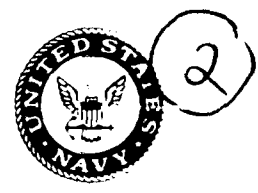


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Importance of Psychomotor Abilities for First-term Navy Enlisted Performance

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NPRDC TN 89-2

October 1988

**Importance of Psychomotor Abilities for
First-term Navy Enlisted Performance**

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19 ABSTRACT (Continue on reverse if necessary and identify by block number) This study examined the importance of nine psychomotor abilities for predicting first-term Navy performance. Two Navy "A" school training instructors from each of 19 ratings completed a questionnaire regarding the importance of various psychomotor and (ASVAB)-related abilities. Results indicated that five psychomotor abilities (multilimb coordination, control precision, arm hand steadiness, manual dexterity, finger dexterity) were rated as being important for first-term performance, with multilimb coordination and control precision rated as most important. Tasks performed by first-term Navy personnel requiring psychomotor abilities were identified. Finally, Navy ratings having the greatest psychomotor ability requirements were identified.				

FOREWORD

This report is the second in a series of three reports designed to evaluate the importance and relevance of psychomotor ability to Navy enlisted performance. The first report, NPRDC TN 88-44, reviewed the literature on the reliabilities and validities of psychomotor ability tests for predicting training or job performance. The present report describes the results of interviews with Navy training school instructors to determine the relative importance they think that psychomotor abilities have in determining job performance in 19 Navy ratings. The findings will be of assistance in deciding whether psychomotor tests should be added to the Armed Services Vocational Aptitude Battery (ASVAB) on an experimental basis.

This report was prepared by Personnel Decisions Research Institute under Delivery Order #7J03, Contract #N66001-87-D-0085, issued by the Navy Personnel Research and Development Center. It was funded by the Office of the Assistant Secretary of Defense (Force Manpower and Personnel) to accelerate the development of new measures of ability that could be used to supplement the current ASVAB.

JOHN J. PASS
Director, Personnel Systems Department

SUMMARY

Problem

The Navy Personnel Research and Development Center is interested in exploring the possibility that assessment of psychomotor abilities at time of entry into the Navy may enhance the prediction of performance in Navy ratings.

Purposes

The primary purposes of this study were to (1) determine whether psychomotor abilities are important for first-term performance in several Navy ratings, and if so, (2) identify first-term rating tasks that require important psychomotor abilities, and (3) identify Navy ratings having the greatest psychomotor ability requirements.

Approach

A questionnaire was developed to (1) assess the importance of various psychomotor and ASVAB-related abilities and (2) identify tasks performed by first-term enlisted personnel that require important psychomotor abilities. This questionnaire was administered to two Navy "A" school training instructors from each of 19 ratings.

Results and Discussion

Five psychomotor abilities--multilimb coordination, control precision, arm hand steadiness, manual dexterity, and finger dexterity--were rated as being important for first-term performance in several Navy ratings, with multilimb coordination and control precision rated as most important. All five abilities had high mean importance values across ratings, high importance values for 10 or more individual ratings, and were ranked as the most important ability for at least two ratings. In other results, tasks performed by first-term Navy personnel in 19 ratings that require psychomotor abilities were identified. Navy ratings having the greatest psychomotor ability requirements were also identified.

Recommendations

The results indicated that the Navy should pursue psychomotor testing on an experimental basis using measures of five psychomotor abilities: multilimb coordination, control precision, manual dexterity, finger dexterity, and arm hand steadiness. Of these, measures of multilimb coordination and control precision should receive the highest priorities.

ACKNOWLEDGEMENTS

Several people assisted in this research.

John Wolfe of the Navy Personnel Research and Development Center served as COTR throughout this project. John's helpful advice during the project and valuable assistance in setting up the data collection workshops greatly facilitated this research.

Thanks are extended to the 38 Navy "A" school training instructors who participated in the data collection workshops and to the points of contact at each training school who assisted in coordinating the workshops.

Finally, several staff members from Personnel Decisions Research Institute assisted in this research: Walter Borman provided counsel throughout the project and helpful comments on an earlier draft of this report; Glen Hallam and Gary Carter each conducted several data collection workshops; and John Novak typed the project materials.

MICHALE J. BOSSHARDT

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INTRODUCTION

Problem

The Navy Personnel Research and Development Center (NAVPERSRANDCEN) is interested in determining the utility of psychomotor tests for improving the prediction of performance for Navy enlisted ratings. Accordingly, information is required regarding (1) the importance of various psychomotor abilities for first-term Navy enlisted performance and (2) the Navy ratings that have the greatest psychomotor requirements.

Objectives

This research had three primary objectives. The first objective was to determine whether the psychomotor abilities are important for successful first-term performance in Navy enlisted ratings. For ratings in which psychomotor abilities are important, a second objective was to identify tasks performed by first-term rating personnel that require these abilities. The final objective was to identify Navy ratings for which psychomotor abilities are important.

Background

The Armed Services Vocational Aptitude Battery (ASVAB) has been used by the Navy for several years to select and classify new recruits into enlisted ratings. The ASVAB measures several attributes including verbal ability, arithmetic ability, math reasoning and knowledge, mechanical comprehension, perceptual speed and accuracy, general science knowledge, automotive/shop knowledge, and electronics knowledge.

The Navy has an ongoing research program to determine whether other types of abilities not measured by the ASVAB are likely to improve prediction of first-term enlisted performance. One aspect of this program is the investigation of psychomotor ability tests as aids in prediction.

A recent literature review by Bosshardt (1988)¹ identified nine types of psychomotor abilities and found that several of these abilities (multilimb coordination, finger dexterity, manual dexterity, wrist-finger speed, control precision) predicted job and training criteria in military and civilian settings. Results from this review also indicated that psychomotor tests typically have high reliabilities, low correlations with ASVAB-related abilities and knowledges, and large practice effects.

The present study examined the importance of these nine psychomotor abilities for performing in 19 Navy ratings.

APPROACH

Thirty-eight Navy subject matter experts (SMEs) completed a questionnaire regarding the importance of various psychomotor and ASVAB-measured abilities for first-term rating performance. Details of the methodology are given below.

Ratings Studied

Nineteen ratings/distributable communities were included in this study. Ratings were selected by the COTR and PDRI project manager after examining descriptions of all Navy enlisted ratings and selecting those that appeared to have the greatest psychomotor ability requirements. The ratings/distributable communities included in the study are shown in Table I.

Table I
Ratings and Distributable Communities Included
in the Psychomotor Abilities Survey

Air Traffic Controller (AC)
Aviation Machinist Mate (AD)
Aviation Electrician's Mate (AE)
Aviation Electronics Technician (AT)
Aviation Antisubmarine Warfare Operator (AWO)
Boiler Technician (BT)
Dental Technician (DT)
Electrician's Mate (EM)
Engineman (EN)
Electronics Technician (ET)
Fire Control Technician (FC)
Gunner's Mate (GM)
Hull Maintenance Technician (HT)
Interior Communications Electrician (IC)
Machinist Mate (MM)
Machinery Repairman (MR)
Operations Specialist (OS)
Sonar Technician--Surface (STG)
Sonar Technician--Submarine (STS)

Survey Instrument

A structured questionnaire was developed to collect information about the importance of psychomotor abilities for first-term enlisted performance in these 19 ratings. This questionnaire contained three sections. The first section contained several biographical questions detailing rater qualifications (rater name, age, sex, race, rating, location, pay grade, rating experience, and Navy experience).

The second section of the questionnaire contained 17 knowledges and abilities. Each ability was rated on two scales: (1) importance for effective overall first-term performance in a particular rating and (2) importance in distinguishing average from superior first-term performance in the ratings.

Nine of these 17 attributes were psychomotor abilities identified by Bosshardt (1987). These abilities were multilimb coordination, wrist-finger speed, manual dexterity, finger dexterity, control precision, rate control, speed of arm movement, arm hand steadiness, and aiming.

The remaining eight attributes were abilities and knowledges measured by the ASVAB. These attributes were verbal ability, arithmetic ability, math reasoning and knowledge, mechanical comprehension, perceptual speed and accuracy, general science knowledge, automotive/shop knowledge, and electronics knowledge. These ASVAB-measured attributes were included on the questionnaire to provide a benchmark against which to compare the psychomotor judgments.

The last section of the questionnaire was designed to identify tasks performed by first-term rating personnel that require important psychomotor abilities. For each psychomotor ability judged to be "important," "very important," or "crucial" on either the overall importance or performance differentiation scale, SMEs were asked to identify tasks performed by first-term rating personnel that require this ability. To facilitate this effort and to ensure that the entire range of activities in the rating was considered, a copy of the most recent occupational standard for the rating was provided.

The same questionnaire (with a different occupational standards list) was used for each rating. A copy of this questionnaire is shown in Appendix A.

Hypotheses

Based on conclusions of a literature review on psychomotor abilities by Bosshardt (1987), five psychomotor abilities were hypothesized to be important for first-term Navy performance: multilimb coordination, control precision, manual dexterity, finger dexterity, and wrist-finger speed.

Procedure

Eighteen 2-hour workshops were held during February 1988 with Navy "A" school training instructors to obtain the questionnaire judgments. Two training instructors from one rating or distributable community and one PDRI staff member participated in each workshop.² The dates, locations, and participants in each workshop are shown in Appendix B.

Participants in each workshop first evaluated the importance of the 17 abilities and knowledges for overall rating performance and for differentiating average from superior first-term incumbents. Those psychomotor abilities with mean ratings of 3.0 or greater on either scale were identified by the PDRI workshop leader. SMEs then reviewed the occupational standards list for that rating and identified tasks performed by first-term rating personnel that require these abilities.

²There was one exception. One workshop included instructors from two distributable communities (Sonar Technician--Surface and Sonar Technician--Submarine).

Description of Rater Sample

Thirty-eight training instructors completed psychomotor questionnaires. The mean age of this sample was 32.8 years (SD = 5.89 years). Thirty-five instructors were Caucasian, two were Black, and one was Hispanic. All but two instructors were males. One instructor was in pay grade 4, 1 was in grade 5, 21 were in grade 6, 11 were in grade 7, and 4 were in grade 8. The instructors had an average of 12.2 years (SD = 4.87 years) in the Navy and an average of 2.6 years (SD = 1.60 years) in their present assignment.

RESULTS AND DISCUSSION

Importance of Psychomotor Abilities for Overall Rating Performance

Mean judgments of the importance of each attribute for overall performance in each Navy rating and across all 19 Navy ratings are shown in Table 2. The mean across-rating values for the eight ASVAB abilities and knowledges range from 4.05 (verbal ability) to 2.37 (automotive/shop knowledge). Five of the eight ASVAB attributes have across-rating means greater than 3.0. Six ASVAB abilities and knowledges are "important" (i.e., have a value of 3.0 or greater) for at least 10 ratings.

Mean across-rating values for nine psychomotor abilities range from 3.68 (multilimb coordination) to 2.29 (speed of arm movement). Five psychomotor abilities have across-rating means greater than 3.0. These abilities are multilimb coordination (3.68), control precision (3.50), arm hand steadiness (3.50), manual dexterity (3.24), and finger dexterity (3.21).

Six psychomotor abilities have values of 3.0 or greater for at least 10 ratings. These are multilimb coordination (16 ratings), control precision (15), arm hand steadiness (15), manual dexterity (12), finger dexterity (12), and rate control (12).

Individual psychomotor abilities are ranked as the most important ability in two ratings and are tied with an ASVAB-measured attribute as the most important ability in eight other ratings. The psychomotor abilities most frequently ranked as the most important ability for a rating were multilimb coordination (3), control precision (3), finger dexterity (3), arm hand steadiness (3), and manual dexterity (2).

To summarize, the results presented in Table 2 indicated that five psychomotor abilities--multilimb coordination, control precision, arm hand steadiness, manual dexterity, and finger dexterity--were generally rated as important for overall performance across the 19 ratings studied.

Importance of Psychomotor Abilities for Differentiating Average From Superior Performers

Mean values of the importance of each attribute for distinguishing average from superior performers in each Navy rating and across all 19 Navy ratings are shown in Table 3. The mean across-rating values for the ASVAB attributes range from 3.68 (perceptual speed and accuracy) to 2.47 (general science knowledge), with an overall mean of 3.25. Six ASVAB attributes have mean ratings of 3.0 or greater for at least 10 ratings. (A value of 3.0 or higher was considered "important.")

Table 2
Mean Importance For Overall Rating Performance

Knowledge	Navy Rating														Mean	SD					
	AC	AD	AE	AT	AW	BT	DT	EM	FN	FT	FC	GM	HT	IC			MM	MR	OS	STG	STS
<u>Related Attributes:</u>																					
Visual Ability	5.0	4.0	5.0	5.0	4.5	4.0	4.0	4.0	3.0	4.0	4.5	4.0	2.5	4.0	4.0	3.5	4.5	3.5	4.0	4.05	.64
Mathematical Ability	4.0	3.5	4.0	3.5	4.0	3.0	2.0	3.5	3.0	4.5	4.5	3.0	2.5	4.0	3.0	5.0	4.5	4.5	4.0	3.68	.79
Reasoning and Knowledge	2.0	2.0	3.0	3.5	4.0	2.0	1.0	3.0	2.0	3.0	4.5	1.5	3.0	4.0	2.5	3.5	5.0	4.0	2.5	2.95	1.07
Analitical Comprehension	4.0	4.0	5.0	3.5	4.0	3.0	2.0	3.5	3.5	4.5	4.5	4.5	3.5	4.5	5.0	3.5	3.0	2.5	3.5	3.71	.79
Optical Speed and Accuracy	4.5	4.5	4.0	4.5	5.0	3.5	5.0	2.5	2.0	2.5	3.5	3.0	3.0	3.0	3.0	3.0	2.0	2.0	4.0	3.55	1.00
General Science Knowledge	3.0	3.0	3.5	3.0	3.0	3.0	2.0	2.0	1.5	1.5	2.5	2.5	2.0	4.5	3.0	1.5	1.5	2.0	3.0	2.53	.81
Automotive/Shop Knowledge	1.5	4.0	4.0	1.0	3.0	2.5	1.0	3.0	3.5	1.5	2.0	3.0	2.0	2.5	4.0	2.5	1.0	2.0	1.0	2.37	1.05
Electronics Knowledge	2.5	2.0	5.0	5.0	3.5	3.5	1.0	3.5	1.5	5.0	5.0	4.0	1.5	5.0	2.5	1.0	3.0	5.0	3.5	3.32	1.46
<u>Other Abilities:</u>																					
Limb Coordination	5.0	5.0	4.5	4.5	4.0	3.5	3.0	2.5	3.5	4.0	4.5	3.5	3.5	4.0	4.0	3.5	3.0	2.5	2.0	3.68	.84
Finger Speed	2.0	4.0	3.5	2.0	4.5	3.0	3.5	1.0	3.0	1.5	2.0	2.0	2.0	2.0	3.0	2.5	2.5	2.0	1.5	2.50	.91
Hand Dexterity	3.0	4.0	4.5	4.0	4.5	3.5	4.0	2.5	4.0	2.0	3.0	4.5	2.5	4.5	3.5	2.5	1.5	2.5	1.0	3.24	1.07
Eye Dexterity	1.5	4.0	4.0	4.5	4.0	4.0	4.0	3.0	4.0	2.5	3.5	3.5	2.5	5.0	3.0	2.0	2.0	2.5	1.5	3.21	1.03
Visual Precision	3.5	4.0	4.0	3.0	5.0	4.0	2.0	3.5	3.5	3.5	3.5	3.5	2.5	2.5	2.5	4.5	4.0	3.5	4.0	3.50	.75
Hand Control	3.5	1.5	4.0	3.0	4.0	3.5	3.5	2.5	3.5	1.5	2.5	4.0	2.5	3.0	4.0	2.5	2.0	3.0	3.0	3.00	.80
Speed of Arm Movement	2.0	2.5	2.0	2.0	4.0	3.5	2.5	2.0	3.5	1.5	1.5	2.0	2.5	2.0	2.0	2.5	1.0	2.5	2.0	2.29	.73
Steadiness	3.5	3.0	5.0	4.0	4.0	4.0	4.5	2.0	3.0	4.5	4.0	4.0	2.5	5.0	2.0	3.0	3.0	3.5	2.0	3.50	.96
Balance	4.5	1.0	3.5	2.0	4.0	3.0	4.5	1.5	2.0	1.5	4.5	3.5	2.0	1.0	1.5	4.5	1.0	4.0	2.5	2.74	1.34

Table 3

Mean Importance For Distinguishing Average From Superior Performance

Knowledge	Navy Rating														Mean	SD							
	AC	AD	AE	AT	AV	BT	DT	EM	FM	ET	FC	GM	HT	IC			MM	MR	OS	STG	STS		
Identified Attributes:																							
Visual Ability	4.0	5.0	3.0	4.5	4.0	5.0	5.0	3.0	3.0	3.0	3.5	2.5	4.0	3.0	2.5	3.5	4.0	2.5	3.5	3.5	3.61	.84	
Arithmetic Ability	3.5	4.5	4.5	3.5	4.0	4.0	1.5	3.0	4.0	4.5	4.0	1.5	4.5	2.0	3.0	5.0	5.0	2.5	3.0	3.55	1.09		
Reasoning and Knowledge	2.5	2.0	5.0	3.0	4.5	3.5	1.0	2.0	2.5	3.0	3.0	1.5	4.5	2.0	2.0	4.5	3.5	3.0	3.5	2.97	1.11		
Technical Comprehension	4.0	4.5	5.0	3.5	3.5	4.5	3.0	4.0	4.5	3.0	3.5	4.0	4.0	3.5	5.0	3.0	2.0	1.0	4.0	3.66	.99		
Physical Speed and Accuracy	4.0	4.5	4.5	4.0	4.0	5.0	5.0	5.0	4.0	2.5	2.5	2.0	4.0	4.0	2.5	3.5	3.5	1.5	4.0	3.68	1.03		
General Science Knowledge	2.5	2.5	3.0	3.0	2.5	5.0	3.5	1.0	2.5	3.0	1.0	1.5	3.0	2.5	2.5	2.5	1.5	1.0	3.0	2.47	.98		
Initiative/Shop Knowledge	1.5	4.0	5.0	1.0	2.0	4.5	1.5	4.0	4.5	2.5	2.0	2.5	3.0	2.5	4.0	2.0	1.0	1.5	1.5	2.66	1.29		
Electronics Knowledge	2.5	2.5	4.5	5.0	3.5	5.0	2.0	5.0	2.0	5.0	4.5	3.5	2.0	2.5	2.5	1.5	3.0	4.0	3.5	3.37	1.20		
Other Abilities:																							
Hand-Limb Coordination	4.5	5.0	4.0	3.5	3.5	4.0	4.0	2.0	3.0	2.5	3.0	2.0	5.0	1.5	3.0	3.0	3.0	2.5	2.0	3.21	1.02		
Finger Speed	1.5	3.5	3.5	2.0	4.0	3.5	3.5	1.0	3.5	1.5	1.5	1.5	3.5	1.5	2.5	2.0	3.0	1.0	1.0	2.37	1.07		
Hand Dexterity	2.5	4.0	4.5	3.5	3.5	4.0	5.0	1.5	3.0	1.5	2.5	4.0	3.5	4.0	3.0	2.0	1.5	2.0	1.0	2.97	1.16		
Foot Dexterity	1.0	4.0	4.0	3.5	4.0	4.5	4.5	4.0	2.5	1.5	3.5	3.5	3.0	4.0	3.0	2.0	2.5	2.0	1.0	3.05	1.13		
Hand Precision	3.0	3.0	3.5	3.0	4.0	4.5	1.5	4.5	2.0	3.0	2.5	4.0	5.0	1.5	1.5	3.5	3.5	4.0	4.0	3.24	1.06		
Hand Control	3.5	2.5	3.0	2.5	4.0	4.0	4.5	2.0	2.0	2.5	1.5	3.5	3.5	1.5	3.5	1.5	2.5	3.0	3.0	2.84	.90		
Speed of Arm Movement	1.5	3.0	3.0	1.5	3.5	4.0	2.0	2.5	1.5	2.5	1.5	2.5	4.0	1.0	1.0	2.0	1.0	2.0	1.5	2.18	.96		
Steadiness	3.0	2.0	4.0	4.0	4.5	4.0	5.0	3.0	3.0	4.5	2.5	3.0	5.0	2.5	1.0	2.5	3.5	2.0	1.5	3.18	1.16		
Agility	4.0	2.0	4.0	1.5	3.5	3.5	5.0	3.0	2.0	1.5	3.5	3.0	4.0	1.5	1.0	3.5	1.5	3.5	3.0	2.87	1.13		

Mean values for the nine psychomotor abilities shown in Table 3 range from 3.24 (control precision) to 2.18 (speed of arm movement), with an overall mean of 2.88. Four psychomotor abilities have across-rating means greater than 3.0. These are control precision (3.24), multilimb coordination (3.21), arm hand steadiness (3.18), and finger dexterity (3.05).

Seven psychomotor abilities have means of 3.0 or greater for at least 10 ratings. These are control precision (14), multilimb coordination (13), finger dexterity (12), arm hand steadiness (12), aiming (12), manual dexterity (11), and rate control (10).

Table 3 shows that a psychomotor ability is the most important ability in two ratings and is tied with an ASVAB-related ability as the most important ability in seven ratings. The psychomotor abilities most frequently ranked as most important ability for a rating were control precision (4), multilimb coordination (3), arm hand steadiness (3), and manual dexterity (3).

In summary, the results shown in Table 3 suggested that control precision, multilimb coordination, arm hand steadiness, manual dexterity, and finger dexterity were generally rated as being important for distinguishing average from superior performance in the 19 ratings studied.

Summary--Psychomotor Importance Ratings

Overall, the questionnaire results indicated that five psychomotor abilities--multilimb coordination, control precision, arm hand steadiness, manual dexterity, and finger dexterity--were rated as being important for first-term performance across 19 Navy ratings. Of these five abilities, multilimb coordination and control precision were consistently rated as most important.

Evidence regarding the validity and reliability of measures of these five psychomotor abilities and their intercorrelations with measures of ASVAB-related abilities was summarized by Bosshardt (1987). Median validities for measures of these psychomotor abilities were .27 for multilimb coordination, .17 for control precision, .05 for arm hand steadiness, .20 for manual dexterity, and .19 for finger dexterity. Mean test-retest reliabilities for measures of these five psychomotor abilities range from .74 (finger dexterity) to .80 (manual dexterity). Finally, all five psychomotor abilities typically showed low correlations (e.g., $r < .20$) with ASVAB-related abilities.

Tasks Performed by First-term Rating Incumbents that Require Psychomotor Abilities

Appendices C through U list tasks performed by first-term incumbents that require important psychomotor abilities. Each rating has a separate appendix. Each appendix lists the psychomotor abilities important for that particular rating and the tasks performed by first-term incumbents that require each important ability. These task lists provide additional documentation of the importance of psychomotor abilities for each rating.

Ratings Requiring Psychomotor Ability

Tables 2 and 3 also provide information about which ratings have the greatest psychomotor ability requirements. Ratings in which six or more psychomotor abilities are rated as important for overall performance (see Table 2) include:

- Aviation Antisubmarine Warfare Operator (9)
- Boiler Technician (9)
- Aviation Electrician's Mate (8)
- Engineman (8)
- Dental Technician (7)
- Gunner's Mate (7)
- Air Traffic Controller (6)
- Aviation Machinist Mate (6)
- Aviation Electronics Technician (6)
- Fire Control Technician (6)

Ratings in which a psychomotor ability is ranked as the most important ability for overall performance (see Table 2) include Aviation Machinist Mate (multilimb coordination) and Engineman (manual dexterity, finger dexterity). Ratings in which one or more psychomotor abilities are tied with an ASVAB-measured attribute as the most important ability for a rating include Air Traffic Controller (multilimb coordination), Aviation Electrician's Mate (arm hand steadiness), Aviation Antisubmarine Warfare Operator (control precision), Boiler Technician (control precision, finger dexterity, arm hand steadiness), Gunner's Mate (manual dexterity), Hull Technician (multilimb coordination), Interior Communications Electrician (finger dexterity, arm hand steadiness), and Sonar Technician--Submarine (control precision).

Table 3 shows the mean importance judgments of various abilities for distinguishing average from superior first-term rating performance. Ratings in which six or more psychomotor abilities are rated as important for distinguishing average from superior performers include:

- Aviation Electrician's Mate (9)
- Aviation Antisubmarine Warfare Operator (9)
- Boiler Technician (9)
- Hull Maintenance Technician (9)
- Dental Technician (7)
- Aviation Machinist Mate (6)
- Gunner's Mate (6)

A psychomotor ability is the most important ability for distinguishing average from superior performers (see Table 3) in two ratings: Air Traffic Controller (multilimb coordination) and Hull Maintenance Technician (arm hand steadiness, control precision, multilimb coordination). Psychomotor abilities are tied with an ASVAB attribute as the most important ability for seven other ratings: Aviation Machinist Mate (multilimb coordination), Aviation Antisubmarine Warfare Operator (arm hand steadiness), Dental Technician (manual dexterity, arm hand steadiness, aiming), Gunner's Mate (manual dexterity, control precision), Interior Communications Electrician (manual dexterity, finger dexterity), Sonar Technician--Ground (control precision, and Sonar Technician--Submarine (control precision).

In summary, psychomotor abilities are important for successful performance in a number of ratings. Ratings in which several psychomotor abilities were rated as being important both for overall performance and for differentiating average from superior performers include Aviation Antisubmarine Warfare Operator, Boiler Technician, Aviation Electrician's Mate, Gunner's Mate, Dental Technician, and Aviation Machinist Mate. Ratings in which a psychomotor ability was rated as the most important ability on either scale (i.e., overall performance; performance differentiation) include Aviation Machinist Mate, Engineman, Air Traffic Controller, and Hull Maintenance Technician.

Limitations of This Study

Two limitations of this study should be noted. First, the sample of ratings included in this study was not a random, representative, or comprehensive sample of all Navy enlisted ratings. The ratings selected were hypothesized to have the greatest psychomotor ability requirements. Therefore, caution should be exercised in generalizing results of this survey to all enlisted ratings.

A second limitation is the small number of SMEs from each rating completing the questionnaire. A larger and more diverse sample of raters (e.g., including rating incumbents as well as training instructors) would have enabled more definitive conclusions.

CONCLUSIONS

Questionnaire data were collected from Navy SMEs regarding the importance of 17 attributes (9 psychomotor, 8 ASVAB-related) for performing in each of 19 Navy ratings. In general, psychomotor abilities were judged slightly less important than ASVAB-related abilities for first-term rating performance. Five psychomotor abilities--multilimb coordination, control precision, arm hand steadiness, manual dexterity, and finger dexterity--were generally rated as being important for first-term performance across 19 Navy ratings. All five psychomotor abilities had mean across-rating importance values of 3.0 or greater, had mean importance values of 3.0 or greater for at least 10 ratings, and were ranked as the most ability for at least two ratings. Of these five psychomotor abilities, multilimb coordination and control precision were consistently rated as the most important.

Tasks performed by first-term rating incumbents that require important psychomotor abilities were identified. These are listed in Appendices C through U.

Ratings with greatest psychomotor requirements were identified. These include Aviation Antisubmarine Warfare Operator, Boiler Technician, Aviation Electrician's Mate, Gunner's Mate, Dental Technician, Aviation Machinist Mate, Engineman, Air Traffic Controller, and Hull Maintenance Technician.

Two limitations of the study, the small sample of SMEs for each rating and the non-random selection of ratings for study, were mentioned. Both factors limit the generalizability of these findings.

RECOMMENDATIONS

It is recommended that the Navy conduct selection research using measures of five psychomotor abilities--multilimb coordination, control precision, manual dexterity, finger dexterity, and arm hand steadiness--as predictors of first-term Navy performance. Of these five psychomotor abilities, measures of multilimb coordination and control precision should receive the highest priorities.

APPENDIX A
PSYCHOMOTOR QUESTIONNAIRE

NAVY PSYCHOMOTOR STUDY WORKSHOPS

PROJECT OVERVIEW

The Navy uses the Armed Services Vocational Aptitude Battery (ASVAB) to select and classify new recruits into Navy ratings. The ASVAB measures nine attributes such as verbal ability, mechanical comprehension, and knowledge of general science.

Last year the Navy Personnel Research and Development Center contracted with Personnel Decisions Research Institute (PDRI) to determine whether the addition of psychomotor tests would improve the efficiency of classification in a significant number of ratings. Depending on the results of this study, new psychomotor tests may be developed and included as part of the classification program for new recruits.

The initial step in the project was to identify the different types of psychomotor ability and to review existing tests that measure these abilities.

YOUR ROLE IN THE PSYCHOMOTOR PROJECT

The present phase of the project involves meeting with subject matter experts from approximately 20 Navy ratings to determine whether psychomotor abilities are important for successful job performance in various Navy ratings. Today you are being asked to provide input about the importance of various attributes for one rating. Depending on the results of these meetings, a recommendation will be made regarding whether or not to include psychomotor tests as part of the entry-level classification process.

TODAY'S WORKSHOP ACTIVITIES

Today's workshop has been divided into two parts. During the first part, you will be asked to evaluate the importance of various attributes for first-term enlisted personnel in your rating. More specifically, you will be presented with a list of 17 knowledges and abilities and then asked to (1) rate the importance of each knowledge or ability for overall job performance and (2) rate the importance of each knowledge or ability for distinguishing average from superior job incumbents.

The second part of the workshop will focus on those psychomotor abilities that you believe are most important to job performance in your rating. For each important psychomotor ability, you will be asked to provide examples of tasks that are performed by first-term rating incumbents which require this ability.

Before we get started, please complete the background information form shown on the next page. This information will document your qualifications as a subject matter expert for this rating.

BACKGROUND INFORMATION FORM

1. Your name: _____
 Last First M.I.

2. Today's date: _____
 Day Month Year

3. Your age: _____ years

4. Your sex (check one):
 _____ Male
 _____ Female

5. Your race (check one):
 _____ Black or Afro-American
 _____ Hispanic or Spanish (Mexican, Puerto Rican, Cuban)
 _____ Asian or Pacific Islander
 _____ North American Indian or Native American
 _____ White or Caucasian
 _____ Other, Please specify _____

6. Your Navy Rating: _____

7. Your Current Location: _____

8. Your Pay Grade: _____

9. How long have you been in the Navy: _____ years

10. How long have you been in your present assignment: _____ years

PART 1. KNOWLEDGE AND ABILITY RATINGS

Today you are asked to evaluate the importance of several knowledges and abilities for first-term enlisted personnel in the rating under consideration.

For each knowledge or ability, you will make two judgments. The first judgment you are asked to make is: How important is this knowledge or ability for effective overall job performance? The scale for this judgment is shown below:

- 1 = Unimportant
- 2 = Minor Importance
- 3 = Important
- 4 = Very Important
- 5 = Crucial

The second judgment asks how important possession of the knowledge or ability is for distinguishing average from superior performance on the job. In other words, think about how important it is to possess this attribute to perform at a superior level. Does this knowledge or ability distinguish superior from average performance? The rating scale, the same one used in the first question, is shown below:

- 1 = Unimportant
- 2 = Minor Importance
- 3 = Important
- 4 = Very Important
- 5 = Crucial

When making your ratings, try to avoid the common tendency to use only the middle of the scale. That is, many raters tend to give ratings of 2, 3, or 4 to all knowledges and abilities and avoid using extreme ratings. You should use the full range of the scale from Unimportant to Crucial when making your ratings. Try to do this on both judgment 1 and judgment 2.

An example showing hypothetical judgments for Verbal Ability and Arithmetic Ability for one rating are shown on the next page.

EXAMPLE

KNOWLEDGE/ABILITY	How important is this knowledge or ability for effective overall job performance? 1 - Unimportant 2 - Minor Importance 3 - Important 4 - Very Important 5 - Crucial	How important is the possession of this knowledge or ability for distinguishing average from superior performance on the job? 1 - Unimportant 2 - Minor Importance 3 - Important 4 - Very Important 5 - Crucial
1. VERBAL ABILITY: ability to understand the meanings of words, to use and understand written and spoken language, and to communicate with others.	4	2
2. ARITHMETIC ABILITY: ability to perform basic arithmetic calculations (e.g., addition, subtraction, multiplication, and division) rapidly and accurately.	3	4

After reading the definition of Verbal Ability, this rater concluded that Verbal Ability is very important for successful overall performance in this rating. Thus, the rater wrote a "4" in the first column, importance to overall job performance.

The rater then proceeded to the second judgment, whether Verbal Ability distinguishes superior from average performance. The rater thought that Verbal Ability was of minor importance in differentiating superior from average performance on the job. Thus, the rater wrote a "2" in the second column.

The rater then proceeded to the next ability, Arithmetic Ability. After reading the definition of Arithmetic Ability, the rater decided that Arithmetic Ability is important for successful performance in this rating; thus, the rater wrote a "3" in the column for importance to overall job performance. The rater thought that Arithmetic Ability was very important in distinguishing superior from average performance on this rating; thus, the rater wrote a "4" in the second column.

Any questions?

Now make your ratings for all 17 knowledges and abilities.

KNOWLEDGE AND ABILITY JUDGMENT FORM

Name: _____

Rating: _____

KNOWLEDGE/ABILITY

How important is this knowledge or ability for effective overall job performance?

- 1 - Unimportant
- 2 - Minor Importance
- 3 - Important
- 4 - Very Important
- 5 - Crucial

How important is the possession of this knowledge or ability for distinguishing average from superior performance on the job?

- 1 - Unimportant
- 2 - Minor Importance
- 3 - Important
- 4 - Very Important
- 5 - Crucial

1. **VERBAL ABILITY:** ability to understand the meanings of words, to use and understand written and spoken language, and to communicate with others.

2. **ARITHMETIC ABILITY:** ability to perform basic arithmetic calculations (e.g., addition, subtraction, multiplication, and division) rapidly and accurately.

3. **MATH REASONING & KNOWLEDGE:** ability to use mathematical formulas (e.g., algebra, geometry, conversions) and to solve mathematical word problems.

4. **MECHANICAL COMPREHENSION:** knowledge of mechanical and physical principles; ability to solve practical problems involving mechanical objects (e.g., levers, gears, pulleys) or concepts (e.g., gravity, velocity).

5. **PERCEPTUAL SPEED & ACCURACY:** ability to notice details about things; ability to compare two or more objects (e.g., words, numbers, symbols) and identify their similarities or differences quickly and accurately.

6. **GENERAL SCIENCE KNOWLEDGE:** knowledge of general science (e.g., physics, chemistry, astronomy) principles and terms.

7. **AUTOMOTIVE/SHOP KNOWLEDGE:** knowledge of automobiles, automotive devices, and automotive problems; knowledge of shop practices and use of tools.

8. **ELECTRONICS KNOWLEDGE:** knowledge of electronics and electricity terms and principles; ability to solve practical problems involving electronics and electrical principles.

9. **MULTILIMB COORDINATION:** ability to coordinate the movements of two or more limbs simultaneously

KNOWLEDGE/ABILITY

	<p>How important is this knowledge or ability for effective overall job performance?</p> <p>1 = Unimportant 2 = Minor Importance 3 = Important 4 = Very Important 5 = Crucial</p>	<p>How important is the possession of this knowledge or ability for distinguishing average from superior performance on the job?</p> <p>1 = Unimportant 2 = Minor Importance 3 = Important 4 = Very Important 5 = Crucial</p>
<p>10. WRIST-FINGER SPEED: ability to make fast, distinct movements of the fingers, hands, and wrists that do not require accuracy (e.g., tapping); it involves the speed with which the movement is made <u>after</u> the movement has been initiated.</p>		
<p>11. MANUAL DEXTERITY: ability to make skillful hand, or arm and hand movements; it may involve manipulating fairly large objects but does <u>not</u> involve manipulating controls on equipment or machines.</p>		
<p>12. FINGER DEXTERITY: ability to make skillful finger movements; it may involve manipulating very small objects but does <u>not</u> involve manipulating controls on machines or equipment.</p>		
<p>13. CONTROL PRECISION: ability to make rapid, precise, controlled arm-hand or leg movements to adjust or position controls on machines or equipment relative to changes in a target stimulus; it involves situations where both the speed and direction of the target are predictable.</p>		
<p>14. RATE CONTROL: ability to make timed, anticipatory motor adjustments relative to unpredictable changes in the speed and/or direction of a moving target; it does <u>not</u> apply to situations where both the speed and direction of the target are predictable.</p>		
<p>15. SPEED OF ARM MOVEMENT: ability to make fast, single arm movements where accuracy is <u>not</u> required; it involves the speed with which the movement is made <u>after</u> the movement has been initiated.</p>		
<p>16. ARM HAND STEADINESS: ability to make precise, steady arm-hand positioning movements that minimize speed or strength; it includes steadiness during arm movement as well as when the arm is in stationary position; it does <u>not</u> include adjusting equipment controls.</p>		

PART 2. TASKS REQUIRING PSYCHOMOTOR ABILITY

During this part of the workshop you are asked to provide examples of tasks that require psychomotor ability.

At this time the PDRI workshop leader will identify those psychomotor abilities to be studied during this part of the workshop. For each psychomotor ability that has been selected, write down tasks performed by first-term rating personnel that require this ability. To assist you in this effort, a copy of the most recent tasklist for this rating will be provided.

PSYCHOMOTOR ABILITY: MULTILIMB COORDINATION

Rating _____

[Definition: ability to coordinate the movements of two or more limbs simultaneously (e.g., both hands, both feet, one hand and one foot); it involves situations where the body is at rest (standing or sitting) while two or more limbs are moving; it does not involve situations where trunk movements must be coordinated with limb movements (e.g., hitting a baseball)].

Representative tasks performed by first-term enlisted rating personnel that require this psychomotor ability:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

PSYCHOMOTOR ABILITY: WRIST-FINGER SPEED

Rating ____

(Definition: ability to make fast, distinct movements of the fingers, hands, and wrists that do not require accuracy (e.g., tapping); it involves the speed with which the movement is made after the movement has been initiated.)

Representative tasks performed by first-term enlisted rating personnel that require this ability:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

PSYCHOMOTOR ABILITY: MANUAL DEXTERITY

Rating _____

(Definition: ability to make skillful hand, or arm and hand movements; it may involve manipulating fairly large objects but does not involve manipulating controls on equipment or machines.)

Representative tasks performed by first-term enlisted rating personnel that require this ability:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

PSYCHOMOTOR ABILITY: FINGER DEXTERITY

Rating ____

(Definition: ability to make skillful finger movements; it may involve manipulating very small objects but does not involve manipulating controls on machines or equipment.)

Representative tasks performed by first-term enlisted rating personnel that require this ability:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

PSYCHOMOTOR ABILITY: CONTROL PRECISION

Rating _____

(Definition: ability to make rapid, precise, controlled arm-hand or leg movements to adjust or position controls on machines or equipment relative to changes in a target stimulus; it involves situations where both the speed and direction of the target are predictable.)

Representative tasks performed by first-term enlisted rating personnel that require this ability:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

PSYCHOMOTOR ABILITY: RATE CONTROL

Rating _____

(Definition: ability to make timed, anticipatory motor adjustments relative to unpredictable changes in the speed and/or direction of a moving target; it does not apply to situations where both the speed and direction of the target are predictable.)

Representative tasks performed by first-term enlisted rating personnel that require this ability:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

PSYCHOMOTOR ABILITY: SPEED OF ARM MOVEMENT

Rating ____

(Definition: ability to make fast, single arm movements where accuracy is not required; it involves the speed with which the movement is made after the movement has been initiated.)

Representative tasks performed by first-term enlisted rating personnel that require this ability:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

PSYCHOMOTOR ABILITY: ARM HAND STEADINESS

Rating ____

(Definition: ability to make precise, steady arm-hand positioning movements that minimize speed or strength; it includes steadiness during arm movement as well as when the arm is in stationary position; it does not include adjusting equipment controls.)

Representative tasks performed by first-term enlisted rating personnel that require this ability:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

PSYCHOMOTOR ABILITY: AIMING

Rating ____

(Definition: ability to make highly precise, accurate hand movements under speeded conditions.)

Representative tasks performed by first-term enlisted rating personnel that require this ability:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

APPENDIX B
PSYCHOMOTOR WORKSHOP DATES, LOCATIONS, AND PARTICIPANTS

PSYCHOMOTOR WORKSHOP DATES, LOCATIONS, AND PARTICIPANTS

Air Traffic Controller (AC) Workshop
16 February 1988
Millington, Tennessee

Herbert L. Bittick
Daniel J. Bartlett

Aviation Machinist Mate (AD) Workshop
16 February 1988
Millington, Tennessee

Michael L. Gulley
Clarence W. Mowry

Aviation Electrician's Mate (AE) Workshop
16 February 1988
Millington, Tennessee

Richard A. Boelens
Mark A. Kruse

Aviation Electronics Technician (AT) Workshop
17 February 1988
Millington, Tennessee

Ronald C. Williams
Steven L. Callahan

Aviation Antisubmarine Warfare Operator (AW) Workshop
24 February 1988
Millington, Tennessee

Ernest E. Tyree
Steven E. Kosse

Boiler Technician (BT) Workshop
24 February 1988
Chicago, Illinois

Donald L. Stout
Arthustus Exum

PSYCHOMOTOR WORKSHOP DATES, LOCATIONS, AND PARTICIPANTS (cont.)

Dental Technician (DT) Workshop
10 February 1988
San Diego, California

Connie J. Day
Ada R. Simons

Electrician's Mate (EM) Workshop
25 February 1988
Chicago, Illinois

Virgil W. Leisure
Kevin Irvin

Engineman (EN) Workshop
24 February 1988
Chicago, Illinois

James D. Maylone
Ronald J. Thibault

Electronics Technician (ET) Workshop
24 February 1988
Chicago, Illinois

William D. Workman
Kelley K. Kingsley

Fire Control Technician (FC) Workshop
25 February 1988
Chicago, Illinois

Robert T. Hoag
David A. Rittenour

Gunner's Mate (GM) Workshop
24 February 1988
Chicago, Illinois

Jeffrey N. Fischer
Harry J. Kantrovich

PSYCHOMOTOR WORKSHOP DATES, LOCATIONS, AND PARTICIPANTS (cont.)

Hull Maintenance Technician (HT) Workshop
3 February 1988
Philadelphia, Pennsylvania

James M. Falcone
Samuel A. McCall

Interior Communications Electrician (IC) Workshop
9 February 1988
San Diego, California

James R. Bunch
David G. Parker

Machinist Mate (MM) Workshop
24 February 1988
Chicago, Illinois

William R. Shockey
Michael Juskiewicz

Machinery Repairman (MR) Workshop
9 February 1988
San Diego, California

Michael J. Treiman
Joseph Welch

Operations Specialists (OS) Workshop
2 February 1988
Norfolk, Virginia

Robin S. Reynolds
Curtis S. Gottardi

Sonar Technician Workshop
9 February 1988
San Diego, California

Floyd A. Sorgenfrey (STG)
Michael J. Hansen (STG)
Gary T. Loy (STS)
Jeffrey G. Brown (STS)

APPENDIX C

IMPORTANT PSYCHOMOTOR ABILITIES FOR AIR TRAFFIC CONTROLLERS AND
TASKS PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES

AIR TRAFFIC CONTROLLER (AC)

Important Psychomotor Abilities for Air Traffic Controllers:

- Multilimb Coordination
- Manual Dexterity
- Control Precision
- Rate Control
- Arm Hand Steadiness
- Aiming

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

- 12251* Perform flight following, provide advisory services and control aircraft using air surveillance radar.
- 12257 Inform necessary units and direct fire, crash and rescue personnel to emergency sites.
- 12258 Issue instructions to and coordinate communications between vehicular traffic and aircraft on the ground.
- 12259 Locate, identify and track aircraft.
- 12260 Maintain flight data and status board.
- 12261 Obtain, record and relay air traffic control clearances to aircraft.
- 12266 Control aircraft using precision approach radar.
- 12271 Direct air traffic under instrument flight rules.
- 12272 Direct air traffic under visual flight rules.
- 12273 Direct ground and air traffic using signal light gun.
- 12275 Provide air traffic control (ATC) services to aircraft that have experienced an emergency situation in flight.
- 33323 Obtain and relay weather information to aircraft and local weather facilities.
- 40283 Operate airfield lighting systems.

*The number preceding this and most task statements is from the most recent

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity:

- 12260 Maintain flight data and status board.
- 12273 Direct ground and air traffic using signal light gun.
- 79379 Issue flight planning material, charts and publications.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

- 12251 Perform flight following, provide advisory services and control aircraft using air surveillance radar.
- 12257 Inform necessary units and direct fire, crash and rescue personnel to emergency sites.
- 12258 Issue instructions to and coordinate communications between vehicular traffic and aircraft on the ground.
- 12259 Locate, identify and track aircraft.
- 12266 Control aircraft using precision approach radar.
- 12270 Correct for effects of weather and topography on radar. IFF and related equipment.
- 12271 Direct air traffic under instrument flight rules.
- 12272 Direct air traffic under visual flight rules.
- 12273 Direct ground and air traffic using signal light gun.
- 12275 Provide air traffic control (ATC) services to aircraft that have experienced an emergency situation in flight.
- 12277 Select various radar presentations that will reduce clutter.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control:

- 12257 Inform necessary units and direct fire, crash and rescue personnel to emergency sites.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control (Continued):

- 12259 Locate, identify and track aircraft.
- 12266 Control aircraft using precision approach radar.
- 12270 Correct for effects of weather and topography on radar, IFF and related equipment.
- 12271 Direct air traffic under instrument flight rules.
- 12272 Direct air traffic under visual flight rules.
- 12273 Direct ground and air traffic using signal light gun.
- 12275 Provide air traffic control (ATC) services to aircraft that have experienced an emergency situation in flight.
- 12277 Select various radar presentations that will reduce clutter.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

- 12251 Perform flight following, provide advisory services and control aircraft using air surveillance radar.
- 12252 Process flight plans.
- 12257 Inform necessary units and direct fire, crash and rescue personnel to emergency sites.
- 12259 Locate, identify and track aircraft.
- 12260 Maintain flight data and status board.
- 12261 Obtain, record and relay air traffic control clearances to aircraft.
- 12266 Control aircraft using precision approach radar.
- 12271 Direct air traffic under instrument flight rules.
- 12272 Direct air traffic under visual flight rules.
- 12273 Direct ground and air traffic using signal light gun.
- 12275 Provide air traffic control (ATC) services to aircraft that have experienced an emergency situation in flight.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness (Continued):

69067 Use charts.

Representative tasks performed by first-term enlisted rating personnel that require Aiming:

- 12251 Perform flight following, provide advisory services and control aircraft using air surveillance radar.
- 12252 Process flight plans.
- 12257 Inform necessary units and direct fire, crash and rescue personnel to emergency sites.
- 12258 Issue instructions to and coordinate communications between vehicular traffic and aircraft on the ground.
- 12259 Locate, identify and track aircraft.
- 12260 Maintain flight data and status board.
- 12261 Obtain, record and relay air traffic control clearances to aircraft.
- 12266 Control aircraft using precision approach radar.
- 12270 Correct for effects of weather and topography on radar, IFF and related equipment.
- 12271 Direct air traffic under instrument flight rules.
- 12272 Direct air traffic under visual flight rules.
- 12273 Direct ground and air traffic using signal light gun.
- 12275 Provide air traffic control (ATC) services to aircraft that have experienced an emergency situation in flight.
- 12277 Select various radar presentations that will reduce clutter.
- 40283 Operate airfield lighting systems.
- 43251 Perform equipment operation checks.

APPENDIX D

**IMPORTANT PSYCHOMOTOR ABILITIES FOR AVIATION MACHINIST'S MATES
AND TASKS PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES**

AVIATION MACHINIST'S MATE (AD)

Important Psychomotor Abilities for Aviation Machinist's Mates:

- Multilimb Coordination
- Wrist-Finger Speed
- Manual Dexterity
- Finger Dexterity
- Control Precision
- Speed of Arm Movement
- Arm Hand Steadiness

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

- 11004 Operate support equipment.
- 11005 Prepare aircraft for ground maintenance.
- 11007 Service aircraft on the flight line.
- 37283 Perform operational turnups of aircraft engines.
- 37360 Remove, inspect and install external fuel tanks.
- 37400 Replace engine air ducts and inlets.
- 37401 Replace gaskets, packings and seals in fuel and oil systems.
- 37402 Replace oil pumps.
- 37406 Replace tail pipes.
- 37476 Clean engines.
- 37478 Clean helo gearboxes, rotor heads, drive shafts and related parts.
- 37562 Replace fuel pumps.
- 48274 Service installed propellers.

Representative tasks performed by first-term enlisted rating personnel that require Wrist-Finger Speed:

- 11004 Operate support equipment.
- 11007 Service aircraft on the flight line.
- 37029 Remove and install igniter plugs, starting ignition units and leads of ignition systems.
- 37283 Perform operational turnups of aircraft engines.
- 37342 Remove and install bladder and self-sealing fuel cells.
- 37397 Replace common aircraft metal fasteners.
- 37406 Replace tail pipes.
- 37409 Rig and adjust power controls, fuel selectors and shutoff valve controls.
- 40251 Perform continuity and insulation tests on engine ignition systems.
- 40252 Perform functional tests on high energy ignition systems.
- 48260 Remove, clean and replace fuel and oil filters.
- 54020 Obtain fuel and oil samples.
- 54033 Perform collateral duty inspections.
- 55003 Detect and treat corrosion.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity:

- 11004 Operate support equipment.
- 11005 Prepare aircraft for ground maintenance.
- 11007 Service aircraft on the flight line.
- 37038 Torque nuts, bolts and locking devices.
- 37283 Perform operational turnups of aircraft engines.
- 37342 Remove and install bladder and self-sealing fuel cells.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity (Continued):

- 37358 Remove, clean and install propeller assemblies.
- 37360 Remove, inspect and install external fuel tanks.
- 37362 Remove, inspect, repair and install in-flight refueling stores.
- 37365 Remove, install and adjust propeller control systems.
- 37400 Replace engine air ducts and inlets.
- 37402 Replace oil pumps.
- 37406 Replace tail pipes.
- 37446 Adjust fuel and oil pressure.
- 37562 Replace fuel pumps.
- 37639 Perform borescope inspections.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity:

- 11007 Service aircraft on the flight line.
- 37029 Remove and install igniter plugs, starting ignition units and leads of ignition systems.
- 37038 Torque nuts, bolts and locking devices.
- 37040 Inspect compressor and turbine clearances.
- 37342 Remove and install bladder and self-sealing fuel cells.
- 37348 Remove and install engines and engine mounts.
- 37362 Remove, inspect, repair and install in-flight refueling stores.
- 37363 Remove, install and adjust engine fuel controls.
- 37397 Replace common aircraft metal fasteners.
- 37400 Replace engine air ducts and inlets.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity (Continued):

- 37402 Replace oil pumps.
- 37406 Replace tail pipes.
- 37446 Adjust fuel and oil pressure.
- 37513 Inspect, remove and install helo power transmission system components.
- 37514 Inspect, remove and install helo rotary wing heads and tail rotor control and components.
- 37515 Inspect, remove, install and adjust auxiliary power plant and components.
- 37562 Replace fuel pumps.
- 47005 Operate general purpose test equipment.
- 48260 Remove, clean and replace fuel and oil filters.
- 54003 Comply with foreign object damage (FOD) program.
- 54004 Comply with tool control program.
- 54022 Perform maintenance requirement inspections.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

- 11004 Operate support equipment.
- 37283 Perform operational turnups of aircraft engines.
- 37348 Remove and install engines and engine mounts.
- 37363 Remove, install and adjust engine fuel controls.
- 37401 Replace gaskets, packings and seals in fuel and oil systems.
- 37408 Rig and adjust power controls, fuel selectors and shutoff valve controls.
- 37446 Adjust fuel and oil pressure.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision (Continued):

- 40251 Perform continuity and insulation tests on engine ignition systems.
- 40252 Perform functional tests on high energy ignition systems.
- 47005 Operate general purpose test equipment.
- 54020 Obtain fuel and oil samples.
- 54022 Perform maintenance requirement inspections.
- 54033 Perform collateral duty inspections.
- 54318 Perform operational inspection on in-flight refueling stores.

Representative tasks performed by first-term enlisted rating personnel that require Speed of Arm Movement:

- 11004 Operate support equipment.
- 11005 Prepare aircraft for ground maintenance.
- 11007 Service aircraft on the flight line.
- 37012 Maintain tools.
- 37038 Torque nuts, bolts and locking devices.
- 37283 Perform operational turnups of aircraft engines.
- 37348 Remove and install engines and engine mounts.
- 37446 Adjust fuel and oil pressure.
- 37513 Inspect, remove and install helo power transmission system components.
- 37514 Inspect, remove and install helo rotary wing heads and tail rotor control and components.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

- 37283 Perform operational turnups of aircraft engines.
- 37348 Remove and install engines and engine mounts.
- 37362 Remove, inspect, repair and install in-flight refueling stores.
- 37363 Remove, install and adjust engine fuel controls.
- 37400 Replace engine air ducts and inlets.
- 37406 Replace tail pipes.
- 37408 Rig and adjust power controls, fuel selectors and shutoff valve controls.
- 54020 Obtain fuel and oil samples.
- 54022 Perform maintenance requirement inspections.
Launch aircraft.

APPENDIX E

**IMPORTANT PSYCHOMOTOR ABILITIES FOR AVIATION ELECTRICIAN'S MATES
AND TASKS PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES**

AVIATION ELECTRICIAN'S MATE (AE)

Important Psychomotor Abilities for Aviation Electrician's Mates:

- Multilimb Coordination
- Wrist-Finger Speed
- Manual Dexterity
- Finger Dexterity
- Control Precision
- Rate Control
- Speed of Arm Movement
- Arm Hand Steadiness
- Aiming

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

- 11004 Operate support equipment.
- 11005 Prepare aircraft for ground maintenance.
- 39005 Fabricate electrical/electronic cables.
- 40254 Remove and install aircraft engine electrical wiring and equipment.
- 40255 Repair aircraft electrical wiring, connectors and hardware.
- 40256 Test and replace aircraft generators.
- 40262 Troubleshoot and repair aircraft electrical power generating systems.
- 40280 Install instrument indicator range marks.
- 44018 Measure voltage, current and resistance.
- 44035 Repair electrical/electronic cables.
- 44038 Solder and wire wrap connections.
- 44047 Test for shorts, grounds and continuity.
- 44283 Remove and install units of electrical/electronic equipment in aircraft.
- 44332 Troubleshoot and repair discrepancies in power distribution

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination (Continued):

- 47005 Operate general purpose test equipment.
- 54021 Perform daily, preflight, postflight, turnaround and conditional inspections of aircraft.
- 55003 Detect and treat corrosion.
- 58005 Operate portable firefighting equipment.

Representative tasks performed by first-term enlisted rating personnel that require Wrist-Finger Speed:

- 11004 Operate support equipment.
- 11005 Prepare aircraft for ground maintenance.
- 39005 Fabricate electrical/electronic cables.
- 58005 Operate portable firefighting equipment.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity:

- 11004 Operate support equipment.
- 11005 Prepare aircraft for ground maintenance.
- 39005 Fabricate electrical/electronic cables.
- 40254 Remove and install aircraft engine electrical wiring and equipment.
- 40255 Repair aircraft electrical wiring, connectors and hardware.
- 40256 Test and replace aircraft generators.
- 44018 Measure voltage, current and resistance.
- 44035 Repair electrical/electronic cables.
- 44038 Solder and wire wrap connections.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity (Continued):

- 46279 Troubleshoot and repair angle of attack systems.
- 46280 Troubleshoot and repair attitude reference systems.
- 46326 Troubleshoot and repair air data computer systems.
- 54003 Comply with foreign object damage (FOD) program.
- 54012 Inspect equipment for proper installation, security of mounting and evidence of damage.
- 54021 Perform daily, preflight, postflight, turnaround and conditional inspections of aircraft.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity:

- 39005 Fabricate electrical/electronic cables.
- 40254 Remove and install aircraft engine electrical wiring and equipment.
- 40257 Test and replace electrical circuit control components.
- 40258 Test, adjust and repair engine performance indicating and warning systems.
- 40276 Calibrate fuel quantity indicating systems.
- 40280 Install instrument indicator range marks.
- 44035 Repair electrical/electronic cables.
- 44038 Solder and wire wrap connections.
- 44043 Test and repair printed and solid state circuits.
- 44370 Troubleshoot, repair and compensate aircraft compass systems.
- 54003 Comply with foreign object damage (FOD) program.
- 54012 Inspect equipment for proper installation, security of mounting and evidence of damage.
- 54021 Perform daily, preflight, postflight, turnaround and conditional inspections of aircraft.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity (Continued):

54022 Perform maintenance requirement inspections.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

11004 Operate support equipment.

11005 Prepare aircraft for ground maintenance.

40260 Test, adjust and repair position indicating systems.

40261 Troubleshoot and repair aircraft automatic flight control/stabilization systems.

48277 Troubleshoot and repair electro-hydraulic control systems.

54023 Perform minimum performance checks.

54033 Perform collateral duty inspections.

Taxi an A/C hand signals.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control:

40258 Test, adjust and repair engine performance indicating and warning systems.

40260 Test, adjust and repair position indicating systems.

40261 Troubleshoot and repair aircraft automatic flight control/stabilization systems.

40276 Calibrate fuel quantity indicating systems.

47005 Operate general purpose test equipment.

48277 Troubleshoot and repair electro-hydraulic control systems.

54023 Perform minimum performance checks.

54033 Perform collateral duty inspections.

Representative tasks performed by first-term enlisted rating personnel that require Speed of Arm Movement:

- 11004 Operate support equipment.
- 11005 Prepare aircraft for ground maintenance.
- 48277 Troubleshoot and repair electro-hydraulic control systems.
- 58005 Operate portable firefighting equipment.
Perform line crew related functions (i.e., taxi an A/C hand signals).

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

- 39005 Fabricate electrical/electronic cables.
- 40255 Repair aircraft electrical wiring, connectors and hardware.
- 40256 Test and replace aircraft generators.
- 40260 Test, adjust and repair position indicating systems.
- 44018 Measure voltage, current and resistance.
- 44038 Solder and wire wrap connections.
- 44043 Test and repair printed and solid state circuits.
- 44332 Troubleshoot and repair discrepancies in power distribution systems.
- 48277 Troubleshoot and repair electro-hydraulic control systems.

Representative tasks performed by first-term enlisted rating personnel that require Aiming:

- 40255 Repair aircraft electrical wiring, connectors and hardware.
- 44018 Measure voltage, current and resistance.
- 44038 Solder and wire wrap connections.

Representative tasks performed by first-term enlisted rating personnel that require Aiming (Continued):

- 44043 Test and repair printed and solid state circuits.
- 44332 Troubleshoot and repair discrepancies in power distribution systems.
- 54021 Perform daily, preflight, postflight, turnaround and conditional inspections of aircraft.
- 58005 Operate portable firefighting equipment.

APPENDIX F

**IMPORTANT PSYCHOMOTOR ABILITIES FOR AVIATION ELECTRONICS TECHNICIANS
AND TASKS PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES**

AVIATION ELECTRONICS TECHNICIAN (AT)

Important Psychomotor Abilities for Aviation Electronics Technicians:

- Multilimb Coordination
- Manual Dexterity
- Finger Dexterity
- Control Precision
- Rate Control
- Arm Hand Steadiness

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

- 14251 Maintain chaff dispensing systems.
- 37006 Inspect and maintain pressurized equipment.
- 37007 Inspect, clean and lubricate equipment.
- 37041 Replace and service air filters and dessicants.
- 39005 Fabricate electrical/electronic cables.
- 44018 Measure voltage, current and resistance.
- 44031 Remove and install units of electronic equipment.
- 44032 Remove, install, align and zero synchros.
- 44038 Solder and wire wrap connections.
Operate support equipment.
Prepare ACFT for ground maintenance.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity:

- 44031 Remove and install units of electronic equipment.
- 44032 Remove, install, align and zero synchros.
- 44035 Repair electrical/electronic cables.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity (Continued):

- 44037 Repair and replace electrical/electronic components and parts.
- 44038 Solder and wire wrap connections.
- 44041 Test and align electronics equipment.
- 44054 Troubleshoot and repair infrared devices.
- 44056 Troubleshoot and repair radar and tactical displays.
- 79006 Install field changes, alterations and modifications.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity:

- 44005 Analyze waveforms.
- 44018 Measure voltage, current and resistance.
- 44035 Repair electrical/electronic cables.
- 44037 Repair and replace electrical/electronic components and parts.
- 44038 Solder and wire wrap connections.
- 44041 Test and align electronics equipment.
- 44047 Test for shorts, grounds and continuity.
- 44051 Troubleshoot and repair combat information center (CIC) and electronic countermeasures (ECM) equipment.
- 44054 Troubleshoot and repair infrared devices.
- 44056 Troubleshoot and repair radar and tactical displays.
- 44057 Troubleshoot and repair recorder systems.
- 44328 Troubleshoot and repair communications systems.
- 44333 Troubleshoot and repair doppler navigation equipment.
- 44346 Troubleshoot and repair IFF/SIF equipment.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity (Continued):

- 44358 Troubleshoot and repair radar systems.
- 44359 Troubleshoot and repair radio navigation equipment.
- 47005 Operate general purpose test equipment.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

- 11004 Operate support equipment.
- 44006 Analyze waveforms.
- 44018 Measure voltage, current and resistance.
- 44041 Test and align electronics equipment.
- 47005 Operate general purpose test equipment.
- 54021 Perform daily, preflight, postflight, turnaround and conditional inspections of aircraft.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control:

- 44024 Perform operational ground checks.
- 44032 Remove, install, align and zero synchros.
- 44041 Test and align electronics equipment.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

- 44006 Analyze waveforms.
- 44018 Measure voltage, current and resistance.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness (Continued):

- 44032 Remove, install, align and zero synchros.
- 44035 Repair electrical/electronic cables.
- 44037 Repair and replace electrical/electronic components and parts.
- 44038 Solder and wire wrap connections.
- 44047 Test for shorts, grounds and continuity.

APPENDIX G

**IMPORTANT PSYCHOMOTOR ABILITIES FOR AVIATION ANTISUBMARINE
WARFARE OPERATORS AND TASKS PERFORMED BY FIRST-TERM
PERSONNEL REQUIRING THESE ABILITIES**

AVIATION ANTISUBMARINE WARFARE OPERATOR (AW)

Important Psychomotor Abilities for Aviation Antisubmarine Warfare Operators:

- Multilimb Coordination
- Wrist-Finger Speed
- Manual Dexterity
- Finger Dexterity
- Control Precision
- Rate Control
- Speed of Arm Movement
- Arm Hand Steadiness
- Aiming

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

- 11010 Perform search and rescue functions.
- 11269 Perform helicopter inflight refueling.
- 11284 Carry out helicopter personnel and cargo transfers.
- 11330 Direct helicopter movements on deck.
- 11331 Perform SAR duties of first crewman (dry crewman).
- 17010 Perform preflight, inflight and postflight operational checks on airborne acoustic systems.
- 17011 Perform preflight, inflight and postflight diagnostic functions to fault isolate to a line replaceable assembly on aircraft equipment.
- 54034 Perform preflight and postflight inspections.
- 54035 Perform preflight checks on survival equipment.

Representative tasks performed by first-term enlisted rating personnel that require Wrist-Finger Speed:

- 17008 Perform preflight, inflight and postflight operational checks on airborne non-acoustic systems.

Representative tasks performed by first-term enlisted rating personnel that require Wrist-Finger Speed (Continued):

17010 Perform preflight, inflight and postflight diagnostic functions to fault isolate to a line replaceable assembly on aircraft equipment.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity:

11009 Accept, load, secure and unload cargo.

11010 Perform search and rescue functions.

11268 Perform helicopter inflight refueling.

11284 Carry out helicopter personnel and cargo transfers.

15261 Store and handle aircraft magnetic recording tape.

17010 Perform preflight, inflight and postflight diagnostic functions to fault isolate to a line replaceable assembly on aircraft equipment.

17011 Perform preflight, inflight and postflight diagnostic functions to fault isolate to a line replaceable assembly on aircraft equipment.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity:

11009 Accept, load, secure and unload cargo.

15024 Identify radio frequency (RF) interference using aerial/acoustic equipment.

15032 Operate tape recording equipment.

15034 Start, operate and adjust airborne acoustic systems.

17010 Perform preflight, inflight and postflight diagnostic functions to fault isolate to a line replaceable assembly on aircraft equipment.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity (Continued):

17011 Perform preflight, inflight and postflight diagnostic functions to fault isolate to a line replaceable assembly on aircraft equipment.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

11010 Perform search and rescue functions.

15034 Start, operate and adjust airborne acoustic systems.

33002 Communicate on intercommunications system (ICS) and tactical circuits.

70028 Use correct emergency procedures under simulated emergency conditions.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control:

17010 Perform preflight, inflight and postflight diagnostic functions to fault isolate to a line replaceable assembly on aircraft equipment.

17011 Perform preflight, inflight and postflight diagnostic functions to fault isolate to a line replaceable assembly on aircraft equipment.

33002 Communicate on intercommunications system (ICS) and tactical circuits.

54034 Perform preflight and postflight inspections.

54035 Perform preflight checks on survival equipment.

70028 Use correct emergency procedures under simulated emergency conditions.

Representative tasks performed by first-term enlisted rating personnel that require Speed of Arm Movement:

- 11010 Perform search and rescue functions.
- 11268 Perform helicopter inflight refueling.
- 11284 Carry out helicopter personnel and cargo transfers.
- 17009 Analyze automatic alert data.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

- 15007 Annotate grams, charts and magnetic tapes.
- 15032 Operate tape recording equipment.
- 15034 Start, operate and adjust airborne acoustic systems.
- 15053 Set up and operate with degraded equipment.
- 15261 Store and handle aircraft magnetic recording tape.

Representative tasks performed by first-term enlisted rating personnel that require Aiming:

- 11012 Brief/debrief flight crews.
- 15005 Annotate acoustic displays.
- 15007 Annotate grams, charts and magnetic tapes.
- 15012 Detect, classify and report magnetic anomalies.
- 15032 Operate tape recording equipment.
- 15039 Detect and classify multisource contacts aurally and acoustically.
- 15041 Reconstruct airborne ASW tactical exercises.
- 15043 Plot ASW data for reconstruction.

Representative tasks performed by first-term enlisted rating personnel that require Aiming (Continued):

- 15048 Analyze acoustic signatures to determine target propulsion mode, depth and speed of advance.
- 15265 Analyze environmental data and determine range prediction.
- 15324 Annotate grams and charts.
- 17013 Supervise performance of preflight, inflight and postflight diagnostic functions to fault isolate to a line replaceable assembly.
- 70028 Use correct emergency procedures under simulated emergency conditions.

APPENDIX H

IMPORTANT PSYCHOMOTOR ABILITIES FOR BOILER TECHNICIANS AND
TASKS PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES

BOILER TECHNICIAN (BT)

Important Psychomotor Abilities for Boiler Technicians:

- Multilimb Coordination
- Wrist-Finger Speed
- Manual Dexterity
- Finger Dexterity
- Control Precision
- Rate Control
- Speed of Arm Movement
- Arm Hand Steadiness
- Aiming

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

- 36012 Operate pumps.
- 36263 Perform light-off.
- 36288 Test low pressure feedwater alarms.
- 36319 Align, operate and secure soot blowers.
- 36336 Maintain water level in a steaming boiler.
- 36341 Operate boilers in automatic, remote manual and local control.

Representative tasks performed by first-term enlisted rating personnel that require Wrist-Finger Speed:

- 36003 Align and operate stripping systems.
- 36012 Operate pumps.
- 36263 Perform light-off.
- 36285 Secure boiler under normal conditions.
- 36314 Align, operate and secure bottom and surface blow systems.
- 36341 Operate boilers in automatic, remote manual and local control.

Representative tasks performed by first-term enlisted rating personnel that require Wrist-Finger Speed (Continued):

36347 Operate fuel oil burners.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity:

36001 Align and operate chemical treatment systems.

36012 Operate pumps.

36314 Align, operate and secure bottom and surface blow systems.

36319 Align, operate and secure soot blowers.

Maintain work area.

Obtain tools for job.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity:

36288 Test low pressure feedwater alarms.

36327 Conduct visual check of lube oil.

74001 Prepare water treatment chemicals.

Take readings and soundings.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

36263 Perform light-off.

36285 Secure boiler under normal conditions.

36312 Align reducing stations.

36336 Maintain water level in a steaming boiler.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision (Continued):

Open and close various valves under supervision.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control:

36336 Maintain water level in a steaming boiler.

36341 Operate boilers in automatic, remote manual and local control.

Representative tasks performed by first-term enlisted rating personnel that require Speed of Arm Movement:

36341 Operate boilers in automatic, remote manual and local control.

37022 Perform preventive maintenance on boilers.

Take lube oil samples on machinery.

Maintain oil levels at their proper perspective.

Take soundings on tanks or voids.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

36327 Conduct visual check of lube oil.

37022 Perform preventive maintenance on boilers.

74255 Test fuel oil.

74256 Test lube oil.

Throttle valves to maintain system in desired pressures.

Maintain water level on a stick shift boiler.

Representative tasks performed by first-term enlisted rating personnel that require Aiming:

- 36263 Perform light-off.
- 36285 Secure boiler under normal conditions.
- 36319 Align, operate and secure soot blowers.

APPENDIX I

**IMPORTANT PSYCHOMOTOR ABILITIES FOR DENTAL TECHNICIANS
AND TASKS PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES**

DENTAL TECHNICIAN (DT)

Important Psychomotor Abilities for Dental Technicians:

- Multilimb Coordination
- Wrist-Finger Speed
- Manual Dexterity
- Finger Dexterity
- Rate Control
- Arm Hand Steadiness
- Aiming

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

- | | |
|-------|--|
| 37652 | Perform preventive maintenance on dental equipment and support systems. |
| 39378 | Construct diagnostic casts. |
| 39387 | Fabricate individualized impression trays. |
| 39399 | Construct mouthguards and temporary splints. |
| 68051 | Write correspondence. |
| 69649 | Prepare dental treatment records. |
| 70366 | Prepare and present oral health briefings. |
| 73003 | Recognize and treat chemical, biological and radiological (CBR) casualties. |
| 73013 | Perform sterile technique. |
| 73014 | Transport patients with or without special equipment. |
| 73273 | Observe, report and render emergency treatment for periodontal disease, post exodontia conditions, dental caries and pulp disease. |
| 73275 | Instruct personnel in oral health care. |
| 73276 | Expose, process and mount dental radiographs. |
| 73346 | Expose and process extra-oral radiographs. |
| 73347 | Provide advanced dental assistance in all dental specialties. |

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination (Continued):

- 73351 Provide basic dental assistance in all dental specialties.
- 73352 Assemble, insert and maintain intravenous therapy equipment.
- 73353 Prepare dental materials used in all dental specialties.
- 73354 Perform supra-gingival scaling and polishing of teeth.

Representative tasks performed by first-term enlisted rating personnel that require Wrist-Finger Speed:

- 39399 Construct mouthguards and temporary splints.
- 69650 Maintain centralized dental appointment, recall and call list system.
- 73013 Perform sterile technique.
- 73014 Transport patients with or without special equipment.
- 73275 Instruct personnel in oral health care.
- 73347 Provide advanced dental assistance in all dental specialties.
- 73351 Provide basic dental assistance in all dental specialties.
- 73353 Prepare dental materials used in all dental specialties.
- 73357 Obtain, check, classify, label and store medicants, chemicals and poisons used in the dental operator.
- 73358 Assist in the treatment of mass casualties.
- 76272 Supervise cleaning and sanitation procedures.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity:

- 37652 Perform preventive maintenance on dental equipment and support systems.
- 69546 Record data for preparation of dental reports.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity (Continued):

- 73003 Recognize and treat chemical, biological and radiological (CBR) casualties.
- 73013 Perform sterile technique.
- 73014 Transport patients with or without special equipment.
- 73273 Observe, report and render emergency treatment for periodontal disease, post exdontia conditions, dental caries and pulp disease.
- 73275 Instruct personnel in oral health care.
- 73276 Expose, process and mount dental radiographs.
- 73348 Render emergency medical treatment.
- 73351 Provide basic dental assistance in all dental specialties.
- 73352 Assemble, insert and maintain intravenous therapy equipment.
- 73353 Prepare dental materials used in all dental specialties.
- 73354 Perform supra-gingival scaling and polishing of teeth.
- 73356 Perform central sterilization procedures.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity:

- 36366 Perform minor repairs, adjustments and operational checks on dental equipment.
- 37652 Perform preventive maintenance on dental equipment and support systems.
- 39399 Construct mouthguards and temporary splints.
- 73003 Recognize and treat chemical, biological and radiological (CBR) casualties.
- 73013 Perform sterile technique.
- 73273 Observe, report and render emergency treatment for periodontal disease, post exdontia conditions, dental caries and pulp disease.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity (Continued):

- 73275 Instruct personnel in oral health care.
- 73276 Expose, process and mount dental radiographs.
- 73347 Provide advanced dental assistance in all dental specialties.
- 73348 Render emergency medical treatment.
- 73351 Provide basic dental assistance in all dental specialties.
- 73352 Assemble, insert and maintain intravenous therapy equipment.
- 73353 Prepare dental materials used in all dental specialties.
- 73354 Perform supra-gingival scaling and polishing of teeth.
- 73356 Perform central sterilization procedures.
- 73357 Obtain, check, classify, label and store medicants, chemicals and poisons used in the dental operatory.
- 73358 Assist in the treatment of mass casualties.
Work with small, sharp instruments in sterilization room.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control:

- 70366 Prepare and present oral health briefings.
- 73003 Recognize and treat chemical, biological and radiological (CBR) casualties.
- 73014 Transport patients with or without special equipment.
- 73273 Observe, report and render emergency treatment for periodontal disease, post exodontia conditions, dental caries and pulp disease.
- 73276 Expose, process and mount dental radiographs.
- 73346 Expose and process extra-oral radiographs.
- 73347 Provide advanced dental assistance in all dental specialties.
- 73348 Render emergency medical treatment

Representative tasks performed by first-term enlisted rating personnel that require Rate Control (Continued):

- 73351 Provide basic dental assistance in all dental specialties.
- 73352 Assemble, insert and maintain intravenous therapy equipment.
- 73353 Prepare dental materials used in all dental specialties.
- 73354 Perform supra-gingival scaling and polishing of teeth.
- 73358 Assist in the treatment of mass casualties.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

- 37652 Perform preventive maintenance on dental equipment and support systems.
- 39399 Construct mouthguards and temporary splints.
- 69650 Maintain centralized dental appointment, recall and call list system.
- 73003 Recognize and treat chemical, biological and radiological (CBR) casualties.
- 73013 Perform sterile technique.
- 73014 Transport patients with or without special equipment.
- 73273 Observe, report and render emergency treatment for periodontal disease, post exodontia conditions, dental caries and pulp disease.
- 73275 Instruct personnel in oral health care.
- 73276 Expose, process and mount dental radiographs.
- 73346 Expose and process extra-oral radiographs.
- 73347 Provide advanced dental assistance in all dental specialties.
- 73348 Render emergency medical treatment.
- 73351 Provide basic dental assistance in all dental specialties.
- 73352 Assemble, insert and maintain intravenous therapy equipment.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness (Continued):

- 73353 Prepare dental materials used in all dental specialties.
- 73354 Perform supra-gingival scaling and polishing of teeth.
- 73358 Assist in the treatment of mass casualties.

Representative tasks performed by first-term enlisted rating personnel that require Aiming:

- 69546 Record data for preparation of dental reports.
- 69649 Prepare dental treatment records.
- 69650 Maintain centralized dental appointment, recall and call list system.
- 73003 Recognize and treat chemical, biological and radiological (CBR) casualties.
- 73273 Observe, report and render emergency treatment for periodontal disease, post exodontia conditions, dental caries and pulp disease.
- 73276 Expose, process and mount dental radiographs.
- 73346 Expose and process extra-oral radiographs.
- 73347 Provide advanced dental assistance in all dental specialties.
- 73348 Render emergency medical treatment.
- 73351 Provide basic dental assistance in all dental specialties.
- 73352 Assemble, insert and maintain intravenous therapy equipment.
- 73353 Prepare dental materials used in all dental specialties.
- 73354 Perform supra-gingival scaling and polishing of teeth.
- 73358 Assist in the treatment of mass casualties.

APPENDIX J

IMPORTANT PSYCHOMOTOR ABILITIES FOR ELECTRICIAN'S MATES AND
TASKS PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES

ELECTRICIAN'S MATE (EM)

Important Psychomotor Abilities for Electrician's Mates:

- Finger Dexterity
- Control Precision
- Arm Hand Steadiness
- Aiming

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity:

- 37035 Replace worn gaskets and seals of watertight electrical fixtures.
- 37503 Inspect and prepare motion picture film for projection.
- 40285 Operate motion picture projectors.
- 44294 Repair portable electric tools, lights and devices.
- 44350 Troubleshoot and repair motion picture equipment.
- 44361 Troubleshoot and repair small boat electrical systems.
- 44492 Repair or replace electrical safety equipment.
- 57019 Perform preventive maintenance.
 - Replace small screws in fixtures that have cramped space.
 - Replace three-prong plugs on electrical equipment.
 - Rewind motors.
 - Manipulate small nuts or screws inside electrical equipment.
 - Tear down electric motors and generators and rebuild using bearings or bore gauges for reading out shafts.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

- 40290 Rig shore power cables.
- 62257 Stand electrical watch.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision (Continued):

Close breakers when paralleling generators.

Balance the load of two generators.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

44323 Trace circuits.

44361 Troubleshoot and repair small boat electrical systems.

62257 Stand electrical watch.

Work between components on live equipment.

Representative tasks performed by first-term enlisted rating personnel that require Aiming:

40290 Rig shore power cables.

62257 Stand electrical watch.

APPENDIX K

**IMPORTANT PSYCHOMOTOR ABILITIES FOR ENGINEMEN AND TASKS
PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES**

ENGINEMAN (EN)

Important Psychomotor Abilities for Enginemen:

- Multilimb Coordination
- Wrist-Finger Speed
- Manual Dexterity
- Finger Dexterity
- Control Precision
- Rate Control
- Speed of Arm Movement
- Arm Hand Steadiness

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

- 36002 Align and operate drain systems.
- 36005 Align steam systems.
- 36309 Align and operate purifier systems.
- 36320 Align, operate and secure steam distilling plants.
- 37321 Perform preventive maintenance on small craft clutches, transmissions, drive shafts and packing glands.

 Operate small boats.

 Use tools properly.

Representative tasks performed by first-term enlisted rating personnel that require Wrist-Finger Speed:

- 36002 Align and operate drain systems.
- 36309 Align and operate purifier systems.

 Use hand tools.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity:

- 36326 Conduct tests on lubricating oil and distillate fuels.
- 37017 Overhaul valves.
- 37321 Perform preventive maintenance on small craft clutches, transmissions, drive shafts and packing glands.
- 39004 Fabricate and fit tubing and flexible hose assemblies.
Perform engine maintenance.
Operate cranes.
Put engines in boats.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity:

- 37017 Overhaul valves.
- 37294 Perform preventive maintenance on auxiliary equipment.
- 37321 Perform preventive maintenance on small craft clutches, transmissions, drive shafts and packing glands.
Use micrometers.
Work with small equipment (valves, gauges).

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

- 37016 Overhaul pumps.
- 37032 Repair valves.
Rebuild engines.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control:

- 37415 Test and recharge refrigeration and air conditioning systems.
- 37416 Test and repair piping systems.

Representative tasks performed by first-term enlisted rating personnel that require Speed of Arm Movement:

- 36309 Align and operate purifier systems.
- 36317 Align, operate and secure internal combustion engines.
Bring engines up to speed.
Secure equipment during casualties.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

- 36317 Align, operate and secure internal combustion engines.
- 37015 Overhaul internal combustion engines.
- 37016 Overhaul pumps.
- 37420 Test electro-hydraulic steering system.
Hold a motor or gear in place.
Use torque wrenches.
Test lube oil.
Use micrometers.

APPENDIX L

**IMPORTANT PSYCHOMOTOR ABILITIES FOR ELECTRONICS TECHNICIANS
AND TASKS PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES**

ELECTRONICS TECHNICIAN (ET)

Important Psychomotor Abilities for Electronics Technicians:

- Multilimb Coordination
- Control Precision
- Arm Hand Steadiness

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

- 43007 Perform operational tests and adjustments on equipment.
- 43010 Verify performance specifications and adjust digital data.
- 43269 Operate distribution patching and switching systems.
- 44047 Test for shorts, grounds and continuity.
- 44375 Adjust microswitches.
- 44486 Align frequency determining devices.
- 46009 Troubleshoot and repair synchro/servo systems.
- 47005 Operate general purpose test equipment.
- 57019 Perform preventive maintenance.
- 79006 Install field changes, alterations and modifications.
Perform micro/mini repair.
Make mechanical alignments.
Make electrical alignments.
Hold probe on test point and adjust or turn power on/off with other hand.
Disassemble/assemble equipment while keeping parts from falling in equipment.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

- 43007 Perform operational tests and adjustments on equipment.
- 43010 Verify performance specifications and adjust digital data.
- 43269 Operate distribution patching and switching systems.
- 44016 Locate circuit failures and replace parts.
- 44047 Test for shorts, grounds and continuity.
- 44375 Adjust microswitches.
- 44486 Align frequency determining devices.
- 46009 Troubleshoot and repair synchro/servo systems.
- 47005 Operate general purpose test equipment.
- 57019 Perform preventive maintenance.
- 79006 Install field changes, alterations and modifications.
Perform micro/mini repair.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

- 43007 Perform operational tests and adjustments on equipment.
- 43010 Verify performance specifications and adjust digital data.
- 44016 Locate circuit failures and replace parts.
- 44047 Test for shorts, grounds and continuity.
- 44375 Adjust microswitches.
- 44485 Remove, test and replace cables and transmission lines.
- 44486 Align frequency determining devices.
- 46009 Troubleshoot and repair synchro/servo systems.
- 47005 Operate general purpose test equipment.
- 57019 Perform preventive maintenance.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness (Continued):

79006 Install field changes, alterations and modifications.
 Perform micro/mini repair.
 Hold probes steady while making a check on equipment.

APPENDIX M

**IMPORTANT PSYCHOMOTOR ABILITIES FOR FIRE CONTROLMEN AND
TASKS PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES**

FIRE CONTROLMAN (FC)

Important Psychomotor Abilities for Fire Controlmen:

- Multilimb Coordination
- Manual Dexterity
- Finger Dexterity
- Control Precision
- Arm Hand Steadiness
- Aiming

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

- 19276 Test, remove and replace guidance electronic assemblies.
- 32005 Enforce nuclear weapons security regulations.
- 44027 Perform preventive maintenance on computers and peripheral equipment.
- 44033 Repair and replace components of weapons power systems.
- 44038 Solder and wire wrap connections.
- 46004 Perform preventive maintenance on electro-mechanical devices.
- 46011 Remove and replace electro-mechanical devices.
- 46297 Clean and inspect fire control equipment cooling systems.
- 47265 Inspect, adjust and align test equipment.
- 47273 Operate test equipment.
- 58339 Serve as a team member during post accident and/or incident evolutions involving FBM/SWS weapons.
Track controls of manned directors.
Use test equipment.
Operate a fire control radar.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity:

- 18252 Perform preventive maintenance on electronic and electrical equipment.
- 27009 Load computer programs.
- 32003 Comply with nuclear weapons security procedures.
- 37012 Maintain tools.
- 44003 Adjust, align and calibrate circuits.
- 44005 Analyze test results, isolate faults and repair computers and peripheral equipment.
- 44015 Isolate and replace defective circuit components.
- 44033 Repair and replace components of weapons power systems.
- 44281 Remove and connect chassis wiring and electronic cables.
- 46004 Perform preventive maintenance on electro-mechanical devices.
- 47259 Analyze equipment test results.
- 47265 Inspect, adjust and align test equipment.
Assemble larger pieces of equipment.
Replace defective equipment.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity:

- 18252 Perform preventive maintenance on electronic and electrical equipment.
- 27009 Load computer programs.
- 44003 Adjust, align and calibrate circuits.
- 44027 Perform preventive maintenance on computers and peripheral equipment.
- 44030 Perform tests, adjustments and calibration procedures on assigned FBM/SWS weapon system components.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity (Continued):

- 44033 Repair and replace components of weapons power systems.
- 44035 Repair electrical/electronic cables.
- 44038 Solder and wire wrap connections.
- 46004 Perform preventive maintenance on electro-mechanical devices.
- 47265 Inspect, adjust and align test equipment.
- 47273 Operate test equipment.
- 79010 Inventory installed equipment and verify spare part support in COSAL.
Replace IC boards.
Solder.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

- 17300 Perform normal and casualty operations during all conditions of readiness on assigned fleet ballistic missile/strategic weapons system (FBM/SWS) components.
- 44003 Adjust, align and calibrate circuits.
- 44005 Analyze test results, isolate faults and repair computers and peripheral equipment.
- 44027 Perform preventive maintenance on computers and peripheral equipment.
- 47273 Operate test equipment.
- 47265 Inspect, adjust and align test equipment.
Perform radar control operations.
Operate computer controls.
Change switchboard switch position.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

- 18252 Perform preventive maintenance on electronic and electrical equipment.
- 40005 Troubleshoot and replace or bypass faulty equipment of components of FBM/SWS components.
- 40287 Perform documented fault isolation procedures and replace faulty components on assigned FBM/SWS components.
- 43008 Prepare computer for all modes of operations.
- 44003 Adjust, align and calibrate circuits.
- 44027 Perform preventive maintenance on computers and peripheral equipment.
- 44030 Perform tests, adjustments and calibration procedures on assigned FBM/SWS weapon system components.
- 44033 Repair and replace components of weapons power systems.
- 44038 Solder and wire wrap connections.
- 44281 Remove and connect chassis wiring and electronic cables.
- 46004 Perform preventive maintenance on electro-mechanical devices.
- 46011 Remove and replace electro-mechanical devices.
- 47265 Inspect, adjust and align test equipment.
- 47273 Operate test equipment.
Solder.
Make adjustments on equipment.

Representative tasks performed by first-term enlisted rating personnel that require Aiming:

- 32005 Enforce nuclear weapons security regulations.
- 43008 Prepare computer for all modes of operations.

Representative tasks performed by first-term enlisted rating personnel that require Aiming (Continued):

Operate a fire control radar.

Operate weapons direction equipment (NTDS).

Operate basically all fire control equipment.

APPENDIX N

**IMPORTANT PSYCHOMOTOR ABILITIES FOR GUNNER'S MATES AND
TASKS PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES**

GUNNER'S MATE (GM)

Important Psychomotor Abilities for Gunner's Mates:

- Multilimb Coordination
- Manual Dexterity
- Finger Dexterity
- Control Precision
- Rate Control
- Arm Hand Steadiness
- Aiming

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

- 17001 Assemble and use landing party equipment.
- 18014 Operate handling equipment applicable to nuclear weapons.
- 18272 Operate ordnance handling and associated equipment.
- 44038 Solder and wire wrap connections.
- 46005 Perform preventive maintenance on handling equipment.
- 46311 Perform preventive maintenance on launching systems.
- 57019 Perform preventive maintenance.
 - Operate major components of the launching group while sitting at a console or standing.
 - Operate missile handling equipment while sitting at a console or standing.
 - Perform bench repairs on equipment.
 - Perform maintenance and inspection of equipment.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity:

- 18271 Operate missile-handling and associated equipment.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity (Continued):

- 48307 Troubleshoot and repair hydraulic/pneumatic components.
- 57019 Perform preventive maintenance.
- 58009 Test and repair magazine sprinkler systems and booster suppression systems.
 Move missile containers on ships.
 Use various test equipment to take voltage readings.
 Perform maintenance on equipment.
 Use drills, grinders, sanders and other hand tools.
 Assist in major repairs of equipment.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity:

- 19006 Maintain small arms and grenade launchers.
- 44038 Solder and wire wrap connections.
 Repair/replace small components.
 Handle and stow ordnance, replace components of ordnance.
 Test electrical/electronic components and parts.
 Perform preventive maintenance on launching system and handling equipment.
 Perform receipt and transfer inspections.
 Perform maintenance on magazine firefighting equipment.
 Adjust synchros/servos using a meter.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

- 17284 Operate major components of launching group.
- 17285 Perform combat systems operational tests on launcher systems.
- 17286 Conduct missile electrical systems test (MEST) or ASROC missile operability test (AMOT).
- 37282 Perform operational tests of missile handling equipment.
- 46005 Perform preventive maintenance on handling equipment.
- 46311 Perform preventive maintenance on launching systems.
Operate weapon systems equipment.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control:

- 17284 Operate major components of launching group.
- 17285 Perform combat systems operational tests on launcher systems.
- 17286 Conduct missile electrical systems test (MEST) or ASROC missile operability test (AMOT).
- 18006 Package and unpackage nuclear weapons and components.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

- 18006 Package and unpackage nuclear weapons and components.
- 18014 Operate handling equipment applicable to nuclear weapons.
- 44038 Solder and wire wrap connections.
- 44046 Test electrical/electronic components and parts.
- 44047 Test for shorts, grounds and continuity.
- 47006 Operate measuring devices.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness (Continued):

- 48010 Perform preventive maintenance on hydraulic equipment.
- 57019 Perform preventive maintenance.
- 58006 Perform preventive maintenance on magazine firefighting systems.
- 60008 Perform nuclear weapons accident response and decontamination procedures.

Representative tasks performed by first-term enlisted rating personnel that require Aiming:

- 17284 Operate major components of launching group.
- 17286 Conduct missile electrical systems test (MEST) or ASROC missile operability test (AMOT).
- 18014 Operate handling equipment applicable to nuclear weapons.
- 18271 Operate missile-handling and associated equipment.
- 46005 Perform preventive maintenance on handling equipment.
- 48306 Evacuate and charge pneumatic systems.
Set motor controls or hydraulic systems or components.

APPENDIX O

**IMPORTANT PSYCHOMOTOR ABILITIES FOR HULL MAINTENANCE
TECHNICIANS AND TASKS PERFORMED BY FIRST-TERM
PERSONNEL REQUIRING THESE ABILITIES**

HULL MAINTENANCE TECHNICIAN (HT)

Important Psychomotor Abilities for Hull Maintenance Technicians:

- Multilimb Coordination
- Wrist-Finger Speed
- Manual Dexterity
- Finger Dexterity
- Control Precision
- Rate Control
- Speed of Arm Movement
- Arm Hand Steadiness
- Aiming

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

- 36342 Operate marine sanitation systems.
- 37020 Perform hydrostatic tests.
- 37297 Perform preventive maintenance on marine sanitation systems.
- 37319 Perform preventive maintenance on shop equipment.
- 39001 Braze and solder metals.
- 39266 Perform oxyacetylene welding and cutting.
- 39345 Fabricate damage control patches.
- 39350 Install and repair pipe systems.
- 58010 Perform de-smoking.
- 58011 Perform de-watering.
- 58012 Perform chemical, biological and radiological (CBR) defense de-contamination.
- 58013 Perform shoring.
- 58016 Isolate damaged sections of firemain and restore pressure.

Representative tasks performed by first-term enlisted rating personnel that require Wrist-Finger Speed:

- 37319 Perform preventive maintenance on shop equipment.
- 39325 Cut and install low-pressure gaskets.
- 39349 Fabricate sheet metal lay outs.
- 39361 Manufacture sheet metal ducting.
- 58012 Perform chemical, biological and radiological (CBR) defense decontamination.
- 58013 Perform shoring.
- 58014 Prepare messages using damage control reporting symbols.
- 58020 Read and plot damage control plates and status boards.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity:

- 37297 Perform preventive maintenance on marine sanitation systems.
- 39001 Braze and solder metals.
- 39266 Perform oxyacetylene welding and cutting.
- 39349 Fabricate sheet metal lay-outs.
- 39350 Install and repair pipe systems.
- 58013 Perform shoring.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity:

- 37020 Perform hydrostatic tests.
- 37297 Perform preventive maintenance on marine sanitation systems.
- 37319 Perform preventive maintenance on shop equipment.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity (Continued):

- 58014 Prepare messages using damage control reporting symbols.
- 58304 Use detection devices for chemical agents.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

- 36342 Operate marine sanitation systems.
- 37020 Perform hydrostatic tests.
- 37319 Perform preventive maintenance on shop equipment.
- 39349 Fabricate sheet metal lay-outs.
- 39361 Manufacture sheet metal ducting.
- 58010 Perform de-smoking.
- 58011 Perform de-watering.
- 58013 Perform shoring.
- 58308 Operate installed fire-extinguishing, fixed-flooding, washdown and ventilation systems.
- 58333 Operate portable fire extinguishers.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control:

- 36342 Operate marine sanitation systems.
- 58010 Perform de-smoking.
- 58011 Perform de-watering.
- 58016 Isolate damaged sections of firemain and restore pressure.
- 58017 Rig and unrig casualty power cables.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control (Continued):

- 58332 Operate portable pumps and eductors.
- 58333 Operate portable fire extinguishers.

Representative tasks performed by first-term enlisted rating personnel that require Speed of Arm Movement:

- 37020 Perform hydrostatic tests.
- 58016 Isolate damaged sections of firemain and restore pressure.
- 58037 Operate fire stations.
- 58308 Operate installed fire-extinguishing, fixed-flooding, washdown and ventilation systems.
- 58332 Operate portable pumps and eductors.
- 58333 Operate portable fire extinguishers.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

- 39001 Braze and solder metals.
- 39266 Perform oxyacetylene welding and cutting.
- 58333 Operate portable fire extinguishers.

Representative tasks performed by first-term enlisted rating personnel that require Aiming:

- 39001 Braze and solder metals.
- 39266 Perform oxyacetylene welding and cutting.
- 39349 Fabricate sheet metal lay-outs.

Representative tasks performed by first-term enlisted rating personnel that require Aiming (Continued):

- 39361 Manufacture sheet metal ducting.
 - 58010 Perform de-smoking.
 - 58011 Perform de-watering.
 - 58013 Perform shoring.
 - 58037 Operate fire stations.
 - 58333 Operate portable fire extinguishers.
-

APPENDIX P

**IMPORTANT PSYCHOMOTOR ABILITIES FOR INTERIOR COMMUNICATIONS
ELECTRICIANS AND TASKS PERFORMED BY FIRST-TERM
PERSONNEL REQUIRING THESE ABILITIES**

INTERIOR COMMUNICATIONS ELECTRICIAN (IC)

Important Psychomotor Abilities for Interior Communications Electricians:

- Multilimb Coordination
- Manual Dexterity
- Finger Dexterity
- Rate Control
- Arm Hand Steadiness

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

- 40291 Operate interior communications (IC) and action cutout (ACO) switchboards.
- 43260 Troubleshoot and repair interior communications (IC) announcing systems.
- 44034 Repair and replace electrical/electronic components and parts.
- 44040 Test alarm and sensing devices.
- 44049 Test, service and replace batteries.
- 44263 Perform preventive maintenance (less motors and generators).
- 44327 Troubleshoot and repair chassis wiring.
- 44376 Adjust or replace sensing devices in alarm and indicating systems.
- 44377 Align and calibrate IC systems.
- 44488 Troubleshoot and repair portable announcing equipment.
- 46009 Troubleshoot and repair synchro/servo systems.
- 68023 Maintain logs.
- 68024 Maintain publications.
- 68026 Maintain records.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity:

- 37645 Troubleshoot and repair mechanical assemblies.
- 40270 Rig shore telephones.
- 43270 Operate entertainment systems.
- 43299 Rig portable announcing equipment.
- 44035 Repair electrical/electronic cables.
- 44289 Repair and install external wiring of IC equipment.
- 44299 Rig and test portable sound-powered telephone stations.
- 44326 Troubleshoot and repair automatic telephone equipment.
- 44327 Troubleshoot and repair chassis wiring.
- 44347 Troubleshoot and repair intercommunication systems.
- 44376 Adjust or replace sensing devices in alarm and indicating systems.
- 44488 Troubleshoot and repair portable announcing equipment.
- 46009 Troubleshoot and repair synchro/servo systems.
Rig shore power.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity:

- 39005 Fabricate electrical/electronic cables.
 - 43260 Troubleshoot and repair interior communications (IC) announcing systems.
 - 44034 Repair and replace electrical/electronic components and parts.
 - 44299 Rig and test portable sound-powered telephone stations.
 - 44327 Troubleshoot and repair chassis wiring.
-

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity (Continued):

- 44336 Troubleshoot and repair entertainment systems.
- 44345 Troubleshoot and repair IC and action cutout (ACO) switchboard components.
- 44356 Troubleshoot and repair power supplies.
- 44376 Adjust or replace sensing devices in alarm and indicating systems.
- 44377 Align and calibrate IC systems.
- 44489 Troubleshoot and repair gyrocompass.
- 46285 Troubleshoot and repair voltage and frequency controls.
- 79006 Install field changes, alterations and modifications.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control:

- 44289 Repair and install external wiring of IC equipment.
Repair sound-powered phone systems - underway.
Repair synchro-servo systems.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

- 39005 Fabricate electrical/electronic cables.
- 44034 Repair and replace electrical/electronic components and parts.
- 44263 Perform preventive maintenance (less motors and generators).
- 44289 Repair and install external wiring of IC equipment.
- 44326 Troubleshoot and repair automatic telephone equipment.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness (Continued):

- 44336 Troubleshoot and repair entertainment systems.
- 44362 Troubleshoot and repair sound-powered telephone systems.
- 44376 Adjust or replace sensing devices in alarm and indicating systems.
- 44377 Align and calibrate IC systems.
- 44489 Troubleshoot and repair gyrocompass.
- 46009 Troubleshoot and repair synchro/servo systems.
- 46285 Troubleshoot and repair voltage and frequency controls.

APPENDIX Q

**IMPORTANT PSYCHOMOTOR ABILITIES FOR MACHINIST'S MATES AND
TASKS PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES**

MACHINIST'S MATE (MM)

Important Psychomotor Abilities for Machinist's Mates:

- Multilimb Coordination
- Wrist-Finger Speed
- Manual Dexterity
- Finger Dexterity
- Rate Control

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

- 36002 Align and operate drain systems.
- 36014 Operate steam reducing stations.
- 36293 Align and operate air conditioning and refrigeration systems.
- 36294 Align and operate air ejectors.
- 36300 Align and operate distilling systems.
- 36301 Align and operate gland seal systems.
- 36302 Align and operate lube oil purifier systems.
- 36303 Align and operate lube oil systems.
- 36307 Align and operate potable water systems.
- 36308 Align and operate pumps.
- 36310 Align and operate ship's steering system.
- 36392 Operate reduction and turning gears.
- 36395 Operate turbo generators.
- 37030 Repair flexible couplings.

Representative tasks performed by first-term enlisted rating personnel that require Wrist-Finger Speed:

Disassemble/reassemble equipment with small parts, in tight spaces.

Representative tasks performed by first-term enlisted rating personnel that require Manual Dexterity:

- 36001 Align and operate chemical treatment systems.
- 36002 Align and operate drain systems.
- 36005 Align steam systems.
- 36294 Align and operate air ejectors.
- 36297 Align and operate compressed air systems.
- 36298 Align and operate condensate systems.
- 36300 Align and operate distilling systems.
- 36301 Align and operate gland seal systems.
- 36310 Align and operate ship's steering system.
- 39004 Fabricate and fit tubing and flexible hose assemblies.
Remove large equipment components from tight spaces, bilges, etc.
Move heavy objects in the work space.

Representative tasks performed by first-term enlisted rating personnel that require Finger Dexterity:

Remove or replace small component parts in tight areas.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control:

- 36001 Align and operate chemical treatment systems.
- 36005 Align steam systems.
- 36014 Operate steam reducing stations.
- 36297 Align and operate compressed air systems.
- 36302 Align and operate lube oil purifier systems.
- 36310 Align and operate ship's steering system.
- 36395 Operate turbo generators.
- 37291 Perform preventive maintenance on air ejector systems.
- 47269 Measure and record readings and clearances taken on machinery.

APPENDIX R

**IMPORTANT PSYCHOMOTOR ABILITIES FOR MACHINERY REPAIRMEN AND
TASKS PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES**

MACHINERY REPAIRMAN (MR)

Important Psychomotor Abilities for Machinery Repairmen:

- Multilimb Coordination
- Control Precision
- Arm Hand Steadiness
- Aiming

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

- 36251 Operate metal cutting bandsaw.
- 36253 Perform engraving.
- 36254 Operate drilling machine.
- 36261 Perform precision bench work.
- 36270 Operate bench and pedestal grinders.
- 36273 Operate planers and shapers.
- 36275 Operate milling machines.
- 36280 Set up shop machinery.
- 36283 Remove broken taps and studs.
- 36344 Operate engine lathes.
- 37003 Align and balance machine shop equipment.
- 37012 Maintain tools.
- 37320 Perform preventive maintenance on shop machinery.
- 37539 Maintain measuring instruments.
- 39308 Construct geometric forms.
- 39357 Manufacture keys and cut keyways.
- 39372 Design special tools and adapters.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

- 36260 Perform grinding on inside and outside diameters.
- 36253 Perform engraving.
- 36271 Perform plain, rapid and angular indexing.
- 37012 Maintain tools.
- 37539 Maintain measuring instruments.
- 39308 Construct geometric forms.
- 39357 Manufacture keys and cut keyways.
- 39405 Manufacture spur gears.
- 54006 Conduct quality assurance inspections.
- 67351 Supervise operations of a machine shop.
- 69410 Compute measurements for shop manufacture.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

- 36253 Perform engraving.
- 36261 Perform precision bench work.
- 37539 Maintain measuring instruments.
- 39006 Perform metal hardness tests.
- 39308 Construct geometric forms.
- 39372 Design special tools and adapters.
- 39374 Perform file hardness tests.
- 51001 Perform heat treatment of metals.
- 54006 Conduct quality assurance inspections.
- 57000

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness (Continued):

- 69410 Compute measurements for shop manufacture.
- 79021 Package, process and document repairables for turn in.

Representative tasks performed by first-term enlisted rating personnel that require Aiming:

- 36253 Perform engraving.
- 36260 Perform grinding on inside and outside diameters.
- 36271 Perform plain, rapid and angular indexing.
- 36280 Set up shop machinery.
- 36343 Operate cylindrical grinders.
- 36357 Operate surface grinders.
- 36359 Operate tool and cutter grinders.
- 37561 Align and balance rotating equipment.
- 39364 Manufacture worm wheel hobs.
- 39375 Manufacture bevel, worm, worm wheels and helical gears.

APPENDIX S

**IMPORTANT PSYCHOMOTOR ABILITIES FOR OPERATIONS SPECIALISTS AND
TASKS PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES**

OPERATIONS SPECIALIST (OS)

Important Psychomotor Abilities for Operations Specialists:

- Multilimb Coordination
- Wrist-Finger Speed
- Control Precision
- Arm Hand Steadiness

Representative tasks performed by first-term enlisted rating personnel that require Multilimb Coordination:

Plot NC2/DRT utilizing PMP.

Operate radar console.

Perform PMS.

Perform emergency destruct.

Maneuver board plotter.

Speak on R/T net.

ASAC and AIC.

Use parallels, dividers, PMP arms.

Write while using headsets that require you to "key" the equipment.

Operate NTDS console.

Representative tasks performed by first-term enlisted rating personnel that require Wrist-Finger Speed:

Operate radar console.

Keep logs.

Plot vertical/surface summary/cartesian grids.

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

- Operate radar console.
- Operate radar navigation plotter.
- Use PMPS.
- Use IFF.
- Adjust radar controls.
- Manipulate NTDS ball tab.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

- Conduct maneuvering board plotting.
- Perform navigation plotting.
- Perform NGFS plotting.
- Conduct target motion analysis (TMA).
- Draw sketches and diagrams.
- Maneuver board plotting, DRT plotting.
- Position ball tabs.

APPENDIX T

**IMPORTANT PSYCHOMOTOR ABILITIES FOR SONAR TECHNICIANS, SURFACE
AND TASKS PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES**

SONAR TECHNICIAN, SURFACE (STG)

Important Psychomotor Abilities for Sonar Technicians, Surface:

- Control Precision
- Rate Control
- Arm Hand Steadiness
- Aiming

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

- 18268 Load, handle and stow ASW weapons.
- 43007 Perform operational tests and adjustments on equipment.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control:

- 15255 Prepare and interpret sonar messages.
- 15291 Operate underwater battery fire control system.
- 33331 Operate underwater communications equipment.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness:

- 43007 Perform operational tests and adjustments on equipment.
- 44025 Perform performance monitoring/fault location (PM/FL) tests on equipment.
- 44028 Perform preventive maintenance on sonar and auxiliary equipment.
- 44035 Repair electrical/electronic cables.
- 44269 Perform preventive maintenance on underwater battery fire control system equipment.

Representative tasks performed by first-term enlisted rating personnel that require Arm Hand Steadiness (Continued):

44276 Perform transmission, computing and rate tests on sonar and auxiliary equipment.

Representative tasks performed by first-term enlisted rating personnel that require Aiming:

Repair equipment.

APPENDIX U

**IMPORTANT PSYCHOMOTOR ABILITIES FOR SONAR TECHNICIANS, SUBMARINE
AND TASKS PERFORMED BY FIRST-TERM PERSONNEL REQUIRING THESE ABILITIES**

SONAR TECHNICIAN, SUBMARINE (STS)

Important Psychomotor Abilities for Sonar Technicians, Submarine:

- Control Precision
- Rate Control
- Aiming

Representative tasks performed by first-term enlisted rating personnel that require Control Precision:

- 15030 Operate sonar auxiliary equipment.
- 15254 Perform transmission, computing and rate tests on sonar, auxiliary and fire control equipment.
- 15287 Operate sonar computer.
- 15288 Operate sonar sensors.
- 44262 Perform planned maintenance management program (PMMP) checks.
Operate sonar equipment and acoustic sensors.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control:

- 15030 Operate sonar auxiliary equipment.
- 15254 Perform transmission, computing and rate tests on sonar, auxiliary and fire control equipment.
- 15287 Operate sonar computer.
- 15288 Operate sonar sensors.
- 33331 Operate underwater communications equipment.
- 43007 Perform operational tests and adjustments on equipment.
- 44001 Adjust and align sonar and auxiliary equipment.
- 44044 Test and repair sonar and auxiliary equipment.

Representative tasks performed by first-term enlisted rating personnel that require Rate Control (Continued):

Manipulate equipment to track and analyze contacts held by sonar equipment.

Representative tasks performed by first-term enlisted rating personnel that require Aiming:

- 15016 Determine contact position using all available intelligence data.
- 15017 Determine optimum sonar operating modes.
- 15029 Obtain and classify aural turn counts.
- 15030 Operate sonar auxiliary equipment.
- 15254 Perform transmission, computing and rate tests on sonar, auxiliary and fire control equipment.
- 15287 Operate sonar computer.
- 15288 Operate sonar sensors.
- 15301 Determine target bearing; target range and range rate; angle on the bow; target aspect and doppler; target true and relative motion; closest point of approach; target course and speed; and target zig detection.
- 44028 Perform preventive maintenance on sonar and auxiliary equipment.
- 44035 Repair electrical/electronic cables.

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