



Defense Advisory Committee on Military Personnel Testing: New Member Briefing

December 2022

OVERVIEW

- ORGANIZATIONAL INFORMATION
- ARMED SERVICES VOCATIONAL APTITUDE BATTERY (ASVAB) BACKGROUND
- MAJOR RESEARCH AND DEVELOPMENT (R&D) EFFORTS

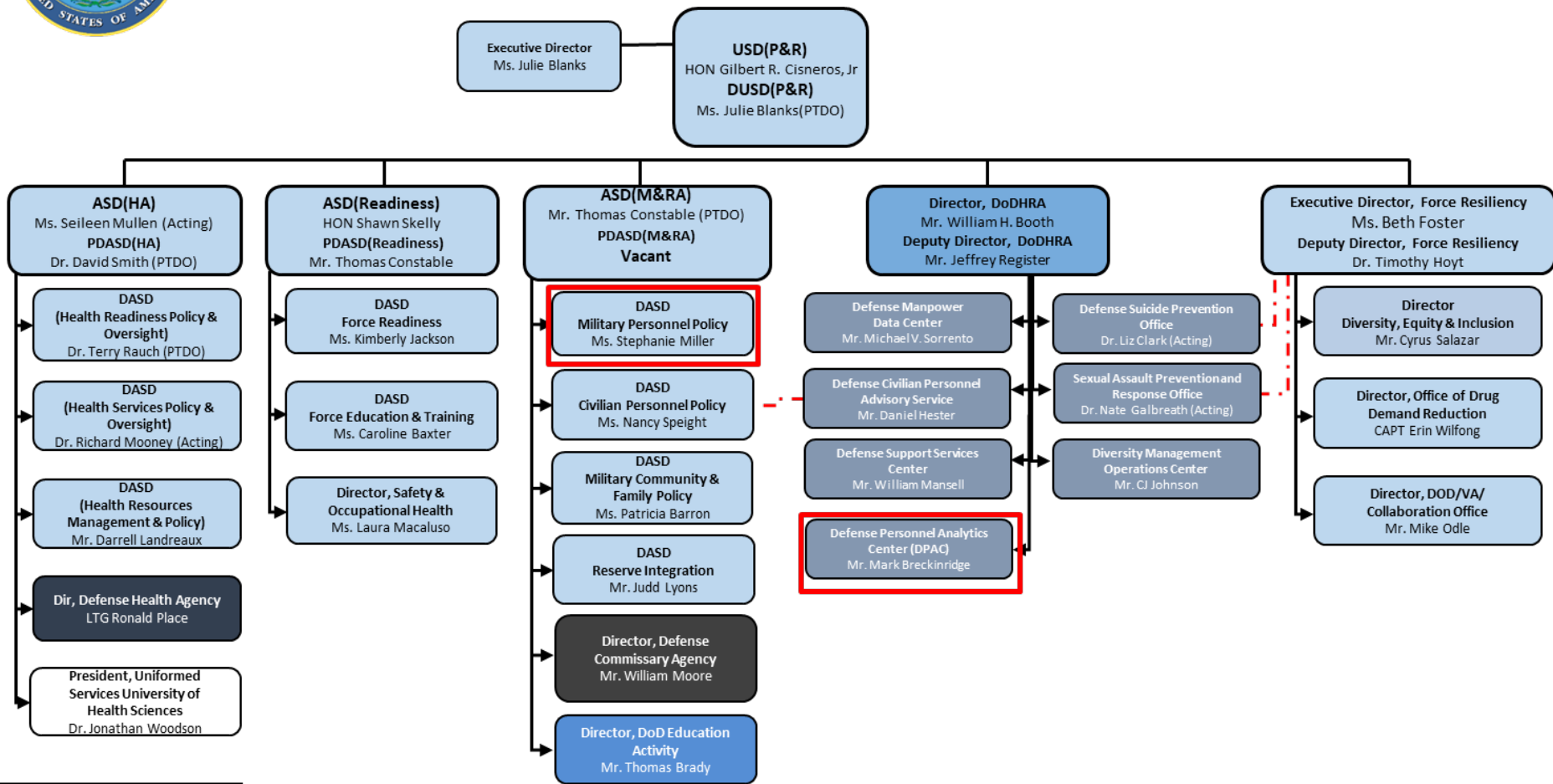
ORGANIZATIONAL INFORMATION

ASVAB/TESTING ROLES AND RESPONSIBILITIES

- **Defense Testing and Assessment Center (DTAC)**
 - Provides research, development, and computer-based delivery for the Armed Services Vocational Aptitude Battery (ASVAB) and special purpose tests
- **United States Military Entrance Processing Command (USMEPCOM)**
 - Conducts testing operations and applicant processing
- **Accession Policy (AP)**
 - Oversight of standards and applicable testing
 - Joint-service oversight—policy and technical input through the Manpower Accession Policy Working Group (MAPWG)
- **Defense Advisory Committee on Military Personnel Testing (DACMPT)**
 - Federal advisory committee—Independent, technical review and recommendations through Accession Policy to the Under Secretary of Defense for Personnel and Readiness (OSD P&R)



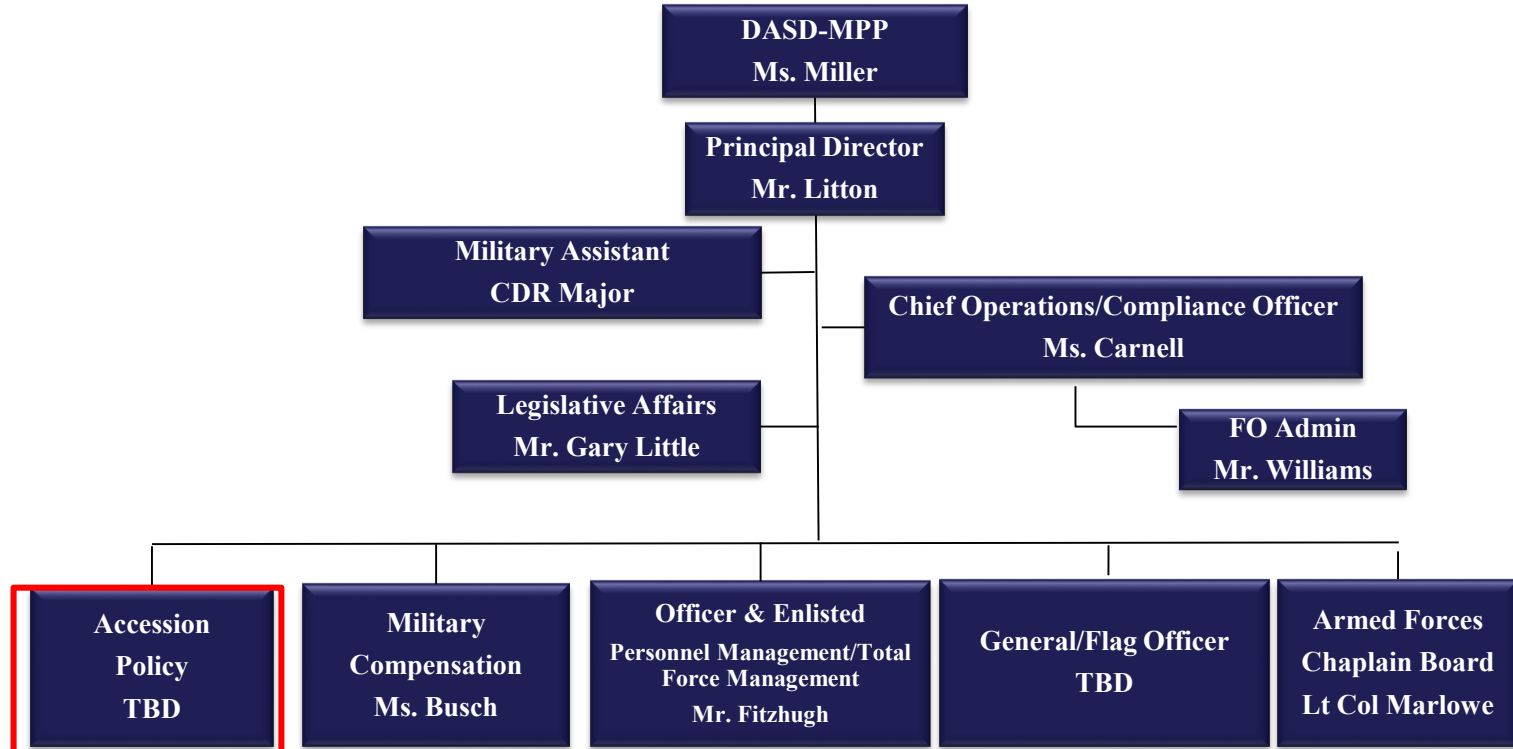
Office of the Under Secretary of Defense Personnel & Readiness



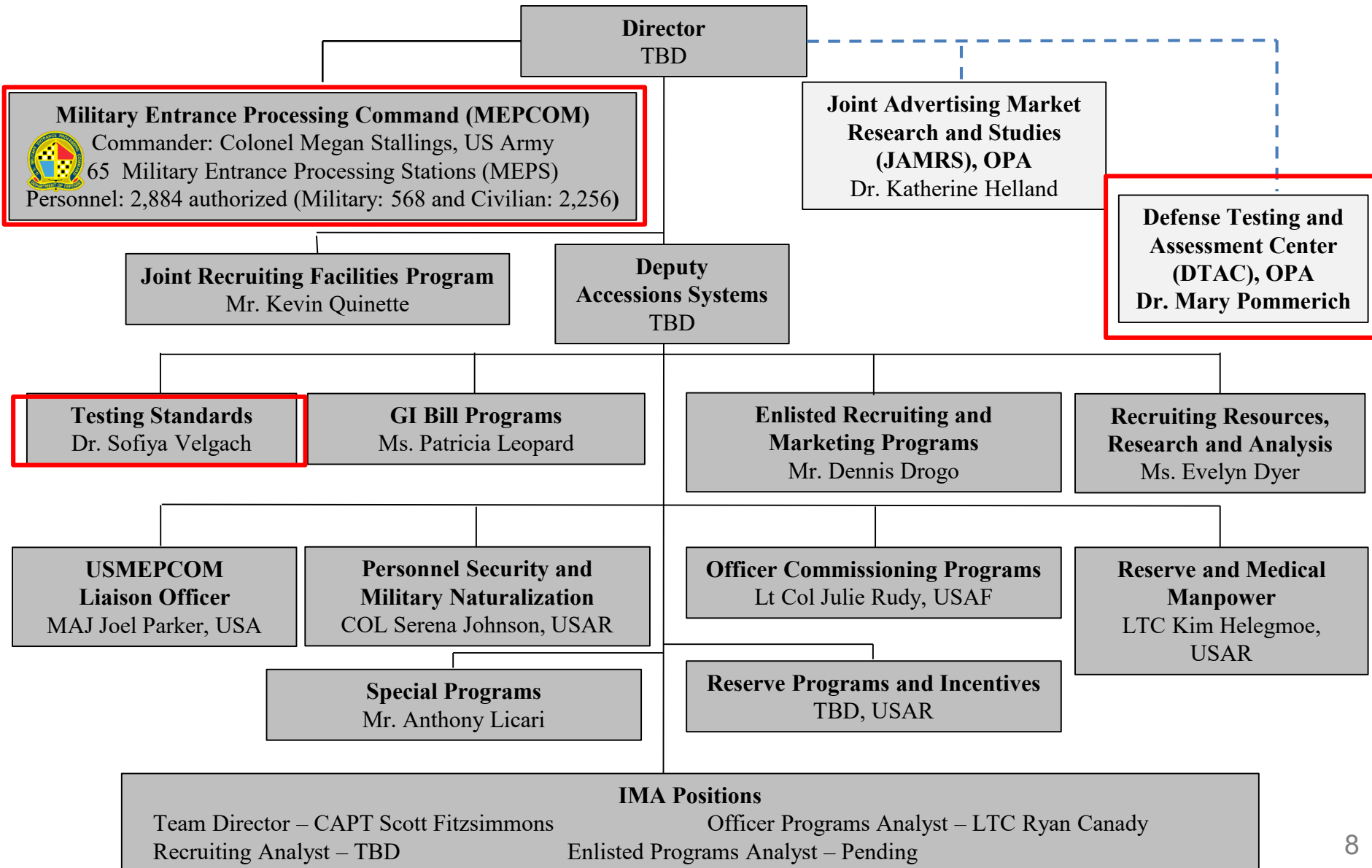
LEGEND

- OSD Staff Element
- DoD Field Activity
- Defense Agency
- Policy Guidance

DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR MILITARY PERSONNEL POLICY (DASD-MPP) ORGANIZATIONAL STRUCTURE



ACCESSION POLICY (AP) ORGANIZATIONAL STRUCTURE





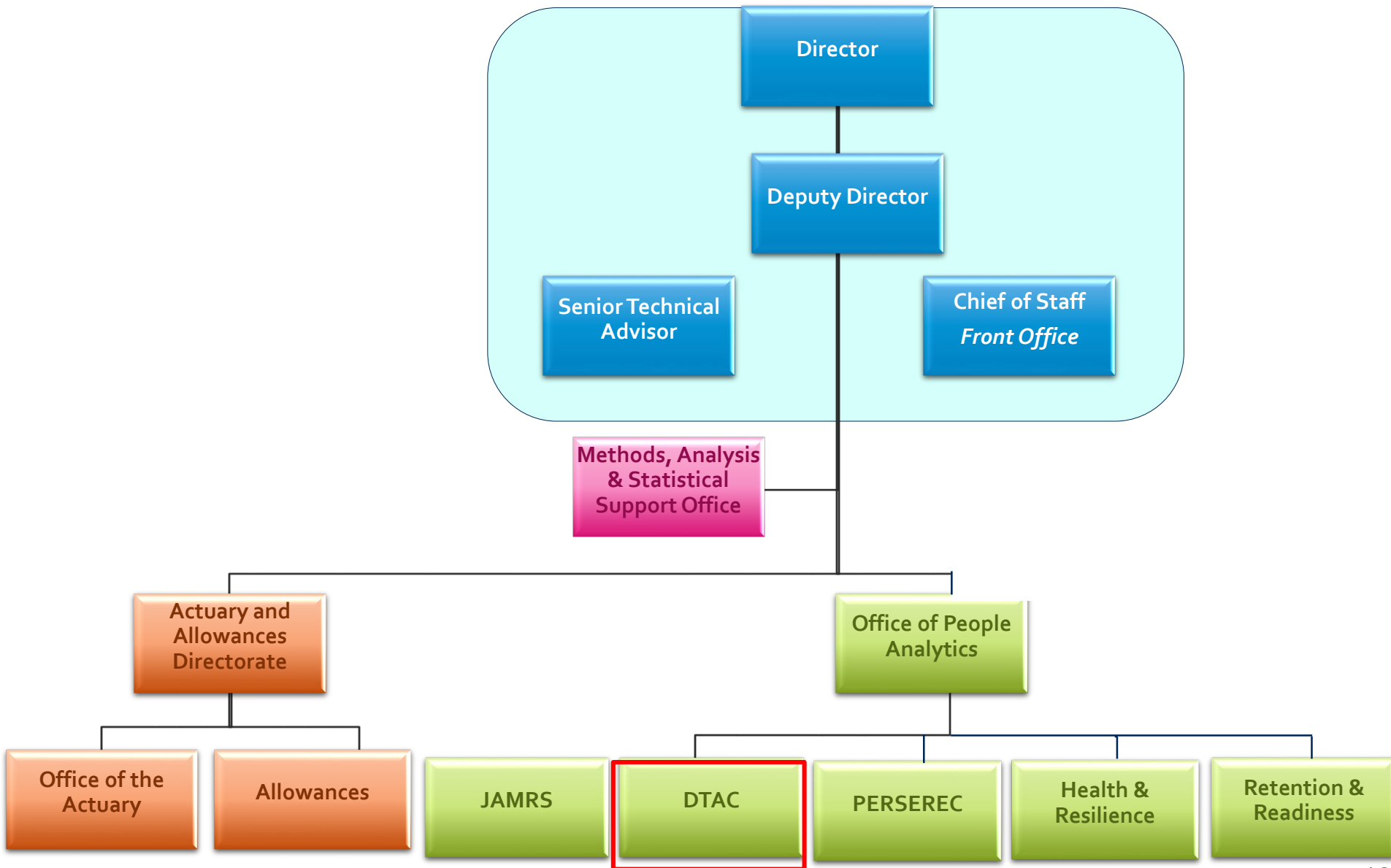
Defense Human Resources Activity

Organizational Structure

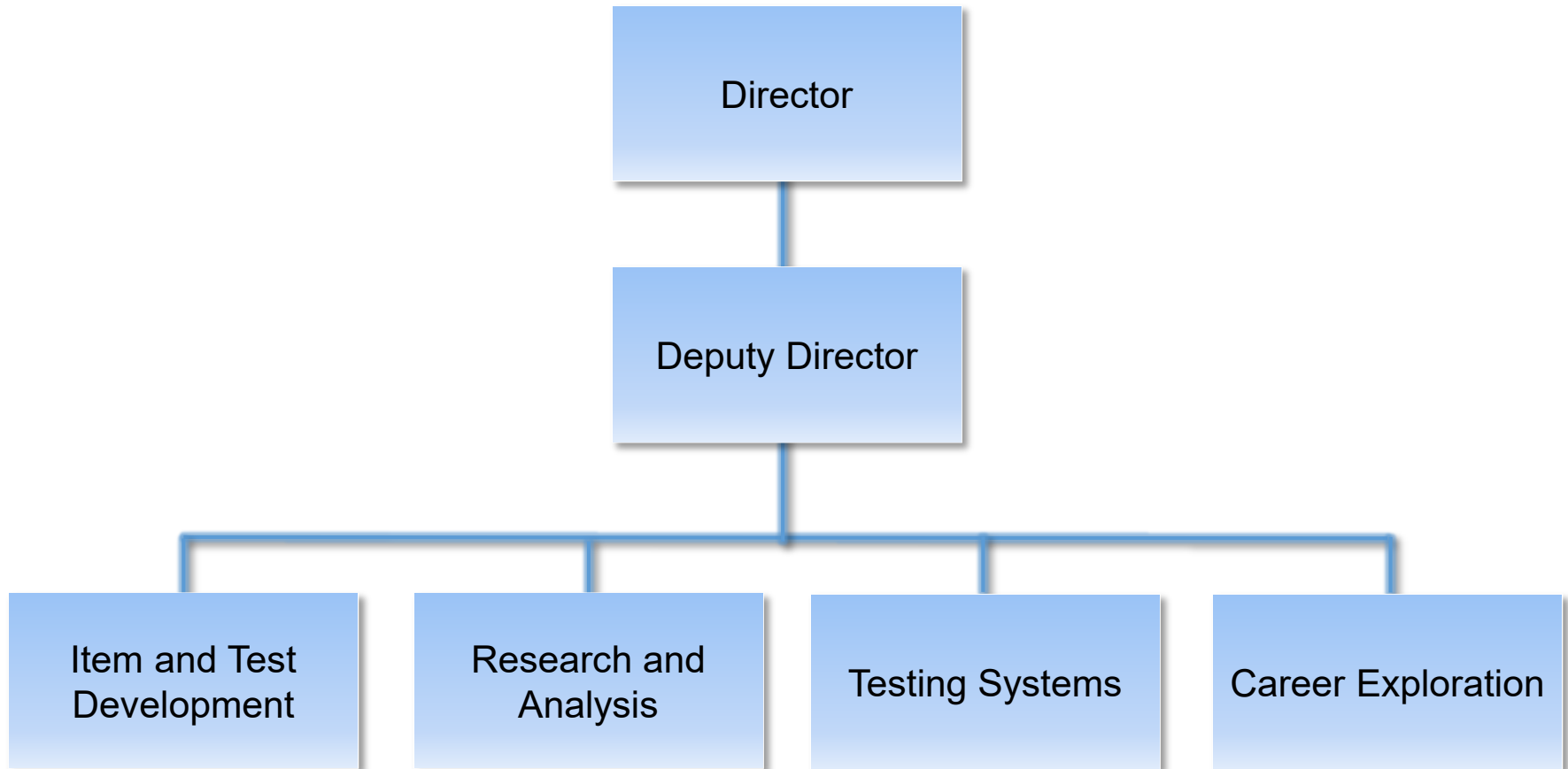


HQ Directorates: Combating Trafficking in Persons (CTIP), DHRA Enterprise Operations Center (DEOC), Equal Employment Opportunity (EEO), Enterprise Resource Advisor Team, Comptroller, General Counsel (OGC), Manpower Management (MM), Office of the Director (OOD), Ombudsman, Program Analysis & Evaluation (PA&E), Small Business Utilization Office, Strategic Plans & Initiatives (SPI)

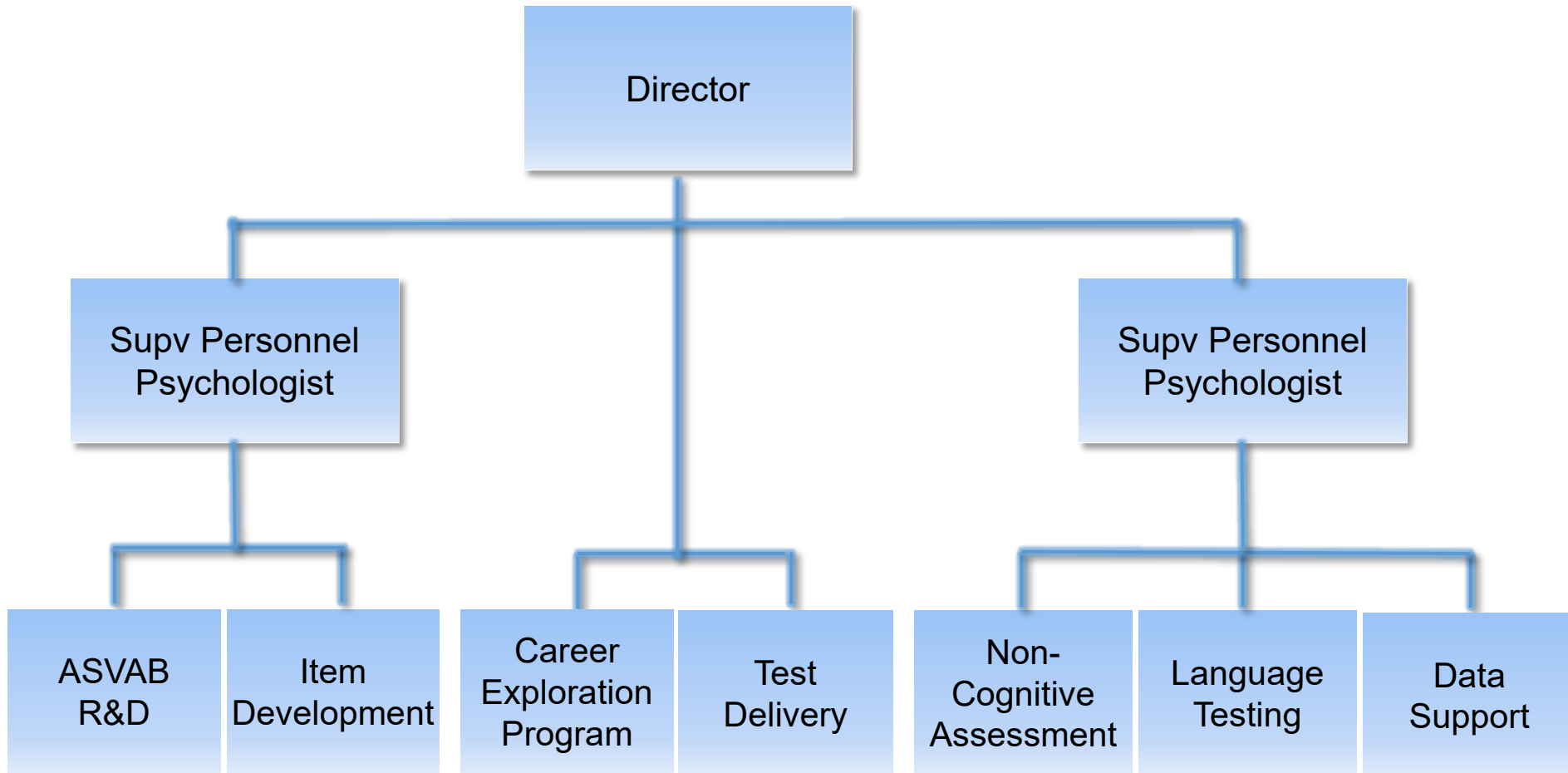
DEFENSE PERSONNEL ANALYTICS CENTER (DPAC)



DEFENSE TESTING AND ASSESSMENT CENTER (DTAC) – FY22



DEFENSE TESTING AND ASSESSMENT CENTER (DTAC) – FY23



DTAC PRINCIPAL PROJECTS

- Armed Services Vocational Aptitude Battery (ASVAB)
 - Enlistment Testing Program (ETP)
 - Career Exploration Program (CEP)
 - In-Service Testing Program (Armed Forces Classification Test—AFCT)
- Special Purpose Tests
 - Tests (see slides 24–25)
 - Primary Role: Test Delivery
 - Secondary Role: Technical Support and Consultation to Services
- Defense Language Testing
 - Tests
 - Defense Language Proficiency Test (DLPT)
 - Defense Language Aptitude Battery (DLAB)
 - English Comprehension Level (ECL) Test
 - Primary Role: Internet-based Test Delivery
 - Secondary Role: Psychometric Consultation

DTAC's ASVAB MISSION

- **Development / Maintenance / Sustainment**

- Develop items and test forms/item pools for the ASVAB
- Calibrate, scale, and equate new ASVAB forms/item pools
- Develop and maintain test delivery software
- Develop and maintain cloud-based test delivery platform
- Develop and maintain materials for Department of Defense (DoD) Career Exploration Program (CEP)
- Monitor operational testing
- Maintain, analyze, and disseminate ASVAB testing information

- **Research**

- Evaluate ASVAB changes
- Conduct research on ASVAB use
- Evaluate and enhance DoD Career Exploration Program
- Develop and evaluate new measurement methodologies

ASVAB BACKGROUND

DoD TESTING PROGRAMS

- **Enlistment Testing Program (ETP)**
 - The ASVAB is administered to approximately 350,000* applicants annually at:
 - 65 Military Entrance Processing Stations (MEPS), 2 Remote Proctoring Stations, and 178 Military Enlistment Testing (MET) sites
 - The Computerized Adaptive Testing ASVAB (CAT-ASVAB) is administered to almost all applicants at MEPS and MET sites
 - Paper-and-pencil ASVAB (P&P-ASVAB) is administered at a few remote (i.e., Pacific island) locations that do not have sufficient internet capabilities to administer CAT-ASVAB
 - Applicants can also take an unproctored version of the ASVAB (PiCAT) followed by a short, proctored verification test (Vtest) at the MEPS
 - Individuals who pass the verification test can enlist on their unproctored scores
 - Individuals who fail the verification test automatically take a proctored full-length ASVAB for enlistment purposes
 - Potential applicants can also take an unproctored, short screening test (APT) to help predict eligibility for military service
 - APT is intended to be a precursor to taking PiCAT or a proctored ASVAB, to screen for viable candidates
 - Scores are not used for enlistment purposes

DoD TESTING PROGRAMS

- **Career Exploration Program (CEP)**

- The ASVAB is administered to over 700,000* students in more than 13,000 high schools and post-secondary schools for career counseling purposes and to generate recruiting leads
 - P&P-ASVAB is administered to approximately 90% of all examinees
 - CAT-ASVAB is administered to approximately 10% of all examinees

- **In-Service Testing Program (ISP)**

- Retired forms of the ASVAB are repurposed as tests called the Armed Forces Classification Test (AFCT) and administered to already enlisted personnel in one of the Military Services in order to determine academic readiness to pursue a different military career or enter Officer Candidate School (OCS)
 - The program is administered by the Services
 - Most people take the web-delivered (CAT) version of the AFCT
 - P&P forms are available for environments without internet access

*Reflects pre-COVID volume

ASVAB TEST CONTENT

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

*AI and SI are administered as separate subtests in CAT-ASVAB but combined into one single score (labeled AS). AI and SI are combined into one single subtest (AS) in P&P-ASVAB.

†AO is not administered in the Career Exploration Program.

CAT-ASVAB TEST LENGTHS AND TIMES

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

* Tryout items are administered in CAT-ASVAB in the Enlistment Testing Program. Each examinee receives tryout items in 2 to 4 of the ASVAB subtests.

P&P-ASVAB TEST LENGTHS AND TIMES

Subtest	# of Items	Time Limit (in Minutes)
GS: General Science	25	11
AR: Arithmetic Reasoning	30	36
WK: Word Knowledge	35	11
PC: Paragraph Comprehension	15	13
MK: Mathematics Knowledge	25	24
EI: Electronics Information	20	9
AS: Auto and Shop Information	25	11
MC: Mechanical Comprehension	25	19
AO: Assembling Objects	25	15

COMPOSITE SCORES

- **Armed Forces Qualification Test (AFQT)**

- Composite of Verbal and Math tests used to determine enlistment eligibility and for reporting to Congress on the “quality”* of new recruits (accessions):

$$\text{AFQT} = 2(\text{VE}) + \text{AR} + \text{MK}$$

- VE is a verbal composite formed from an optimally weighted composite of unrounded WK and PC standard scores
- All test scores are added as Standard Scores that are standardized in the 1997 American Youth Population
- AFQT scores are reported on a percentile metric that represents the percentage of applicants scoring at or below the given composite score

* “High quality” is defined as individuals who score in the top 50th percentile on AFQT 21

COMPOSITE SCORES

- **Service Classification Composites**

- Used to qualify applicants for specific military occupations
- Services have as many as 29 classification composites (Navy) or as few as 4 (Air Force and Marine Corps)
- Examples include (Marine Corps):

Mechanical: AR + MC + AS + EI

Clerical: VE + MK

General Technician: VE + AR + MC

Electrical: AR + EI + GS + MK

SPECIAL PURPOSE TESTS

SPECIAL PURPOSE TESTS IN THE ETP

- *Special Purpose Tests* are given at the request of the Services to determine qualification of applicants for specific occupational specialties or special enlistment programs
 - A key distinction is who is responsible for development and maintenance of the tests (e.g., DTAC is responsible for the ASVAB tests; the Services and language proponents are responsible for the various special purpose tests)
 - DTAC provides test delivery and consultation support for special purpose tests

Special Purpose Test	Description
Coding Speed	Test of perceptual speed/accuracy
Complex Reasoning*	Test of non-verbal reasoning
Cyber Test	Test of information technology knowledge
Defense Language Aptitude Battery	Test of potential to learn a foreign language
Mental Counters*	Test of working memory
Tailored Adaptive Personality Assessment System** (TAPAS)	Assessment of personality factors related to performance in the military

* Under development

**Service-specific versions are currently being administered; a joint version is also being researched

SPECIAL PURPOSE TESTS IN THE ETP

Test	Service Administering					
	Air Force	Army	Coast Guard	Marine Corps	Navy	Space Force
Cyber Test	×	×		×	×	×
Defense Language Aptitude Battery*	×	×		×	×	×
Tailored Adaptive Personality Assessment System (TAPAS)	×	×		×	×	×
Coding Speed					×	
Mental Counters					×	
Complex Reasoning**	n/a	n/a	n/a	n/a	n/a	n/a

× = **proponent**

* The Defense Language and National Security Education Office is the proponent. Navy and Army have pilots underway investigating the use of ASVAB in lieu of the DLAB.

**Test is currently under development in response to an NDAA requirement to develop a special purpose test to address computational thinking.

MAJOR RESEARCH AND DEVELOPMENT EFFORTS

MAJOR DTAC EFFORTS

- **ITEM AND TEST DEVELOPMENT**
- RESEARCH AND ANALYSIS
- TESTING SYSTEMS
- CAREER EXPLORATION
- NON-COGNITIVE TESTING

ITEM AND TEST DEVELOPMENT

- New items for the ASVAB are developed under contract
- DTAC editorial staff and subject matter experts work closely with the contractor to ensure consistency of items over time and consistency with standards
 - DTAC editors review items for content accuracy
 - DTAC editors review items for written bias and sensitive content that could cause an examinee to have an adverse reaction to a test item
- DTAC is also working with the contractor to develop and populate an item bank

ITEM AND TEST DEVELOPMENT

- Operational ETP Forms:
 - Four unique CAT-ASVAB forms (pools) are used for proctored administrations of all subtests (current operational forms are 05E, 06E, 08E, 09E)
 - Currently, Form 07E is used for unproctored (PiCAT) administrations
 - Historically, four P&P-ASVAB forms were developed for proctored administrations
 - 4 unique forms for AR, MK, PC, and WK (AFQT tests)
 - 2 unique forms for AI, AO, GS, EI, MC, SI (the non-AFQT tests) were scrambled to create 4 total forms
 - Current P&P-ASVAB forms are 27A and 27B (introduced following compromise)
 - The development of P&P-ASVAB forms for ETP use has largely been discontinued because of development costs and their susceptibility to compromise
 - One last wave of four new P&P-ASVAB forms is under development for ETP use, planned for continuity of operations

ITEM AND TEST DEVELOPMENT

- Operational CEP Forms:
 - Four P&P-ASVAB forms are used for proctored administrations of all subtests
 - 2 unique forms for all subtests are scrambled to create 4 total forms
 - Current operational forms are 23A, 23B, 24A, 24B
 - Forms 03E and 10E are used for proctored CAT-ASVAB administrations
 - The development of P&P-ASVAB forms for CEP use has largely been discontinued because of development costs and their susceptibility to compromise
 - One last wave of four new P&P-ASVAB forms are under development for CEP use
 - There is a desire to replace all operational P&P-ASVAB testing in the CEP with CAT-ASVAB testing for sites with sufficient bandwidth

ITEM AND TEST DEVELOPMENT

- Item tryouts, calibration, scaling, form assembly, and equating
 - Each examinee taking CAT-ASVAB in the ETP receives 15 tryout (seeded) items in 2 to 4 of the ASVAB subtests
 - Average total time spent on tryout items is approximately 20 minutes
 - Examinees are randomly assigned to a tryout group that determines the subtests where tryout items are administered
 - Tryout items are randomly seeded throughout operational tests
 - Responses to seeded items are not used in scoring the subtests
 - After target sample sizes are obtained, seeded items are calibrated and scaled to be on the CAT-ASVAB scale and item analyses are conducted to screen items
 - Form assembly methods are used to build item pools (forms) from retained items
 - Scores on new pools are equated to scores on existing pools to ensure scores can be treated interchangeably across new and existing CAT-ASVAB pools

ITEM AND TEST DEVELOPMENT

- Development of new ASVAB forms/pools has historically been targeted at a 5-year cycle for both ETP and CEP
 - DTAC has had mixed success meeting these target dates
- DTAC is working with the contractor team responsible for form development to transition to developing new CAT-ASVAB forms every 2 years
- An equating study is currently underway for CAT-ASVAB Forms 11–15

MAJOR DTAC EFFORTS

- ITEM AND TEST DEVELOPMENT
- **RESEARCH AND ANALYSIS**
- TESTING SYSTEMS
- CAREER EXPLORATION
- NON-COGNITIVE TESTING

RESEARCH AND ANALYSIS

- Next Generation Testing
 - ASVAB evaluation
 - Focus group efforts
 - Training relevance survey
- AIG efforts (AO, WK, MK, AR, GS)
- Social media efforts
- Calibration simulations
- CAT-ASVAB methodology evaluation
- Norming evaluations
 - Assess state of current norms
 - Renorming needs assessment

RESEARCH AND ANALYSIS

- Complex Reasoning efforts
 - Develop generator
 - Evaluate item performance
 - Develop computational thinking composite
- Evaluate adverse impact and differential prediction
- Develop and expand upon validity arguments for ASVAB, AFQT, and TAPAS
- Explore efficacy of machine learning methods to streamline form assembly process
- Explore feasibility of using Bayesian-based item calibration methods to reduce calibration sample size requirements
- Conduct high school curriculum study

MAJOR DTAC EFFORTS

- ITEM AND TEST DEVELOPMENT
- RESEARCH AND ANALYSIS
- **TESTING SYSTEMS**
- CAREER EXPLORATION
- NON-COGNITIVE TESTING

TESTING SYSTEMS

- Historically, CAT-ASVAB was administered at MEPS/MET sites via a local area network platform called WinCAT
- In 2008, internet delivery was introduced on the Defense Manpower Data Center's (DMDC's) web platform
- In 2021, DTAC transitioned ASVAB testing operations from DMDC servers to an AWS cloud platform
 - An internet version of CAT-ASVAB (iCAT) is now administered solely via the cloud platform
 - Most special tests are currently available on the cloud platform
 - DTAC provides 24/7 helpdesk support
 - Data transfers are automated between DTAC and MEPCOM
 - The cloud platform has led to greater reliability and stability of test sessions
 - WinCAT and the DMDC platform have been decommissioned

TESTING SYSTEMS

- DTAC is in the planning stages to expand devices upon which the CAT-ASVAB can be taken
 - Currently, desktops, laptops, and Chromebooks are allowed
 - Recommended system specifications are provided
 - Plans are to expand testing applications to enable the use of mobile devices in some settings
 - Device expansion efforts are supported by prior research that showed no notable performance differences (when examinees are familiar with the device they use for testing, and the test delivery interface is designed to be responsive to various device types)
 - Device expansion programming efforts for iCAT are expected to commence in FY2023

MAJOR DTAC EFFORTS

- ITEM AND TEST DEVELOPMENT
- RESEARCH AND ANALYSIS
- TESTING SYSTEMS
- **CAREER EXPLORATION PROGRAM**
- NON-COGNITIVE TESTING

CAREER EXPLORATION PROGRAM

- The ASVAB Career Exploration Program (CEP) is a comprehensive, **no cost, no commitment** career planning resource designed to help young people align their strengths and interests with a post-secondary plan that works
- Students in grades 10–12 and first/second year post-secondary students are encouraged to participate; students in 11th grade and beyond can use their scores for enlistment purposes
- Department of Defense (DoD) sponsors ASVAB CEP with a two-part mission—as a free career exploration resource and to provide qualified leads to Military Services
 - MEPCOM administers the program
 - DTAC is responsible for program technical development, maintenance, and evaluation

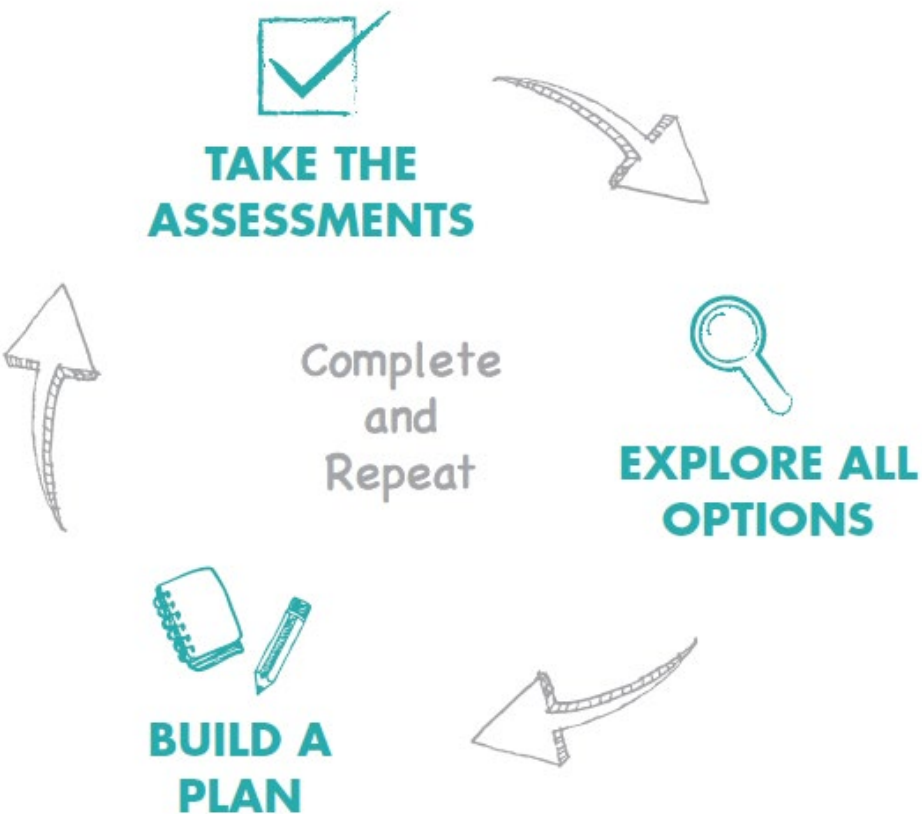
HISTORY OF CAREER EXPLORATION PROGRAM

- ASVAB was first used in high schools in 1968, with introduction of ASVAB as a Joint-Service test
- DTAC assigned research & development responsibility in 1989
- In 1992, ASVAB 18/19 was implemented and included significant improvements to career exploration aspects of the high school testing program, where it is known as the ASVAB Career Exploration Program
 - Find Your Interests (FYI) inventory was added
- In 2005, there was a complete revision of the career development and planning model underlying the CEP
 - Developed competency-based linkage between three career exploration scores (Verbal Skills, Math Skills, and Science and Technical Skills) and the Skill Importance Ratings in O*Net occupations
 - Developed websites—www.asvabprogram.com and www.careersinthemilitary.com—to provide students and counselors with career exploration and planning tools, including the OCCU-Find, a unique career database designed for high school students

RECENT HISTORY OF THE CAREER EXPLORATION PROGRAM

- **2014–2017:** Redesigned websites
- **2016:** Score hosting
- **2017:** Service input and composite scores; expanded military civilian crosswalk
- **2018:** Introduction of new website functionality to facilitate repeat program usage
- **2019:** Post-Test Interpretation (PTI) training to the field
- **2020:** Continuing Education (CE) sessions introduced
- **2021:** Virtual program offerings implemented to accommodate pandemic restrictions in the education community

HOW THE ASVAB CEP WORKS



Take the ASVAB: The ASVAB is an aptitude test that helps predict future academic and occupational success. It is available at no cost and is a graduation option in many states.

Join a Post-Test Interpretation: This guided session includes an ASVAB score explanation, an interest inventory, and an opportunity to discover potentially satisfying career fields and explore all the ways to enter career fields. Now offered virtually!

Use the Career Planning Tools: Families can use the classroom activities and planning tools to help teens consider their options and make post-secondary plans that work for their family.

Use access code **CEP4ME** to create an account at **asvabprogram.com**

PARTICIPATION AND LEADS

Year*	Participating Students	Participating Schools	Leads Provided to Military Services
2019	786,807	13,976	468,003
2020**	694,996	13,214	402,868
2021***	311,465	9,692	259,162
2022	607,920	12,948	497,164

*School year runs from July 1–June 30.

**In-school ASVAB testing was suspended due to COVID-19 on March 13, 2020.

***Limited access to schools due to CDC guidance prohibiting outside agencies from visiting schools.

CURRENT ASVAB CEP PROJECTS

- **ConCEP**

Develop new platform to consolidate access to all ASVAB CEP applications and modernize processes and systems surrounding scheduling, marketing, and communications

- **Linkages**

Continue crosswalk analysis between military-civilian occupations and U.S. Office of Personnel Management (OPM) GS job series

- **CEP 2.0**

Revamp planning activities to fulfill state-requested capabilities for asvabprogram.com

- **Training**

Standardize training delivery for national field personnel

MAJOR DTAC EFFORTS

- ITEM AND TEST DEVELOPMENT
- RESEARCH AND ANALYSIS
- TESTING SYSTEMS
- CAREER EXPLORATION PROGRAM
- **Non-Cognitive Testing**

NON-COGNITIVE TESTING

- The Services have traditionally taken the lead in research and development of non-cognitive assessments
- DTAC has recently been charged with implementing pre-accession personality assessments for evaluation purposes
 - To expand enlistment eligibility
 - In response to recommendations of the Independent Review Commission (IRC) on Sexual Assault in the Military
- TAPAS has been identified as the assessment instrument to be used for these efforts
- New efforts will include:
 - Joint-Service TAPAS: Joint Version vs Joint Composite
 - Compatibility/Suitability: Conduct Composite
 - Maximizing Test Efficacy