



ASVAB Validation Technical Report

Aviation Maintenance Administrationman (AZ)

Rating

Zannette A. Uriell
Navy Selection and Classification Office (OPNAV N-132)

Reviewed by
Jason Jacobs-Lentz
Navy Selection and Classification Office (OPNAV N-132)

Approved and Released by
James Johnson
Navy Selection and Classification Office (OPNAV N-132)

June 26, 2024

REPORT DOCUMENTATION PAGE			<i>Form Approved</i> <i>OMB No. 0704-0188</i>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.				
1. REPORT DATE (DD-MM-YYYY) 26-06-2024	2. REPORT TYPE Technical Report		3. DATES COVERED (From - To) July 2021 – June 2024	
4. TITLE AND SUBTITLE ASVAB Validation Technical Report Aviation Maintenance Administrationman (AZ) Rating			5a. CONTRACT NUMBER	
			5b. GRANT NUMBER	
			5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Zannette A. Uriell			5d. PROJECT NUMBER	
			5e. TASK NUMBER	
			5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Navy Selection and Classification Office, OPNAV N132, 701 S. Courthouse Road, Arlington, VA 22204			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Director, Navy Selection and Classification Office OPNAV N132 701 S. Courthouse Road Arlington, VA 22204			10. SPONSOR/MONITOR'S ACRONYM(S) OPNAV N132	
			11. SPONSOR/MONITOR'S REPORT NUMBER(S) 24-02	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited				
13. SUPPLEMENTARY NOTES				
14. ABSTRACT Scores from the tests in the Armed Services Vocational Aptitude Battery (ASVAB) are used to classify Navy Sailors into occupations, or ratings. Test classification composites for each rating are re-evaluated periodically, and a recent study was undertaken to do a re-evaluation for the Aviation Maintenance Administrationman (AZ) rating as the training changed in 2021. Because of unique aspects of the AZ training, it was determined during this study that normal methods of validation of classification tests were not possible. This report describes initial findings as well as decisions made that continued the use of the existing AZ classification test composite.				
15. SUBJECT TERMS ASVAB, selection and classification, Navy ASVAB validation/rating entry standards, validity coefficients, cutscores, diversity				
16. SECURITY CLASSIFICATION OF: UNCLASSIFIED			17. LIMITATION OF ABSTRACT UNLIMITED	18. NUMBER OF PAGES 36
a. REPORT UNCLASSIFIED	b. ABSTRACT UNCLASSIFIED	c. THIS PAGE UNCLASSIFIED		
			19b. TELEPHONE NUMBER (include area code) 703-604-5103	
Standard Form 298 (Rev. 8-98) Prescribed by ANSI Std. Z39.18				

Table of Contents

Introduction.....	1
Aviation Maintenance Administrationman Work.....	2
Methods.....	4
Student Data Used.....	4
Options Considered.....	5
Discussion and AVRC Decision.....	9
References.....	10
Appendix A – Description of the ASVAB and Additional Selection Tests	A-1
Appendix B – Current Composites in Use Across All Ratings	B-1
Appendix C – Aviation Maintenance Administrationman (AZ) Results Brief	C-1

Introduction

Determining a job for military personnel has been a formal process since at least 1943 (see, for example, *US Navy Interviewer's Classification Guide*, 2020). In 1974, the Department of Defense began requiring that all services use the Armed Services Vocational Aptitude Battery (ASVAB) for selection into the military (based on the Armed Forces Qualification Test (AFQT) scores) and job classification (*History of Military Testing*, n.d.). The ASVAB consists of tests of intelligence, predominantly crystallized intelligence (see Appendix A for brief descriptions of each test, or visit <https://www.officialasvab.com>), and is usually administered at a Military Entrance Processing Station (MEPS) or Military Entrance Testing (MET) prior to joining the military.

Within the Navy, classification into a particular job, or rating, is dependent upon specific composite(s) of tests and specific cutscore(s) for those composites, as well as needs of the Navy, other rating specific requirements such as minimum vision or security clearances, and Sailor interests. The composites currently in use are listed in Appendix B, and are formally updated through the Career Waypoints website as indicated in MPM 1306-618 as well as within the Navy Recruiting Manual – Enlisted (COMNAVCRUITCOMINST 1130.8 series), both of which contain any additional rating specific requirements.

Determination of the composites to use for each rating is based upon success in initial rating-specific training. Prior to the 2010s, this success was defined as the final school grade in these initial, or “A”, schools; those composites of ASVAB tests that showed the highest correlation with final school grade became the composites used to classify subsequent recruits into the rating training (and, thereby, the rating itself upon graduation); an overview of the process is laid out in Held, Hezlett, Johnson, McCloy, Drasgow, and Salas (2014), with more detailed technical information in Held, Carretta, Hezlett, Johnson, Mendoza, Abrahams, Drasgow, McCloy, & Wolfe (2015). In the 2010s, the focus shifted from final school grade to First-Pass Pipeline Success (FPPS), or the ability to successfully complete training in the first attempt without having any academic setbacks. Those with FPPS are sent to the Fleet the fastest, and do not require longer time and training costs, nor do they need someone to replace them when they fail the course and have to be reclassified into another rating requiring a different training path.

A re-assessment of composites in use may be triggered by changes in training content, by concerns about observed setbacks/failures, or may occur simply because the composites have not been re-evaluated in a long period of time. This report describes the revalidation effort for the Aviation Maintenance Administrationman (AZ) rating which had a training change in 2021, and includes analyses undertaken as well as the final decision of the ASVAB Validation Review Committee (AVRC).

Aviation Maintenance Administrationman Work

AZ work is summarized in several different locations. The Navy Enlisted Manpower and Personnel Classifications and Occupational Standards (NEOCS) manuals (available at <https://www.mynavyhr.navy.mil/References/NEOCS-Manual/>), particularly Volume I – Navy Enlisted Occupational Standards, captures the specific tasks that an AZ will do at each paygrade in a career. It also lists Skills and Abilities needed:

Skills

Management of Material Resources
Monitoring
Coordination
Reading Comprehension
Mathematics
Active Learning
Systems Analysis
Complex Problem Solving
Critical Thinking
Equipment Maintenance

Abilities

Written Comprehension
Written Expression
Problem Sensitivity
Deductive Reasoning
Information Ordering
Mathematical Reasoning
Selective Attention
Number Facility
Inductive Reasoning
Time Sharing

This document also provides information about the scope of the rating, the career pattern, and any relevant job titles, as well as descriptions of O*Net relationships. This information is used to create training courses that AZ may attend at different stages of their career.

Another summary of AZ work, directed more towards recruiting and retention, is contained online in Navy Credentialing Opportunities On-Line (COOL; <https://www.cool.osd.mil/usn/>). The rating cards available at this site provide an overview of the rating, a description of the working environment, and relevant qualifications and interests, with the COOL website itself also providing bibliographies that might be useful for advancement, development roadmaps, and any related civilian credentials and occupations. For the AZ rating, the October 2022 rating card indicates:

“Aviation Maintenance Administrationman perform a variety of clerical, administrative, and managerial duties necessary to keep aircraft maintenance activities running efficiently. The rating requires close communication with all other aviation maintenance ratings.

WHAT THEY DO:

- Scheduling aircraft inspections;
- Keeping charts that show trends in aircraft system reliability;
- Organizing and operating libraries of technical publications, reports and related maintenance data;
- Issuing aircraft inspection and work orders;
- Performing clerical and administrative duties such as filing and typing;

- Preparing reports and correspondence;
- Performing computer database and system analysis;
- Maintaining engine logbooks and associated aircraft records.”

Additionally, the COOL card lists other qualifications and interests for AZ as:

“Applicants must be U.S. citizens eligible for security clearance. Applicants should have an interest in aviation and working with or around aircraft. They should be interested in weather systems and have basic skills in arithmetic, speaking, writing, and record keeping. Applicants should expect detailed work and repetitive tasks as part of their normal functions. Also important are a good memory and the ability to get along well with people. Helpful attributes are an interest in ideas and information, resourcefulness, curiosity, competence with tools, equipment and machines, manual dexterity and teamwork. Normal hearing and color perception are required for this rating.”

The bulletized tasks from the COOL rating card are presented in Table 1, along with possible linkages to the various ASVAB tests. These possible linkages can be useful as a general, intuitive guide to what composites might be most likely to be correlated with FPPS. For AZ, seemingly the verbal tests/scores would be most closely related to the tasks, with possibly some links to math, assembling objects, and coding speed tests.

Table 1
ASVAB Linkages to the AZ Rating

AZ Tasks	GS	AR	WK	PC	MK	EI	AS	MC	AO	CS	VE
Scheduling aircraft inspections									X	X	
Keeping charts that show trends in aircraft system reliability					X				X		
Organizing and operating libraries of technical publications, reports and related maintenance data			X	X						X	X
Issuing aircraft inspection and work orders		X	X	X							
Performing clerical and administrative duties such as filing and typing										X	
Preparing reports and correspondence			X	X							X
Performing computer database and system analysis						X			X		
Maintaining engine logbooks and associated aircraft records			X							X	

At present, classification into the AZ rating requires $AR+VE \geq 102$, and this study was conducted to determine if this composite was still appropriate or should be modified.

Methods

Student Data Used

Data for those who had been through the AZ “A” School (CDP 20XC) were analyzed, as AZs could be assigned to Fleet billets without additional training beyond this course. Corporate Enterprise Training Activity Resource Systems (CeTARS) data were downloaded for those with Active Duty Service Dates (ADSD) 1 October 2016 and beyond. The data was decreased to only those who had attended the CDP since it began in 2021 until the data was downloaded on 5 October 2023.

Table 2 provides descriptive details for each ASVAB subtest for the 462 who had useable test data (an additional person had no useable test data but did complete the course; this person was considered as having received a waiver). The mean score for the composite AR+VE for this group was 106.2, with the histogram of the composite scores for these AZ trainees shown in Figure 1.

Table 2
ASVAB Test Descriptives for AZ Sample

Test	Count	Min	Max	Mean
GS	462	27	74	49.99
AR	462	40	73	53.21
WK	462	32	72	52.87
PC	462	34	68	52.81
MK	462	35	72	53.09
EI	462	21	78	48.14
AS	462	27	71	44.34
MC	462	25	74	49.53
VE	462	35	69	53.01
AO	421	26	68	54.54
CS	121	27	72	59.89
AFQT	462	35	99	60.44

Note: As part of ASVAB testing, each score is standardized so that 50 is the mean and 10 is the standard deviation of the population.

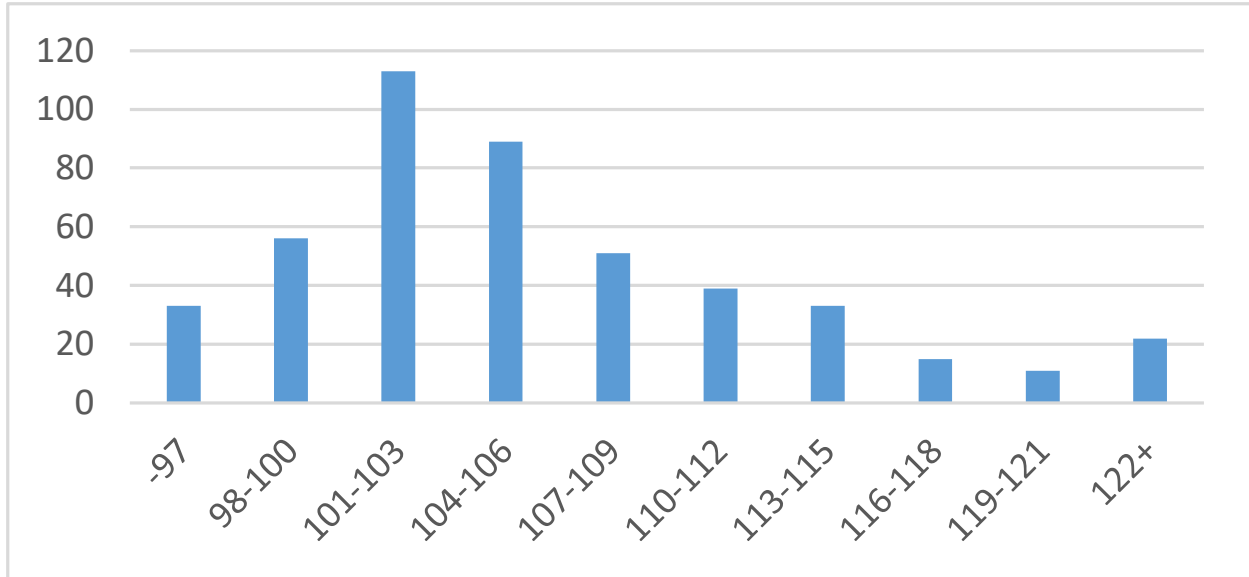


Figure 1. AR+VE Scores of AZ Students.

Person Event (PEVT) codes provide information about enrollment (code 2), graduation (code 288), and various academic and non-academic setbacks and failures. As ASVAB validations are based on academic success, any non-academic setbacks or failures would not be considered and only academic issues used for analyses. For those attending CDP 20XC, no academic codes beyond enrollment and graduation were found, as can be seen in Table 3. In meeting with the schoolhouse, this was expected. As indicated during the conversation, all tests are open book, which has led to concerns from outsiders reviewing test results that the tests are too easy.

Table 3
Findings for CDP 20XC

	Student #	% of Sample	Academic Setback Rate	Academic Setback Still in Training	Grad Rate	Academic Failure Rate	Observed FPPS
Total Sample	463	100.0%	0.0000	0	1.0000	0.0000	1.0000
Qualified	351	75.8%	0.0000	0	1.0000	0.0000	1.0000
Waivered	112	24.2%	0.0000	0	1.0000	0.0000	1.0000

Options Considered

As there was no variability in training data, additional analyses to determine composites with highest validity were not possible. Instead, several alternatives to analysis were considered, with each having positive and negative features.

The first option considered was leaving the composite as it is currently, $AR+VE \geq 102$. As this composite was likely arrived at based upon data from a previous version of the course, it

was assumed that the duties of an AZ had not changed substantially since the previous course so the decisions made then might still be appropriate, even if the data was outdated. Additionally, there had not been any concerns expressed from any stakeholders that might indicate there was a problem with the composite. However, maintaining the score as it is might be eliminating a pool of candidates who could also complete the course successfully.

Another option considered was to lower the score to the waiver limit, as those currently receiving waivers (6 points waived, per *Class "A" School and Rating Entry Requirements* (MILPERSMAN 1306-618), 2016) are able to complete the course successfully. This maintains some of the positives from the previous option, and also would likely allow more accessions since the score would be 96 vice 102. However, it is unclear if this would impact graduation rate, as lowering the score required by 6 points would also lower the waiver limit by another 6 points, and it is unclear what success those below the current waiver limit (score of 96) would have (i.e., those with scores 90-95).

A third option considered was to maintain the composite but lower the score to the equivalent of the A-PACT program. A-PACT is the aviation branch of the Professional Apprenticeship Career Track (PACT) program, which guarantees apprentice skill training while providing a career development plan (*Professional Apprenticeship Career Track (PACT) Program*, 2016). Those in the 2-year PACT program should be able to join a rating after their PACT commitment ends, subject to the requirements of each rating. As "A" school training is not required for the AZ rating per the career path available from the rating website at <https://www.mynavyhr.navy.mil/Career-Management/Community-Management/Enlisted/Aviation/AZ/>, those who complete PACT should be able to transition to AZ if they meet any AZ-specific requirements. At present, classification into A-PACT requires $AR+AS+MK+VE \geq 161$, which for a 2-test composite would be standardized to a score of 80. This would maintain the already approved composite, while also substantially increasing the number of accessions who would qualify. As discussed with the previous option considered, this might lead to lower graduation rates and more academic setbacks, but that is unclear from the data available.

The fourth option considered was switching to the A-PACT composite and score entirely. This likely would increase the number of accessions who would qualify as the score is lower, however this would no longer be based upon any old or new AZ training data, and including a composite with the technical test AS might be more technical than needed to conduct AZ work. As discussed previously, it is unclear what impact this might have on graduation rates.

A different option considered was to adopt the composite and score of a rating with somewhat similar taskings. Since a portion of work done by an AZ might be considered office administrative work (e.g., "Performing clerical and administrative duties such as filing and typing"), the Yeoman (YN) rating composite and score were considered. At present, YN requires either $VE+MK \geq 99$ or $CS+MK+VE \geq 148$. The score of 99 is slightly lower than the 102 for AZ so adopting it would likely increase accessions, however this decision would not be made on any relevant AZ data and so could impact graduation rates. Additionally, there is not complete overlap of YN and AZ work so the YN composite might not lead to academic success through the AZ training.

The last option considered was to increase the AZ score by the waiver amount, to 108 points. This maintains the composite that was seemingly based on AZ data in the past. The benefit of this option would be that it might enable/encourage recruits to join another rating; if

there are a number of candidates considering AZ, this could potentially lead to fewer qualifying as an AZ and instead joining other aviation (or any) ratings that they might not have already been considering.

The impact of all options is provided in Table 4, using the most recent 12 months of Navy accessions as the data source upon which each option is evaluated. In addition to a comparison of the qualification rates (QR) and the difference in number of qualifications from the current composite/score are comparisons of the percent qualified female to male (F::M), African American to White (AA::W), and Hispanic to White (H::W). Almost every option considered would increase the qualification rate, possibly allowing more than 14,000 additional accessions to be qualified when using the A-PACT score or A-PACT composite/score combination. In addition, almost every option would also improve the qualification rates of the minority as compared to the majority group.

Table 4
Classification Options

	AR+VE ≥ 102	AR+VE ≥ 96	AR+VE ≥ 80	AR+MK+AS+VE ≥ 161	MK+VE ≥ 99	AR+VE ≥ 108
	[Current]	[Option 2]	[Option 3]	[Option 4]	[Option 5]	[Option 6]
QR	48.7%	64.1%	92.8%	94.2%	63.6%	33.8%
Diff from Current #	---	+5,050	+14,427	+14,892	+4,866	-4,876
% Qualified F::M	0.649	0.762	0.966	0.943	0.865	0.534
% Qualified AA::W	0.397	0.522	0.891	0.891	0.572	0.297
% Qualified H::W	0.617	0.719	0.944	0.955	0.722	0.523

Discussion and AVRC Decision

When the AVRC met in February 2024, presented findings and all options, using the brief included in Appendix C. The recommendation provided by the analyst was to continue with the current composite and score, generally for the reasons discussed above for that option. Additionally, comparisons to other services were provided, showing that the current score is generally similar. When looking at USMC Military Occupational Specialties (MOS), the most similar was 6046, Aviation Maintenance Data Specialist. Per the COOL card for this MOS, they “...maintain aircraft logbooks, naval aircraft maintenance publications/files, and prepare reports, logs records, directives, and correspondence within aircraft maintenance and repair activities;” a composite of GS+AR+MK+EI ≥ 100 is required, which would be equivalent to 100 on a 2-test composite in the Navy. Within the USAF, the nearest Air Force Specialty Code (AFSC) seemed to be 1C0X2, Aviation Resource Management. Per the relevant USAF website (<https://www.airforce.com/careers/logistics-and-administration/aviation-resource-management>), these Airmen are responsible for maintaining flight records and validating aircrew safety requirements; classification into this AFSC requires an administrative composite of MK+VE ≥ 50 , which would be equivalent to 100 on a 2-test composite in the Navy.

There was some discussion at the meeting about the importance of a portion of new AZ actually attending AZ training (i.e., not all come from the APACT program or reclassify from other ratings) even if the rating does not require AZ training, because there have to be sufficient numbers of trained AZs in the squadrons who can train those who join from APACT or reclassify from other ratings. An additional point was made about the importance of the AZ in the “safe for flight” decision, where (among other things) various pieces of documentation that the AZs maintain are consulted before each aircraft is allowed to take off.

One of the stakeholders recommended decreasing the score to the waiver limit and later determining if there was an impact on graduation and academic setback rates, which might then lead to an adjustment back to the current score if any changes were deemed too impactful. The rationale was that it would give Navy recruiting a few more options if needed during a difficult recruiting time (see, for example, Garamone, 2023). An email vote was conducted after the AVRC, asking stakeholders to vote to adjust the AZ classification composite to AR+VE ≥ 96 , on a temporary basis through FY25. There was no consensus, so the decision was made to be conservative and maintain the current composite and cutscore at present.

References

- Class "A" School and Rating Entry Requirements* (MILPERSMAN 1306-618). (23 Apr 2016). Downloaded July 27, 2022 from https://www.mynavyhr.navy.mil/Portals/55/Reference/MILPERSMAN/1000/1300Assignment/1306-618.pdf?ver=4gog_6-fXVtZNdOtGr7U8g%3d%3d.
- Garamone, J. (2023). *After Tough Year, Military Recruiting is Looking Up*. Downloaded March 5, 2024 from <https://www.defense.gov/News/News-Stories/Article/Article/3625464/after-tough-year-military-recruiting-is-looking-up/>.
- Held, J. D., Carretta, T. R., Hezlett, S. A., Johnson, J. W., Mendoza, J. L., Abrahams, N. M., Drasgow, F., McCloy, R. A., & Wolfe, J. H. (2015). *Technical Guidance for Conducting ASVAB Validation/Standards Studies in the U. S. Navy* (NPRST-TR-15-2). Millington, TN: Navy Personnel Research, Studies, and Technology (NPRST).
- Held, J. D., Hezlett, S. A., Johnson, J. W., McCloy, R. A., Drasgow, F., & Salas, E. (2014). *Introductory Guide for Conducting ASVAB Validation/Standards Studies in the U. S. Navy* (NPRST-TR-15-1). Millington, TN: Navy Personnel Research, Studies, and Technology (NPRST).
- History of Military Testing*. (n.d.) Downloaded July 27, 2022 from <https://www.officialasvab.com/researchers/history-of-military-testing/>.
- Professional Apprenticeship Career Track (PACT) Program* (MPM 1306-611). (13 May 2016). Downloaded March 5, 2024 from <https://www.mynavyhr.navy.mil/Portals/55/Reference/MILPERSMAN/1000/1300Assignment/1306-611.pdf?ver=KFLr0m-2MyND3Ek5-zv0OA%3D%3D>.
- U.S. Navy Interviewer's Classification Guide*. (2020). Downloaded April 12, 2023 from <https://www.history.navy.mil/research/library/online-reading-room/title-list-alphabetically/u/us-navy-interviewers-classification-guide.html>.

**Appendix A
Description of the ASVAB and Additional Selection Tests**

Test Type	Test Name and Abbreviation	Test Description
Standard ASVAB	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 correct synonyms
	Paragraph Comprehension (PC) ^a	Ability to obtain information from written passages
	Mathematics Knowledge (MK)	Knowledge of high school mathematics principles
	Electronics Information (EI)	Knowledge of electricity and electronics
	Auto and Shop Information (AS)	Knowledge of automobile and shop technologies, tools, and practices
	Mechanical Comprehension (MC)	Knowledge of mechanical and physical principles
	Assembling Objects (AO)	Ability to determine correct spatial forms from their separate parts and connection points (not administered in all versions)
Special Tests (May be Given in Conjunction with ASVAB)	Coding Speed (CS)	Ability to quickly identify correct word/number pairings from a key with many options
	MCt	Ability to maintain value of 3 counters that increment and decrement simultaneously
	Cyber Test (CT)	Information and communications technology literacy
	Navy Advanced Placement Test (NAPT)	Knowledge of advanced physics, mathematics, and chemistry
	Defense Language Aptitude Battery (DLAB)	Aptitude to learn a foreign language

^a WK and PC are combined to form the Verbal (VE) composite that is a component of the AFQT and several Navy ASVAB classification composites.

Appendix B
Current Composites in Use Across All Ratings

Composite Name	Composite Calculation	Rating/Program Entry Standards
Administration 1	VE+MK	CTI, LN, PS, QM, RP, YN
Administration 2	MK+CS+VE	OS, PS, RP, YN
Administration 3	PC+MK	CTR
Administration 4	AR+PC+MK	AC, CTR, HM
Cyber 1	MK+VE+CT	CWT, IT/ATF, IT/SG, ITS (ITC/ITE/ITR)
Cyber 2	AR+MK+CT	CTT/AEF, CTT/SG
Mechanical 1	AR+AS+MC	BU, CM, EO, SW
Mechanical 2	MK+AS+AO	AO, AS, BM, MR, PR
Mechanical 3	AR+MK+AS	UT
Mechanical 4	MK+AS+VE	AD
Operations 1	AR+MK+AS+VE	ABE, ABF, ABH, AIRC, AIRR, AM, AME, AN (APACT), AO, BM, DC, EN, FN (E/PACT), GSM, HT, MM, MR, PR
Operations 2	GS+AR+2MK	AECF, CWT, CTT/SG, EA, ET, FC, FCA, GM, ITS (ITC/ITE/ITR), ND, OS, SB
Operations 3	AR+MK+AO+VE	AE, AME, AT, AV, BU, EN, GSM, IC, IC/ATF, MM, MN, MT, RW, SO, STG, STG/AEF
Operations 4	MK+MC+CS+VE	SO
Operations 5	AR+MK+EI+VE	AS, CTM, IT/SG, MMA, MMS, TM
Operations 6	GS+MK+MC+VE	QM
Operations 7	MK+EI+VE	AD
Specialized 1	AR+VE	AZ, CS, EOD, LN, LS, MC, ND, RS, SB, SN (S/PACT), SO
Specialized 2	GS+MK+VE	AG, CTI, HM/ATF, IT/ATF, IT/SG, NC
Specialized 3	AR+WK	HM/ATF
Specialized 4	GS+AR+MK+VE	HM, HM/ATF, IS, IT/ATF, ITS (ITC/ITE/ITR)
Specialized 5	GS+AR+MK	AG
Specialized 6	GS+MK+2VE	HM
Specialized 7	AR+MK+MC+VE+NAPT	EM(NUC), ET(NUC), MM(NUC), NUC
Specialized 8	GS+AR+MK+EI+NAPT	EM(NUC), ET(NUC), MM(NUC), NUC
Technical 1	AR+MK+MC+VE	AC, AE, AIRC, AIRR, AM, AS, AT, AV, CSS, CWT, DC, EM, EM(NUC), ET(NUC), ETV, FT, FN (E/PACT), GSE, HT, LSS, MA, MM(NUC), MN, MR, MT, NUC, RW, SECF, STS, YNS
Technical 2	GS+AR+MK+EI	AECF, CE, CSS, CTT/AEF, EM, EM(NUC), ET, ET(NUC), ETV, FC, FCA, FT, GM, GSE, IC, IC/ATF, LSS, MM(NUC), NUC, RW, SECF, STS, STG, STG/AEF, UT, YNS
Technical 3	GS+EI+MC	EOD, ND, SO
Technical 4	GS+AR+EI+MC	MMA, MMS, TM

As of 3/15/2024

Aviation Maintenance Administrationman (AZ)



ECM Brief

Zannette A. Uriell
Navy S&C





Background

- **Navy S&C develops and monitors ASVAB standards for all Navy ratings**
 - Goal is to balance rating qualification rate and training performance
 - Ideally a revalidation occurs every 3-5 years
 - About 18 months after any change in selection standards, a retrospective is conducted to determine if change is functioning as expected

- **AZ composite has not changed for many years, however training changed in 2021**
 - $AR+VE \geq 102$

- **AVRC decision to revalidate AZ based on time since last validated**

C-2



Study Goals

- **In ideal Navy, want to improve First Pass Pipeline Success (FPPS) to save money in training time and lessen aggravation due to training/reclassification of Sailors**

- **In recruiting-challenged Navy, want to maintain or improve graduation rate while increasing number who would qualify for training**
 - Use FPPS predictions to determine most valid composites (FPPS and graduation are generally related)
 - Test most valid composites and linescores to determine graduation and qualification rates
 - Consider adjustment of linescore further to account for unique recruiting environment, similar to temporary adjustments to other ratings based on rating complexity (medium) and findings of waiver analyses

CS



About AZ and Linkage to ASVAB

- Aviation Maintenance Administrationman perform a variety of clerical, administrative, and managerial duties necessary to keep aircraft maintenance activities running efficiently. The rating requires close communication with all other aviation maintenance ratings. – **Navy COOL, Oct 2022**

	GS	AR	WK	PC	MK	EI	AS	MC	AO	CS	VE
Scheduling aircraft inspections									X	X	
Keeping charts that show trends in aircraft system reliability					X				X		
Organizing and operating libraries of technical publications, reports and related maintenance data			X	X						X	X
Issuing aircraft inspection and work orders		X	X	X							
Performing clerical and administrative duties such as filing and typing										X	
Preparing reports and correspondence			X	X							X
Performing computer database and system analysis						X			X		
Maintaining engine logbooks and associated aircraft records			X							X	

C-4



Findings – CDP 20XC

- All graduate with no academic setbacks

	Student #	% of Sample	Academic Setback Rate	Academic Setback Still in Training	Grad Rate	Academic Failure Rate	Observed FPPS
Total Sample	463	100.0%	0.0000	0	1.0000	0.0000	1.0000
Qualified	351	75.8%	0.0000	0	1.0000	0.0000	1.0000
Waivered	112	24.2%	0.0000	0	1.0000	0.0000	1.0000

- Schoolhouse indicates minimal difference in grades and test scores

C-5



Other Service Comparison

■ USMC:

- Aviation Maintenance Data Specialist (6046) - “Aviation Maintenance Data Specialists maintain aircraft logbooks, naval aircraft maintenance publications/files, and prepare reports, logs records, directives, and correspondence within aircraft maintenance and repair activities. ”
- Electrical Composite $\geq 100 \rightarrow GS+AR+MK+EI \geq 100$ (equivalent of 100 in 2-test composite since they renorm their composites to a mean of 100)

■ USAF:

- Aviation Resource Management (1C0X2) - includes managing the scheduling, training, and personnel requirements for flying operations, as well as ensuring that aircraft and equipment are properly maintained and ready for use.
- Administrative Composite $\geq 50 \rightarrow MK+VE \geq 100$ (composites renormed to an average of 50)



Options Under Consideration

➔ **Same or better graduation rate, with more qualifying** ←

1. No change at present
2. Reduce AR+VE score to waiver limit
3. Reduce AR+VE score to AN score
4. Adopt AN composite/score
5. Change to administrative composite used by YN
6. Increase AR+VE score

C-7



Option 1 – No Change

- **Currently AR+VE \geq 102**

- **Pros**
 - Based on data (from previous version of course)
 - No expressed concerns (revalidation being done due to time and course change)
 - Composite is not a technical composite (no AS, EI, MC, GS)

- **Cons**
 - Based on outdated data
 - Linescore may be too high; additional accessions with lower scores may be able to attend course with success



Option 2 – Reduce Score to Waiver Limit

- **Reduce to waiver limit (6 points): $AR+VE \geq 96$**

- **Pros**
 - Composite based on data (from previous version of course)
 - No expressed concerns (revalidation being done due to time and course change)
 - Composite is not a technical composite (no AS, EI, MC, GS)
 - Expected to increase options for accessions

- **Cons**
 - Composite based on outdated data
 - Unclear if reduction will impact graduation rate (although $\frac{1}{4}$ of those through course now have scores less than 102)

C-9



Option 3 – Reduce Score to AN Score

- **AN line score is 161 for 4 tests, so reduce to equivalent line score:
AR+VE ≥ 80**

- **Pros**
 - Composite based on data (from previous version of course)
 - No expressed concerns (revalidation being done due to time and course change)
 - Composite is not a technical composite (no AS, EI, MC, GS)
 - Likely to substantially increase options for accessions

- **Cons**
 - Composite based on outdated data
 - Unclear if reduction will impact graduation rate (although ¼ of those through course now have scores less than 102)

C-10



Adopt AN Composite/Score

▪ AR+AS+MK+VE ≥ 161

▪ Pros

- Likely to increase options for accessions (based on score)
- No A-school required for rating, so would allow APACT to immediately qualify

▪ Cons

- Composite not based on any AZ data at all
- Unclear if change will impact graduation rate or setbacks
- May be more technical (AS) than needed



Adopt Composite/Score of a Similar Rating (YN)

- **VE+MK \geq 99 OR CS+MK+VE \geq 148**

- **Pros**
 - Might increase options for accessions due to slightly lower score
 - Administrative composite seems appropriate for type of work

- **Cons**
 - Composite not based on any AZ data
 - Unclear if change will impact graduation rate or setbacks

- **NOTE: Re-evaluation of CS scores needed before continuing to use as an alternate**

C-12



Option 6 – Increase Score

- **Increase by waiver limit (6 points): $AR+VE \geq 108$**

- **Pros**
 - Composite based on data (from previous version of course)
 - No expressed concerns (revalidation being done due to time and course change)
 - Composite is not a technical composite (no AS, EI, MC, GS)
 - Would likely encourage/force some currently considering AZ to consider other (aviation) ratings
 - Assumes no impact on graduation rate since would be a subset of those already through course

- **Cons**
 - Composite based on outdated data



Summary of Full Permanent Options

- Unclear impact of any change on graduation/setback rates; course is generally open-book so changes may have no impact
- Any change from current composite/score will increase number who qualify

	Qualification Standard					
	AR+VE ≥ 102 [Current]	AR+VE ≥ 96 [Option 2]	AR+VE ≥ 80 [Option 3]	AR+MK+AS+VE ≥ 161 [Option 4]	MK+VE ≥ 99 [Option 5]	AR+VE ≥ 108 [Option 6]
QR	48.7%	64.1%	92.8%	94.2%	63.6%	33.8%
Diff from Current #	---	+5,050	+14,427	+14,892	+4,866	-4,876
%Qualified F::M	0.649	0.762	0.966	0.943	0.865	0.534
%Qualified AA::W	0.397	0.522	0.891	0.891	0.572	0.297
%Qualified H::V	0.617	0.719	0.944	0.955	0.722	0.523

C-14

*12-month Navy accessions ending 1/8/2024.

Recommendation



- **Maintain current composite and line score:**

$$AR+VE \geq 102$$

- **Consider adding a CS-based alternative if CS testing changes are determined to be unimpactful and additional methods for qualification are needed**
- **Conduct full revalidation if any changes in course delivery occur**

C-15



Backup





ASVAB and Special Classification Tests

Test	Content
General Science (GS)	Biological and physical sciences
Arithmetic Reasoning (AR)	Arithmetic word problems
Word Knowledge (WK)*	Synonyms/meaning of words in context
Paragraph Comprehension (PC)*	Written passages
Mathematics Knowledge (MK)	Algebra, geometry, fractions, decimals, exponents
Electronic Information (EI)	Electrical principles and electronics
Auto and Shop Information (AS)	Automotive, tool, shop, practices
Mechanical Comprehension (MC)	Mechanical and physical principles
Assembling Objects (AO)	Patterns and connection point recognition

*VE, Verbal, is a combination of 1/3 PC and 2/3 WK

Special Classification Tests:

- Coding Speed (CS) is a perceptual speed and accuracy test.
- DLAB is the Defense Language Aptitude Battery administered to CTI candidates.
- NAPT is the Navy Advanced Placement Test administered to about 1/2 of NF candidates.
- Cyber Test (CT) is operational for some computer intensive ratings.
- Mental Counters (MCt), a working memory test, may be operational in FY23.

AFQT is a combination of PC, WK, AR, and MK; 2VE+AR+MK.

C-17



More Common PEVT Codes

Non-Academic Setback

73	STBK NACAD W/O REMEDIAL ADMINISTRATIVE LEAVE
294	STBK NACAD MEDICAL W/O REMEDIAL TRNG
295	STBK NACAD PHYSICAL W/O REMEDIAL TRNG
296	STBK NACAD MILITARY W/O REMEDIAL TRNG
298	STBK NACAD ADMIN W/O REMEDIAL TRNG
300	STBK NACAD MEDICAL W/REMEDIAL TRNG
301	STBK NACAD PHYSICAL W/REMEDIAL TRNG
302	STBK NACAD MILITARY W/REMEDIAL TRNG
305	STBK NACAD ADMINISTRATIVE W/REMEDIAL TRNG
308	STBK NACAD OTHER W/O REMEDIAL TRNG

Academic Setback

48	STBK ACAD W/O REMEDIAL TRAINING ADMINISTRATIVE
51	STBK ACAD W/REMEDIAL REVIEW BOARD
53	STBK ACAD W/REMEDIAL CLSRM LACK OF COMPREHENSION
56	STBK ACAD W/REMEDIAL TRNG MOTIVATION LACK OF PERF
324	STBK ACAD W/REMEDIAL TRAINING LAB INABILITY
855	STBK ACAD W/REMEDIAL TRAINING

Non-Academic Failure

148	NON-GRAD NACAD ADMIN UNSUITABILITY
149	NON-GRAD NACAD ADMIN HARDSHIP
207	NON-GRAD NACADDEATHNON-TRAININGRELATED
211	NON-GRAD NACAD PHYSICAL NOT AQUATICALLY ADAPTABLE
212	NON-GRAD NACAD PHYSICAL PRTFAILURE
214	NON-GRAD NACAD PHYSICAL PERFORMANCEFAILURE
227	NON-GRAD DSNRL CLASS/COURSECANCEL
228	NON-GRADDSNRL ADMINRATING/PROGCONV
229	NON-GRAD DSNRLADMIN RECALLED BY PARENTACTIVITY
230	NON-GRAD DSNRLADMIN NONPREREQ MED/PHY
231	NON-GRAD DSNRL ADMIN NONPREREQACADEMIC
232	NON-GRAD DSNRL ADMIN NONPREREQ SECURITY
311	NON-GRAD NACAD OTHER
320	NON-GRAD NACAD MOTIV NEGATIVE MILITARY ATTITUDE
970	NON-GRAD NACAD MEDICAL
971	NON-GRAD NACAD LEGAL - UCMJ ACTION
972	NON-GRAD NACAD LEGAL - CIVIL ACTION
973	NON-GRAD NACAD LEGAL - ADMIN ACTION
986	NON-GRAD NACAD MEDICAL 986
987	NON-GRAD NACAD LEGAL 987
994	NON-GRAD NACAD MEDICAL 994

Academic Failure

81	NON-GRAD ACAD CLSRM LACK OF CMPRHN/RETENTION
103	NON-GRAD ACAD LABORATORY LACK OF MANUAL SKILLS
106	NON-GRAD ACAD LABORATORY LACK OF KNOWLEDGE APPL
135	NON-GRAD NACAD MOTIV EXPRESSED DOR
138	NON-GRAD NACAD MOTIV LACK OF PERF SCOL N/O CHOICE
141	NON-GRAD NACAD MOTIV LACK OF PERF SCOL N/W EXPCTD
142	NON-GRAD NACAD MOTIV LACK OF PERF NEG TRNG ATT
309	NON-GRAD ACAD OTHER

(NOTE: Historically PEVT 135, 138, and 141, categorized as motivational attrition, are considered academic failures for ASVAB validation analyses as these students are judged to be unable keep up in the course.)



Findings Table – Key Points

- Findings, or decomposition, table will show how many qualified through each possible qualification method and various success rates for each
- Non-academic failures are removed from all analyses; non-academic setbacks are not considered since a change of ASVAB would not impact these (see separate list for what is considered non-academic failure)
- Those with an academic setback but not yet done with training included in FPPS analyses, so graduation rate + academic failure rate may not total to 100%

C-19

	Student #	% of Sample	Academic Setback Rate	Academic Setback Still in Training	Grad Rate	Academic Failure Rate	Observed FPPS%
Total Sample	218	100%	.1835	5	.9343	.0657	80.73%
Qualified Only Through VE+AR+MK+AS≥210	4	1.8%	0	0	1.000	0	100.00%
Qualified Only Through MK+AS+AO≥152	135	61.9%	.2370	3	.9394	.0606	75.56%
Qualified On Both	54	24.8%	.0556	1	.9623	.0377	92.59%
Qualified On Either	193	88.5%	.1813	4	.9471	.0529	80.83%
Waivered	25	11.5%	.2000	1	.8333	.1667	80.00%

More data is better for basing decisions, recommend never less than 100 total

These can show if one composite is driving the data

Setback closer to 0 is better—rate= % / 100

Grad closer to 1 is better - rate= % / 100

First Pass Pipeline Success – 100% is better

Top line is all data being considered

Next set of lines is per individual composite as well as combination

Last set of lines is qualified (sum of the previous set) vs waived



Options Chart Overview

- Chart shows current composite combination compared to several others deemed the best of those considered during analyses
- Many issues considered when determining combinations to consider, including correlation with FPPS, graduation and FPPS rate, qualification rate, current composite (incremental changes), and demographic subgroup comparisons

	Qualification Standard			
	VE+AR+MK+AS ≥ 210 or MK+AS+AO ≥ 152	VE+AR+MK+AS ≥ 199 or VE+AR+MK+EI ≥ 199 or VE+AR+MK+MC ≥ 199	VE+AR+MK+AS ≥ 187 or VE+AR+MK+EI ≥ 187 or VE+AR+MK+MC ≥ 187	VE+AR+MK+AS ≥ 204 or VE+AR+MK+EI ≥ 204 or VE+AR+MK+MC ≥ 204
	[Current]	[Option 5 – Waiver match current FPPS]	[Option 6 – Match current FPPS]	[Option 7 – Match current QR]
QR	66.4%	75.3%	92.4%	67.3%
Diff from Current #	---	+3,443	+9,990	+357
%Qualified F::M	.699	.745	.903	.683
%Qualified AA::W	.504	.606	.836	.520
%Qualified H::W	.632	.803	.943	.752
Predicted Grad Rate	95.3%	95.6%	94.6%	96.0%
Predicted FPPS	85.9%	90.9%	86.2%	92.6%

C-20



Options Chart - Interpretation

- Chart applies findings from those who went through A-school (data in use) to a larger group, either recent Navy accessions or applicants (i.e., what would last year have looked like if these standards had been in place at the start)

C-21

	Qualification Standard			
	VE+AR+MK+AS ≥ 210 or MK+AS+AO ≥ 152 [Current]	VE+AR+MK+AS ≥ 199 or VE+AR+MK+EI ≥ 199 or VE+AR+MK+MC ≥ 199 [Option 1]	VE+AR+MK+AS ≥ 187 or VE+AR+MK+EI ≥ 187 or VE+AR+MK+MC ≥ 187 [Option 2]	VE+AR+MK+AS ≥ 204 or VE+AR+MK+EI ≥ 204 or VE+AR+MK+MC ≥ 204 [Option 3]
QR	66.4%	75.3%	92.4%	67.3%
Diff from Current #	---	+3,443	+9,990	+357
%Qualified F::M	.699	.745	.903	.683
%Qualified AA::W	.504	.606	.836	.520
%Qualified H::W	.632	.803	.943	.752
Predicted Grad Rate	95.3%	95.6%	94.6%	96.0%
Predicted FPPS	85.9%	90.9%	86.2%	92.6%

Options may have different cutscores from current, as several cutscores may have been evaluated to meet desired criteria

Change in number qualified compared to current

Ratio of qualification rates for various demographic subgroups; a ratio closer to 1 shows the qualification rates to be similar

If H and W were same size groups, roughly 6 H qualify for every 10 W

Predictions, assuming next year consistent with previous year; may not actually be observed in future

Predicted graduation rates lower than predicted FPPS due to setbacks; if setbacks less of a concern, can base comparison between options solely on graduation rate