVAB forms. New forms are also reviewed for item overlap, clueing, and sensitivity. Form development is briefly described for both CAT-ASVAB and P&P-ASVAB below. It should be noted that future form development efforts will focus on the CAT-ASVAB, in accordance with the goal to phase out P&P testing, as appropriate.

CAT-ASVAB

Item information is computed for each retained seed item. The item information functions are then weighted across theta using a normal distribution. All items that are not contained in an enemy group are sorted by their weighted information value, and the items with the highest weighted information values are randomly distributed across the forms. The items with the next highest weighted information values are then randomly distributed across the forms. This process is followed until all items are distributed onto the forms. The number of items compared in each iteration is equal to the number of forms to be developed. This similar process is followed within each enemy group.

Form precision is evaluated using score information functions that are computed based on the simulated responses of 2,000 examinees at each of 31 equally spaced points between -3.0 and +3.0 (Segall, Moreno, & Hetter, 1997). Item responses are simulated using CAT-ASVAB item selection and scoring algorithms. Ideally, form precision is approximately equivalent between forms.

P&P-ASVAB

Automated Test Assembly (ATA; van der Linden, 2005; Diao & van der Linden, 2011) methods with a custom implementation in SAS using PROC OPTMODEL are used for the development of P&P-ASVAB test forms. This custom implementation minimizes an objective function with an equally weighted sum of the distance between the test information functions (TIFs) and test characteristic curves (TCCs) of the forms. Constraints applied include the number of items per form, a content blueprint, item key, and item enemy targets to develop new P&P forms that are both parallel to each other and parallel to the forms they are intended to replace. True parallelism is an impossible-to-achieve abstraction; however, it is possible to achieve effective or practical equivalence by optimizing several tightly specified psychometric and content characteristics of the forms. Differences in reliability between target and candidate new forms are evaluated in practical terms by identifying the additional number of items needed to achieve equivalent reliability between the forms.

For more information, see:

- CAT-ASVAB Forms 1 & 2 (Technical Bulletin No. 1) [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_1.pdf]
- CAT-ASVAB Forms 3 & 4 (Technical Bulletin No. 2) [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_2.pdf]
- CAT-ASVAB Forms 5–9 (Technical Bulletin No. 3) [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_3.pdf]
- Seeding and Form Replacement Strategy—Briefing provided to the DAC January 7–8, 2016

ASVAB Form Equating

Although the calibration and scaling procedures were designed to ensure that theta scores based on CAT-ASVAB new forms are on the same scale as the CAT-ASVAB reference form, theta scores based on the new pools are equated to theta scores based on the reference pool as an extra precaution. Equating ensures that reported scores can be treated interchangeably across the different CAT-ASVAB pools, namely, as if they had come from the same CAT pool and had the same meaning regardless of which pool was actually used during administration. Linear equating methods were used to derive constants to transform theta scores from the new pools to the scale of the reference pool. The linear equating procedures ensure that theta scores have the same mean and variance across the reference pool and the new pools. Unique transformations are estimated for each ASVAB test for each new pool.

Data collection for the equating is conducted in three phases of operational administration of new forms to military applicants. The equating is conducted in phases to maximize the accuracy of the reported operational scores (i.e., equated new form scores). Sample sizes increase with each phase. In the first phase of the data collection, provisional score transformations are provided based on the IRT invariance assumption that theta scores are on the same scale across the different pools. In the second and third phases of the data collection, the reported operational scores are based on provisional score transformations computed from an equating conducted in the previous phase. Upon completion of the data collection, final equating transformations are developed and applied to all subsequent examinees.

For more information, see:

- CAT-ASVAB Forms 5–9 (Technical Bulletin No. 3) [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_3.pdf]

ASVAB Validity, Reliability, and Adverse Impact Information

Information about the psychometric characteristics of the ASVAB subtests is presented in a number of sources. The validity of ASVAB scores for selection and classification also has been extensively studied, and two validity arguments have been developed to support both the selection (AFQT) and classification (ASVAB) uses, respectively. Within these documents, evidence sources supporting the validity, reliability, and adverse impact are summarized. The composites used in making selection and classification decisions have been found to be highly valid predictors of success in training and performance on the job. ASVAB scores have also

been found to be significantly correlated with performance in civilian jobs and with grades in specific high school courses.

The DoD has conducted research into the sensitivity and fairness of the ASVAB for various minority groups. A study on the fairness of classification composites used to qualify recruits for entry-level training in various military technical specialties indicated that the current technical composites are sensitive and fair for females, Non-Hispanic Blacks, and Hispanic Whites, but the use of these technical composites does have some adverse impact on these three groups. The DoD added a spatial subtest to help reduce adverse impact minimizing loss of validity. The Navy has incorporated this subtest into two of its classification composites. However, additional research continues to further explore and reduce adverse impact, including differential prediction studies and the development of a non-verbal complex reasoning subtest.

Extensive information on ASVAB reliability, validity, and adverse impact may be found in:

- Validity Argument 1.0 for the Armed Forces Qualification Test (AFQT)
- Validity Argument 1.0 for the ASVAB
- The ASVAB Career Exploration Program: Technical Summary [available at https://prod-media.asvabprogram.com/CEP_PDF_Contents/ASVAB_CEP_Technical_Chapter.pdf]

A Note about the ASVAB Platform & Special Purpose Tests

The ASVAB platform is the test delivery system developed, used, and maintained by DTAC to deliver online assessments, including the ASVAB and special purpose tests given at the request of the Services to determine qualification of applicants for specific occupational specialties or special enlistment programs. ASVAB and special tests are administered jointly on the ASVAB platform and share a common look.

Special tests are used in addition to ASVAB scores for classification purposes. Currently, special tests administered on the ASVAB platform include the Tailored Adaptive Personality Assessment System (TAPAS), Cyber Test, and Coding Speed. Other special tests in the near future may include Mental Counters, a test of working memory, and Complex Reasoning. Special tests could be administered for operational use or could be administered as field studies.

A key distinction between the ASVAB and special tests is who is responsible for the development and maintenance of the test content and psychometric properties. DTAC maintains the responsibility for the ASVAB, while Service proponents maintain the responsibility for special tests. As appropriate, DTAC does provide expertise to the Service test development processes. Additional information on each of the special purpose tests will be provided by the Services during the DACMPT sessions.

Current ASVAB and Military Personnel Testing Program Research

Next Generation Testing

In the early 1990s, the joint Services reviewed Service-specific and joint-Service research on new test content. The primary sources of new test content grew out of Project A, an Army effort to explore new tests, and the Enhanced Computer Administered Testing (ECAT) validity study, a joint-Service effort that included aptitude measures developed by each of the Services. The evaluation of the tests showed that spatial tests (most notably the Assembling Objects subtest) provide gains in incremental validity, on average, over other ASVAB subtests. Psychomotor tests improved the validity of the ASVAB, but only for a small number of jobs; they also required the use of specialized equipment. For the most part, the criterion was training school performance, as job performance data were limited in availability. After reviewing the results of this evaluation, the DoD decided to add Assembling Objects to the ASVAB. Currently, the subtest is used operationally by the Navy, and implementation by other Services is pending validity analyses that will determine how it could be incorporated into their Service-specific classification composites.

The evaluation of ASVAB content, such as the ones performed in Project A, is ongoing. An ASVAB Review Panel formed and advised changes to the composition of the ASVAB in 2005. The Services and DTAC initiated (and continued) efforts in response to those recommendations. DTAC has recently launched an extensive evaluation of the ASVAB subtests and is also conducting wide-reaching focus group efforts, with the ultimate goal of a consolidated recommendation for the design and blueprint for Next Generation testing that meets the needs of its various stakeholders.

For example, one aspect of validity was addressed by examining the relationship of specific content areas tested with ASVAB subtests to training course prerequisites. A survey instrument asked respondents to first specify the entry-level technical training course they develop or instruct, then rate the relevance of each technical content area to its curriculum. Respondents judged whether a content area was relevant or not to the technical training curriculum, and, if relevant, then the degree to which it relates to trainee success in the course. This work was an expanded replication of a 1997 study (Oppler, Felker, and Rossmeissl, DMDC TR 97-021) and relevance findings between the two were consistent.

Review of ASVAB Norms

The DoD initiated an effort in 1995 to develop new norms on the ASVAB for both the enlisted and student populations and create norms for the first time on the Interest-Finder (the predecessor to the FYI). The norming study, called the Profile of American Youth 1997 (PAY97), was conducted in cooperation with the Department of Labor that conducted a new National Longitudinal Survey of Youth (NLSY97). Three nationally representative samples were drawn for the joint effort: two samples to create norms for the Enlistment Testing Program and the Student Testing Program (now known as the Career Exploration Program), and the other sample for the NLSY97. All sample participants were administered the CAT-ASVAB that contained the new subtest, Assembling Objects, and a computerized version of the Interest-Finder. The norming data collection was completed in November 1998. The PAY97 norms were implemented on July 1, 2004.

Since the implementation of the PAY97 norms in 2004, the need to re-norm the ASVAB has been regularly evaluated. To date, evidence has cumulated that the 1997 norms are still sufficient. Regardless, DTAC is currently pursuing several efforts to evaluate the current norms and prepare for possible future re-norming efforts.

Evaluation of Alternative Testing Media

Expanding the ASVAB program for administration on a variety of devices, including laptops, tablets, and smartphones, was explored in a 2019 data collection and analysis evaluation effort. Military applicants and active service members took two forms of the same modified ASVAB test on two randomly assigned devices. Mixed linear effects modeling and Bayesian-based analyses were used to detect test-level differences for both test scores and response times. Findings suggest that ASVAB subtest scores among applicants should be comparable regardless of the device used to take the tests so long as the examinee uses a device that is familiar to them and the test delivery application is designed to be responsive to a variety of device types. This additional flexibility for ASVAB delivery is critical as testing organizations investigate the possibility of remote proctoring to mitigate safety concerns related to the viral spread of COVID-19 and as the ASVAB strives to be more accessible to less populated geographical locations where testing centers are far away.

Current follow-up efforts include the development of a platform maintenance plan to continually explore the possible impact of various device types on ASVAB performance, support for future new devices, and making improvements to the delivery interface to support responsive design features.

Future efforts will also include the formation of a panel to support operational implementation of the device expansion effort, including the launch of a post-test questionnaire that addresses potential issues examinees faced interacting with the test administration platform.

Psychometric Modernization and Enhancements

Research is currently underway to investigate whether there are more modern psychometric methods that the ASVAB programs could substantially benefit from adapting. These lines of research include 1) reviewing the CAT-ASVAB item selection and scoring algorithms and comparing them to alternatives, 2) comparing item calibration software performance against the current BILOG-MG implementation, 3) evaluating the feasibility of using Bayesian approaches to item calibration to reduce calibration sample sizes, 4) piloting automatically generated item content for Word Knowledge, Assembling Objects, Mathematics Knowledge, Arithmetic Reasoning, and General Science subtests, 5) designing a high school curriculum alignment study, 6) exploring the development of a computational thinking composite, and 7) exploring the use of social media-based performance prediction algorithms and recruitment efforts. A brief description of each is provided here.

- **CAT-ASVAB item selection and scoring algorithms**—This study involved investigating promising new CAT algorithms for comparison to the existing algorithms. Both the existing and new algorithms behaved well with no detectable differences in score information between any of them.
- **ASVAB calibration software comparison**—This study evaluated and compared the performance of different calibration methods for creating item pools for the ASVAB

under the current seeding and calibration design. The aim was to identify a calibration method that best represents the examinee response data and maintains a stable scale over time with the continuous development and replacement of CAT pools from tryout items. While findings show that a Bayesian-based approach to calibration using the Stan package had better parameter recovery compared to other software, the differences did not translate into meaningful theta recovery or score information differences, supporting the current use of Bilog-MG.

- **Bayesian calibration approaches for reducing sample size needs**—This study will explore the efficacy of using Bayesian-based item calibration methods to streamline ASVAB form development efforts by reducing calibration sample size requirements. Methods such as Stan and/or other promising and practical approaches from the ASVAB calibration software evaluation that could be readily implemented operationally shall be investigated and compared alongside the existing ASVAB operational calibration protocols.

- **Automatically generated item content**—Several projects have focused on efforts to develop Automatic Item Generation (AIG) tools for some ASVAB subtests: Word Knowledge, Assembling Objects, Mathematics Knowledge, Arithmetic Reasoning, and General Science. These tools are currently being evaluated for ease of operational use and quality of items produced. Likewise, a sample of items generated using these tools are being piloted on operational ASVAB test forms. The utility of these tools varies across subtests.

- **High school curriculum alignment**—This study will determine how ASVAB subtests align with what is taught in high schools, explore how (i.e., pedagogy) ASVAB content is taught (e.g., with or without calculators for Mathematics), and map ASVAB content to other relevant tests. The design will include a review of previous high school curriculum and high school assessment alignment studies with ASVAB test content, a review of previous mappings between ASVAB and other tests, and a review of any available National Assessment of Educational Progress (NAEP) transcript studies for comparative and design development purposes. The design will also include a survey of military recruiters, focusing on obtaining course-taking patterns of applicants and how they differ from the general high school population.

- **Computational thinking composite**—This study will consist of a construct analysis for computational thinking and will include defining a computational thinking construct; identifying a marker instrument with which to assesses computational thinking; evaluating the alignment of Complex Reasoning, Cyber Test, and ASVAB subdomain content against computational thinking constructs of interest; conducting a data collection to obtain necessary scores; comparing Complex Reasoning, Cyber Test, and ASVAB items/scores (as well as composite combinations) against computational thinking items/scores in a construct analysis; and analyzing the feasibility of combining Complex Reasoning, Cyber Test, and/or ASVAB scores to produce a computational thinking composite.

- **Social media-based performance prediction algorithms and recruitment efforts**—This line of research is in its infancy and has included the gathering of expert input to advise on psychometric, legal, and ethical considerations regarding the development and implementation of an automated (i.e., artificial intelligence) tool that leverages social media to prioritize recruiting leads, find additional recruiting leads, and potentially assist the military enlistment selection process. Additional work has included the development of a research plan that is currently being implemented. Progress has included the development of custom language dictionaries for TAPAS and ASVAB subtests using

natural language processing methods. Next steps include using unidentified civilian data to examine whether there is enough signal in social media content to make meaningful interpretations regarding content related to TAPAS and ASVAB constructs; and collect consent from service members to evaluate their social media data in relation to their existing ASVAB and TAPAS scores.

Incorporation of Non-Cognitive Assessments into the Accession Process

Research will begin soon, addressing the use of non-cognitive assessment methodologies for determining military eligibility, aiding with the selection and classification of the enlisted forces, and potentially adding value for assessing compatibility with military core values. Two efforts are being pursued: one focused on the development of a joint-Service Tailored Adaptive Personality Assessment System (TAPAS), and the second focused on implementing recommendations provided by the Independent Review Commission (IRC) on Sexual Assault in the Military.

Joint-Service TAPAS

TAPAS has more than 10 years of history assessing the non-cognitive attributes of enlisted applicants. The Army initially funded the development of TAPAS, an adaptive measure based on an innovative application of item response theory. TAPAS measures up to 27 facets of personality, as well as military-specific traits. TAPAS uses a forced-choice item format where the examinees must choose which of two competing statements is most like them. Statements are matched in terms of intensity and social desirability, to minimize faking.

Various Military Services have been engaged in research and evaluations of various versions of TAPAS for a number of years. Currently, the Services use the different versions of TAPAS for targeted research and operational purposes (e.g. enlistment, classification, suitability). Versions utilized across the Services administer different facets and yield different composite scores. The Army, Air Force, and Marine Corps have supported the collection and analysis of TAPAS data to investigate its incremental validity over the ASVAB in predicting important outcomes (attrition, retention, performance in technical training). The Navy is preparing to initiate data collection in FY 2023.

In 2018, an evaluation project was initiated to examine TAPAS and yielded a report with conclusions about TAPAS's readiness for operational use and recommendations for additional research. Among the recommendations was that operational testing be standardized, the number of latent constructs be reduced to those that are essential to mission, and documentation of the measure be systematized and centralized. In support of the resulting recommendations, a theory of action and validity framework for a joint-Service version of TAPAS was developed, including interpretive and validity arguments. Future planned studies will further the effort in moving the DoD toward a joint, standardized use of TAPAS.

One such study will examine existing Army, Air Force, and Marine Corps data to analyze the impact of TAPAS on its ability to expand the eligible market for enlistment, while maintaining applicant quality and predictive validity. As part of this effort, analyses will examine the impact of TAPAS on diversity of the enlisted market and impact on Service attrition, technical training performance, and classification capacity.

Another study will use existing data to create a joint-Service enlistment composite, to work in combination with the Armed Forces Qualification Test (AFQT). To be applied immediately, the composite would have to be restricted to some combination of the facets currently in common between forms. Such a composite is not likely to be optimal, so it would best be viewed as an interim solution. Recommendations for additional factors to strengthen the composite will also be a result of this study.

These efforts will help inform the best model for pursuing the joint version of TAPAS. The goal is to determine the best approach moving forward (e.g., separate versions with a joint-Service composite, one version with all the same facets, or one version with multiple parts—core and Service specific).

Independent Review Commission on Sexual Assault in the Military

The Secretary of Defense (SecDef) has directed to implement, as modified and approved by the SecDef, the recommendations of the Independent Review Commission (IRC), concerning the implementation of pre-accession personality assessments for research purposes. The objective is to conduct research to assess the feasibility of using a pre-accession assessment instrument to "minimize entrance of persons who are likely to become disciplinary cases, security risks, or who are likely to disrupt good order, morale, and discipline." As a precursor to the IRC recommendation, a Military Compatibility Research Group (MCRG) was formed with an objective to ensure the men and women selected to serve as members of the military possess traits supportive of, and positively aligned with, military core values. The MCRG conducted analyses evaluating the DoD officer and enlisted accession processes, best practices used by other Federal and non-Federal Agencies, and feasibility and alternatives for using standardized testing to assess military compatibility.

Based on the work of the MCRG, TAPAS has been identified as the assessment instrument to be used in operational testing for research purposes to fulfill the IRC recommendation. Initial design will concentrate on the enlisted population. Results from the enlisted sample will help inform further research on expansion to the officer population. Additionally, research to maximize the effectiveness and efficacy of the non-cognitive assessments, with specific concentration on the forced-choice design, is being pursued. Details will be discussed during the DACMPT sessions.

Communiques for Stakeholders

DTAC, the organization responsible for ASVAB R&D, acknowledges the need to be in constant communication with all the applicable stakeholders and address any questions regarding the testing program and platform considerations. Technical documentation on the testing program is included on the official ASVAB website (www.official-asvab.com). Communiques summarizing reports, findings, misconceptions, and future directions for the ASVAB are also developed on an as-needed basis in order to respond to time-sensitive questions. These may be in the form of video presentations and written informational papers.

For more information, see:

- Appropriate Use of Armed Services Vocational Aptitude Battery (ASVAB) Scores
- The Use of Calculators on the ASVAB

- Why There Is No Spanish Version of the ASVAB
- ASVAB Calculator Policy Video [available at https://www.officialasvab.com/applicants/faqs/]

Other Enlistment Screens

In addition to the ASVAB, the educational credential is the other criterion used to assess the quality of enlistment applicants and has proven to be one of the best predictors of first-term attrition. Educational credentials are categorized into three tiers: 1) Tier I includes high school graduates or equivalent (e.g., home schooled)—the DoD benchmark is to have at least 90% of military recruits fall into Tier I; 2) Tier II is composed of alternative types of education credential holders (e.g., GED diplomas); 3) Tier III includes non-graduates.

Other eligibility standards for both enlisted and officers include age, citizenship, physical fitness standards, medical standards, dependency status, drug and alcohol abuse, and character/conduct standards. Exceptions or waivers can be granted by the individual Services for applicable requirements on a case-by-case basis.

Appendix A: History of Major ASVAB Milestones for DTAC R&D Efforts

1992   Implemented new Career Exploration Program

1993   Implemented operational P&P-ASVAB forms 20, 21, and 22

1995   Implemented Interest-Finder in the Career Exploration Program

1997   Implemented CAT-ASVAB in all MEPS

2002   Implemented new P&P-ASVAB Forms 23, 24, 25, and 26 along with IRT scoring

2003   Implemented revised Career Exploration Program

2004   Implemented new ASVAB norms and score scale in the Enlistment and Student Testing Programs

2005   New forms available for the AFCT; implemented Find Your Interests (FYI) interest inventory in the Career Exploration Program

2006   Report on the Technical Review of the ASVAB delivered

2007   Implemented Official ASVAB website

2008   Implemented the Defense Language Aptitude Battery (DLAB) on ASVAB platform; implemented new CAT-ASVAB forms; implemented iCAT at MET sites

2009   Implemented TAPAS on ASVAB platform; implemented web-based AFCT

2010   Implemented Cyber Test on ASVAB platform

2013   Implemented Mental Counters on ASVAB platform

2015   Implemented PiCAT and VTest nationwide

2018   Implemented APT

2019   Implemented new Post-Test Interpretation (PTI) training program and tools for CEP; implemented web-based Cyber Test; TAPAS Review Panel report delivered

2020   Implemented new CEP iCAT test form; launched modernized official ASVAB website; implemented web-based Coding Speed

2021   iCAT test delivery system moved to cloud platform

2022   Initiated equating study for new CAT-ASVAB forms (Forms 11–15)

Appendix B: Acronyms

AFCT	Armed Forces Classification Test
AFQT	Armed Forces Qualification Test
AI	Automotive Information
AIG	Automated Item Generation
AO	Assembling Objects
AP	Accession Policy
APT	AFQT Predictor Test
AR	Arithmetic Reasoning
ARI	Army Research Institute for the Behavioral and Social Sciences
AS	Auto & Shop Information
ASD	Assistant Secretary of Defense
ASVAB	Armed Services Vocational Aptitude Battery
ATA	Automated Test Assembly
CAT-ASVAB	Computerized Adaptive Testing version of the Armed Services Vocational Aptitude Battery
CEP	Career Exploration Program
CNA	Center for Naval Analyses
CS	Coding Speed
DACMPT	Defense Advisory Committee on Military Personnel Testing
DASD	Deputy Assistant Secretary of Defense
DIF	Differential Item Functioning
DLAB	Defense Language Aptitude Battery
DMDC	Defense Manpower Data Center
DoD	Department of Defense
DPAC	Defense Personnel Analytics Center
DTAC	Defense Testing and Assessment Center
ECAT	Enhanced Computer Administered Test
EI	Electronics Information
ETP	Enlistment Testing Program
ESS	Educational Service Specialist
FY	Fiscal Year
FYI	Find Your Interests
GC	General Counsel
GED	General Education Development
GS	General Science
iCAT	Internet-based CAT-ASVAB
ICC	Item Characteristic Curve
IRC	Independent Review Commission on Sexual Assault in the Military
KSA	Knowledge, Skills, Abilities
M&RA	Manpower and Reserve Affairs
MAPWG	Manpower Accession Policy Working Group
MC	Mechanical Comprehension
MCRG	Military Compatibility Research Group
MEPS	Military Entrance Processing Stations
MET	Military Entrance Testing site
MK	Mathematical Knowledge

MOS	Military Occupational Specialty
MPP	Military Personnel Policy
NAEP	National Assessment of Educational Progress
NLSY	National Longitudinal Survey of Youth
NRL	Naval Research Lab
OCCU-Find	Occupational Finder
ODI	Office of Diversity and Inclusion
OPA	Office of People Analytics
OPCAL	Operational Calibration
OPM	Office of Personnel Management
OSD	Office of the Secretary of Defense
OT&E	Operational Test and Evaluation
OUSD	Office of the Under Secretary of Defense
PAY97	Profile of American Youth, 1997
P&P	Paper-and-pencil
P&R	Personnel and Readiness
PC	Paragraph Comprehension
PiCAT	Pending Internet Computerized Adaptive Test
PTI	Post Test Interpretation
R&D	Research and Development
SecDef	Secretary of Defense
SI	Shop Information
SME	Subject Matter Expert
SY	School Year
TAPAS	Tailored Adaptive Personality Assessment System
TCC	Test Characteristic Curve
TIF	Test Information Function
USMEPCOM	United States Military Entrance Processing Command
VTest	Verification Test for PiCAT
VE	Verbal composite score
WK	Word Knowledge

Appendix C: General Resources[7]

Adaptability Screening for the Armed Forces—describes the evolution of educational standards for military selection, reviews the civilian and military literature that covers the use of biodata for preemployment screening, and summarizes the research and development of biodata instruments for use in military enlistment

Computerized Adaptive Testing: From Inquiry to Operation—traces the development of computerized adaptive testing from its origins in the 1960s to its integration with the ASVAB in the 1990s

Manpower for Military Occupations—provides historical information on the military occupational assignment system

Military Aptitude Testing: The Past Fifty Years—documents the history of the military testing program; contains historical information on the content and use of the ASVAB and other joint-Service test batteries

Population Representation in the Military Services: Fiscal Year 2019—describes the social representation in the US. Military annually [available at https://www.cna.org/pop-rep/2019/index.html]

Screening for Service: Aptitude and Educational Criteria for Military Entry—contains information on historical aspects of aptitude screening for military enlistment

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[7] Available upon request

Appendix D: Documents, Reports, and Briefings[8]

ASVAB

CAT-ASVAB Forms 1 & 2 (Technical Bulletin No. 1)—contains the technical and psychometric details for the construction of CAT-ASVAB Forms 1 & 2, administration, hardware and software requirements, and various research studies supporting development and administration [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_1.pdf]

CAT-ASVAB Forms 3 & 4 (Technical Bulletin No. 2)—describes the process of developing CAT-ASVAB Forms 3 & 4, along with supporting research studies [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_2.pdf]

CAT-ASVAB Forms 5–9 (Technical Bulletin No. 3)—describes the process of developing CAT-ASVAB Forms 5–9, along with supporting research studies [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_3.pdf]

Development and Evaluation of the 1997 ASVAB Score Scale—provides details of the score-scale development based on the PAY97 data collection study; also provides an evaluation of the potential effects of the new scale on qualification rates of military applicants (and particular subgroups of applicants); closing section provides a discussion of several implementation options affecting the numbers of qualified applicants and the quality of Military accessions [available at https://www.officialasvab.com/wp-content/uploads/2019/08/1997score_scale.pdf]

P&P-ASVAB Forms 23–27 (Technical Bulletin No. 4)—describes how P&P-ASVAB forms 23–26 were developed and outlines the supporting research studies; also describes characteristics of Form 27, a retired operational form that was reordered, renamed, and re-equated alongside forms 23–26 for use in the event of test compromise [available at https://www.officialasvab.com/wp-content/uploads/2019/08/asvab_techbulletin_4.pdf]

Report on the Armed Services Vocational Aptitude Battery (ASVAB)—documents evaluations of ASVAB to address congressional concerns that ASVAB is a potential barrier to military enlistment

Report on the Enlistment and Accession Testing and Standards for Non-Native English-Speaking Recruits—presents findings from analyses and research/reviews conducted to address congressional concerns about the shrinking pool of qualified recruits interested in military service, specifically among the non-native English-speaking population of the United States

Training Relevance Survey for the Armed Services Vocational Aptitude Battery (ASVAB): Final Report—describes the implementation and findings of a survey to evaluate the relevance of content areas assessed by the ASVAB to entry-level military technical training

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[8] Available upon request

Validity Argument 1.0 for the Armed Forces Qualification Test (AFQT)—presents a theory of action and a comprehensive interpretive framework that specifies exactly why and how the AFQT is valid for use as a screen for enlistment in the U.S. military; also used to identify specific evidence necessary to confirm or disconfirm aspects of the interpretive argument; included are recommendations to improve future versions of the validity argument and address shortcomings or deficiencies in the current research

Validity Argument 1.0 for the ASVAB—presents a theory of action and a comprehensive interpretive framework that specifies exactly why and how the ASVAB is valid for use as a classification tool in the U.S. military; also used to identify specific evidence necessary to confirm or disconfirm aspects of the interpretive argument; included are recommendations to improve future versions of the validity argument and address shortcomings or deficiencies in the current research

Career Exploration Program

ASVAB Career Exploration Program Overview—describes the ASVAB, FYI, and OCCU-FIND to parents and students [available at https://prod-media.asvabprogram.com/CEP_PDF_Contents/ASVAB_CEP_Overview_2020.pdf]

Exploring Careers: The ASVAB Career Exploration Guide—helps students interpret ASVAB scores, understand their interest codes, identify personal preferences, and use that information to identify compatible occupations [available at https://prod-media.asvabprogram.com/CEP_PDF_Contents/ASVAB_CEP_GUIDE_2016_online.pdf]

The ASVAB Career Exploration Program Counselor Guide—consists of a manual produced with the assistance of the American Counseling Association to describe the operational, technical, and career counseling aspects of the ASVAB Career Exploration Program [available at https://prod-media.asvabprogram.com/CEP_PDF_Contents/ASVAB_CEP_Counselor_Manual.pdf]

The ASVAB Career Exploration Program: Technical Summary—presents technical information on the ASVAB and the FYI along with information on the technical underpinnings of the OCCU-FIND chart [available at https://prod-media.asvabprogram.com/CEP_PDF_Contents/ASVAB_CEP_Technical_Chapter.pdf]

TAPAS

TAPAS Evaluation Project Report on the Readiness of TAPAS for Use in Selection and Classification of Military Applicants—provides support for the operational use of TAPAS, along with recommendations to enhance the evidence supporting permanent operational implementation

Validity Argument 1.0 for the Tailored Adaptive Personality Assessment System (TAPAS)—presents a theory of action and a comprehensive interpretive framework that specifies exactly why and how the TAPAS is valid for use as a selection and classification tool in the U.S. military; also used to identify specific evidence necessary to confirm or disconfirm aspects of

the interpretive argument; recommendations to improve future versions of the validity argument and address shortcomings or deficiencies in the current research are provided

Job Performance Measurement

Performance Measurement for the Workplace—two volumes summarize a multi-year criterion study conducted by the four Military Services to measure hands-on performance in military jobs; Volume I analyzes the job performance measurement experience in the context of human resource management policy in the military; Volume II covers measurement and analytical issues, including range restriction adjustment, comparing alternative measures of performance, strategies for clustering military occupations, etc.

Social Media

Use of Social Media in Military Recruitment and Selection: A Review and Research Agenda—summarizes literature and expert findings and recommendations regarding the utility of social media data for assessing propensity and competency for military service with a focus on technical, psychometric, legal, and ethical questions; presents a research agenda for advancing forward

Informational Papers and Videos

Appropriate Use of Armed Services Vocational Aptitude Battery (ASVAB) Scores—defines three approved uses of ASVAB scores and strongly advises against any alternative uses for ASVAB scores

ASVAB Calculator Policy Video—defines and explains the ASVAB calculator use policy [available at https://www.officialasvab.com/applicants/faqs/]

The Use of Calculators on the ASVAB—defines and explains why calculators are not available when taking the ASVAB

Why There Is No Spanish Version of the ASVAB—explains why the ASVAB is delivered in English only

DACMPT Briefings

Device Evaluation: Update on Data Collection and Analyses: Briefing provided to the DAC September 17, 2020—provides the results and recommendations for a study that explores the expansion of ASVAB for delivery on a variety of device types to include tablets and smartphones

Identifying the Need for an ASVAB Norming Study—PAY 20xx: Briefing provided to the DAC January 2018—provides the results and recommendations for evaluating the sufficiency of PAY97 norms

Next Generation Testing: Overview and Update: Briefing provided to the DAC September 18, 2020—provides the progress on an extensive effort to evaluate the current configuration of the ASVAB and special tests toward making recommendations for a Next Generation ASVAB configuration

Seeding and Form Replacement Strategy: Briefing provided to the DAC January 7–8, 2016—provides details on seeding and form replacement practices for CAT-ASVAB