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PERSONNEL STUDIES IN MINE WARFARE

TECHNICAL REPORT—PART IV

RECOMMENDATIONS FOR SELECTION STANDARDS AND TRAINING FOR MINE WARFARE BILLETS

By:
MILTON H. IREDELL
HARRY J. OLDER

A RESEARCH PROJECT CONDUCTED FOR THE BUREAU OF NAVAL PERSONNEL UNDER CONTRACT Nonr 902 (00).
PRA REPORT 54-3 • APRIL 1954

PSYCHOLOGICAL RESEARCH ASSOCIATES
1025 CONNECTICUT AVENUE, NORTHWEST WASHINGTON 6, D. C.

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ACKNOWLEDGEMENTS

THE OVER-ALL ACKNOWLEDGEMENTS FOR ALL PERSONNEL STUDIES IN MINE WARFARE MAY BE FOUND IN THE FIRST TECHNICAL REPORT OF PERSONNEL STUDIES IN MINE WARFARE (TECHNICAL REPORT - PART I - PROCEDURES, MANUALS AND FORMS FOR INTERVIEWING, TABULATING AND COMPILING BILLET ANALYSIS INFORMATION, PRA REPORT 53-6, AUGUST 1953). ALL PERSONNEL MENTIONED IN THESE OVER-ALL ACKNOWLEDGEMENTS HAD A PART IN THE COLLECTION AND PREPARATION OF THE DATA FOR THE PRESENT REPORT OF THE SERIES, TECHNICAL REPORT - PART IV - RECOMMENDATIONS FOR SELECTION STANDARDS AND TRAINING FOR MINE WARFARE BILLETS.

PARTICULAR CREDIT IS DUE, HOWEVER, TO THE SCHOOLS OFFICER AND MEMBERS OF HIS STAFF AT THE U. S. NAVAL SCHOOLS, MINE WARFARE, YORKTOWN, VIRGINIA, FOR THE INFORMATION WHICH THEY PROVIDED DURING THE PREPARATION OF THE TRAINING PHASES OF THIS STUDY.

SPECIAL CREDIT SHOULD ALSO BE GIVEN TO OUR LIAISON OFFICER, LT. CHARLES H. WILLIS, U. S. N., FOR HIS TIME AND ADVICE IN THE PREPARATION OF THIS REPORT. LT. WILLIS' WILLING COOPERATION IN BOTH THE COLLECTION AND PREPARATION OF THIS REPORT IS GRATEFULLY ACKNOWLEDGED.

FINALLY, WE WOULD LIKE TO THANK AGAIN FOR THE COOPERATION GIVEN FOR THESE STUDIES THROUGHOUT ALL OF THE PHASES, CAPT. LINDSEY WILLIAMSON, DIRECTOR, PERSONNEL ANALYSIS DIVISION (PERS 15) AND CDR. W. J. RUHE, PROJECTS SUPERVISOR, PERSONNEL ANALYSIS DIVISION, BUREAU OF NAVAL PERSONNEL.

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CHAPTER I

INTRODUCTION

UNDER CONTRACT NONR 902 (00), PSYCHOLOGICAL RESEARCH ASSOCIATES IS CONDUCTING A SERIES OF PERSONNEL STUDIES IN THE FIELD OF MINE WARFARE. THESE STUDIES ARE CONCERNED BOTH WITH MINING AND WITH MINE COUNTERMEASURES.

THE PRIMARY OBJECTIVES OF THESE PERSONNEL STUDIES HAVE BEEN DISCUSSED IN A PREVIOUS REPORT* PUBLISHED BY PSYCHOLOGICAL RESEARCH ASSOCIATES. IN BRIEF THE BASIC OBJECTIVES OF THESE STUDIES ARE AS FOLLOWS:

(A) BILLET ANALYSIS, INCLUDING BILLET DESCRIPTIONS AND BILLET SPECIFICATIONS, FOR OFFICER AND ENLISTED BILLETS IN MINE WARFARE.

(B) WELL DEFINED MEASURES OF PERFORMANCE ON A KEY MINE WARFARE JOB.

(C) RECOMMENDATIONS FOR SELECTION STANDARDS FOR VARIOUS MINE WARFARE BILLETS.

(D) RECOMMENDATIONS CONCERNING TRAINING.

DUE TO THE SCOPE AND DIVERSITY OF THESE PERSONNEL STUDIES AND BECAUSE OF THE DIFFERENCES IN SECURITY CLASSIFICATION AND NECESSARY DISTRIBUTIONS, IT WAS DECIDED TO REPORT THE FINDINGS OF THIS PROJECT IN FIVE SEPARATE REPORTS AS FOLLOWS:

TECHNICAL REPORT - PART I - PROCEDURES, MANUALS AND FORMS FOR INTERVIEWING, TABULATING AND COMPILING BILLET ANALYSIS INFORMATION. (UNCLASSIFIED)

APPENDICES TO TECHNICAL REPORT - PART I - PROCEDURES, MANUALS, AND

*PERSONNEL STUDIES IN MINE WARFARE: TECHNICAL REPORT - PART I - PROCEDURES, MANUALS, AND FORMS FOR INTERVIEWING, TABULATING, AND COMPILING BILLET ANALYSIS INFORMATION, PRA REPORT 53-6, AUGUST 1953.

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FORMS FOR INTERVIEWING, TABULATING AND COMPILING BILLET ANALYSIS INFORMATION. (UNCLASSIFIED)

TECHNICAL REPORT - PART II - MINE WARFARE BILLET DESCRIPTIONS AND SPECIFICATIONS - VOLUMEN I - MINING. (CONFIDENTIAL)

TECHNICAL REPORT - PART III - (SECRET)

TECHNICAL REPORT - PART IV - RECOMMENDATIONS FOR SELECTION STANDARDS AND TRAINING FOR MINE WARFARE BILLETS. (CONFIDENTIAL)

TECHNICAL REPORT - PART V - CRITERION DEVELOPMENT FOR A KEY MINE WARFARE BILLET. (CONFIDENTIAL)

TO DATE, PARTS I, II, AND III HAVE BEEN PUBLISHED AND DISTRIBUTED. PARTS I AND II CONTAINED TWO VOLUMES EACH.

THIS REPORT IS PART IV. IN ORDER TO UNDERSTAND ADEQUATELY THE BACKGROUND OF THE INFORMATION REPORTED IN THIS REPORT, THE READER IS ADVISED TO REFER TO PARTS I AND II OF THE PERSONNEL STUDIES IN MINE WARFARE ALREADY PUBLISHED.

THE PURPOSE OF THIS REPORT IS TO SERVE AS AN AID FOR THOSE WHO MUST DECIDE THE SELECTION STANDARDS AND TRAINING CURRICULA FOR THOSE PERSONNEL ENGAGED IN MINE WARFARE. THE RECOMMENDATIONS CONTAINED IN THIS REPORT ARE A SYNTHESES OF THE INTERVIEWS WHICH WERE OBTAINED BY NAVY TEAMS (SEE TECHNICAL REPORT - PART I) AND OF THE OBSERVATIONS MADE BY PSYCHOLOGICAL RESEARCH ASSOCIATES.

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CHAPTER II

TRAINING METHODS AS DETERMINED FROM THE INTERVIEWS

TECHNICAL REPORT - PART II OF PERSONNEL STUDIES IN MINE WARFARE INCLUDED TRAINING AREAS IN THE SPECIFICATIONS WITH RESPECT TO THE TYPE OF NAVY TRAINING THAT WAS DESIRABLE FOR EACH BILLET ACTIVITY, BUT IT DID NOT INCLUDE QUESTIONS CONCERNING WHEN THAT TRAINING SHOULD BE GIVEN (QUESTIONS F 19A OR F19B)* OR THE BEST AND SECOND BEST TRAINING METHODS FOR EACH ACTIVITY (QUESTIONS F20 AND F21).*

THIS CHAPTER WILL PRESENT THE RESULTS OF THIS SECTION OF THE INTERVIEW FOR ALL MINE WARFARE BILLETS INTERVIEWED BROKEN DOWN BY ACTIVITY. TABLE I ON THE NEXT 43 PAGES PRESENTS IN TABULAR FORM FOR EACH ACTIVITY OF EACH BILLET PREVIOUSLY ANALYZED AND REPORTED IN TECHNICAL REPORT - PART II, THE INFORMATION WHICH HAS NOT YET BEEN REPORTED CONCERNING TRAINING. THE TABLE SHOULD READ AS FOLLOWS:

COLUMN I - THE NAME OF THE BILLET AS ANALYZED IN PART II IS PRESENTED IN THIS COLUMN. AS IN PART II, BILLET FOR THE PURPOSES OF THESE STUDIES IS DEFINED AS, "A GROUP OF ACTIVITIES WHICH TAKES UP ALL OF A MAN'S TIME". TO CONSERVE SPACE THE TITLES OF THE BILLETS ARE PRESENTED IN ABBREVIATED FORM. THE MEANING OF THE ABBREVIATIONS ARE AS FOLLOWS:

ABBREVIATED TITLES	FULL TITLES
AM/BM	BOATSWAIN'S MATE (BM) ON A MINE SWEEPER (AM)
AM/EM	ELECTRICIAN'S MATE (EM) ON A MINE SWEEPER (AM)
AM/MINESWEEPING OFFICER	MINESWEEPING OFFICER ON A MINE SWEEPER (AM)

* SEE PERSONNEL STUDIES IN MINE WARFARE: APPENDICES TO TECHNICAL REPORT - PART I - PROCEDURES, MANUALS AND FORMS FOR INTERVIEWING, TABULATING AND COMPILING BILLET ANALYSIS INFORMATION (UNCLASSIFIED), PP. 372-375.

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AMS/BM	Boatswain's mate on a Motor Mine Sweeper (AMS)
AMS/EM	Electrician's mate on a Motor Mine Sweeper (AMS)
AMS/Minesweeping Officer	Minesweeping Officer on a Motor Mine Sweeper (AMS)
Aviation Squadron/ Mining Officer	Mining Officer of an Aviation Squadron
DM/Mining Officer	Mining Officer on board a light Mine Layer (DM)
DMS/BM	Boatswain's mate (BM) on a High Speed Mine Sweeper (DMS)
J II/Unit/ O in C	Officer in Charge of a J II Unit
MDU/Enlisted	Enlisted Man at a Mine Disposal Unit
MDU/Officer	Officer at a Mine Disposal Unit
Mine Division Commander	Commander of a Mine Division
Mine Force Type Commander Staff Officer	Mine Force Type Commander Staff Officer
MSB/BM	Boatswain's Mate on a Minesweeping Boat (MSB)
MSB/EM	Electrician's Mate on a Minesweeping Boat (MSB)
Nav. Ord. Fac./ Mining Officer	Mining Officer at a Naval Ordnance Facility
MN	All Minemen (MN) performing mining duties

COLUMN 2 - THIS COLUMN PRESENTS THE ACTIVITIES COMPOSING EACH OF THE BILLETS IN COLUMN 1. AN ACTIVITY FOR PERSONNEL STUDIES IN MINE WARFARE IS DEFINED AS "A GROUP OF SEVERAL RELATED TASKS WHICH MAKE UP A MAJOR PART OF A MAN'S TOTAL JOB". IT SHOULD BE REMEMBERED THAT A TASK HAS BEEN DEFINED AS "A SMALL UNIT OF WORK OR EFFORT DONE FOR A SPECIFIC PURPOSE".

COLUMN 3 - THIS COLUMN PRESENTS A RECAPITULATION OF THE TYPE OF NAVY TRAINING THAT HAS BEEN RECOMMENDED OF THE INTERVIEWEES FOR THE BILLET ACTIVITY UNDER CONSIDERATION. IN ADDITION TO THE NAMES OF THE SCHOOLS AND COURSES WHICH ARE PRESENTED IN THIS COLUMN THE GENERAL CATEGORIES OF CLASSS A SCHOOLS, CLASS B SCHOOLS, CLASS C SCHOOLS, FUNCTIONAL TRAINING SCHOOLS, AND FACTORY SCHOOLS ARE SOMETIMES PRESENTED. THE DEFINITIONS FOR THESE CATEGORIES OF SCHOOLS AS USED IN THESE STUDIES ARE:

CLASS A SCHOOLS - THESE SCHOOLS ARE DESIGNED TO COVER THE GROUND WORK FOR GENERAL SERVICE RATINGS. THE CURRICULA FOR CLASS A SCHOOLS INCLUDE ALL TECHNICAL QUALIFICATIONS REQUIRED FOR PETTY OFFICER, 3RD AND 2ND CLASS. THE LENGTH OF COURSES FOR CLASS A SCHOOLS VARIES FROM NINE TO 44 WEEKS.

CLASS B SCHOOLS - THESE SCHOOLS ARE DESIGNED TO PREPARE ENLISTED PERSONNEL FOR THE HIGHER PETTY OFFICER'S RATES. CURRICULA INCLUDE ALL TECHNICAL QUALIFICATIONS FOR PETTY OFFICER, 1ST CLASS AND CHIEF. THE LENGTH OF COURSES FOR CLASS B SCHOOLS VARIES FROM 14 TO 60 WEEKS.

CLASS C SCHOOLS - THESE SCHOOLS ARE DESIGNED TO TRAIN ENLISTED PERSONNEL IN A PARTICULAR QUALIFICATION OR SKILL WHICH DOES NOT COVER FULL REQUIREMENTS FOR A GENERAL SERVICE RATING. THE CURRICULA FOR THESE SCHOOLS ARE DESIGNED AROUND THE SPECIAL QUALIFICATION OR SKILL WHICH IS DESIRED.

FUNCTIONAL TRAINING SCHOOLS - FUNCTIONAL TRAINING SCHOOLS ARE AVAILABLE IN GENERAL FOR THE TRAINING OF ENLISTED PERSONNEL AS WELL AS OFFICERS. SOME OF THESE SCHOOLS ARE: NET TRAINING SCHOOLS, MINE WARFARE SCHOOL, SALVAGE SCHOOL, EXPLOSIVE ORDNANCE DISPOSAL SCHOOL, GUIDED MISSILE SCHOOL, ADVANCED UNDERSEA WEAPONS SCHOOLS, ETC.

FACTORY SCHOOLS - THESE ARE TECHNICAL SCHOOLS SPONSORED BY INDUSTRIAL ORGANIZATIONS. MILITARY PERSONNEL ARE SENT THERE TO RECEIVE TRAINING ON EQUIPMENT OR MATERIAL MANUFACTURED BY THAT ORGANIZATION.

COLUMN 4 - THE RESULTS FROM QUESTION F 20, "WHICH TRAINING METHOD SHOULD BE STRESSED MOST TO TEACH THIS TASK?" ARE PRESENTED IN THIS COLUMN. FOR THIS PRESENTATION ALL OF THE TASK RECOMMENDATIONS COMPOSING EACH ACTIVITY WERE SYNTHESIZED TO OBTAIN AN OVER-ALL RECOMMENDATION FOR EACH ACTIVITY.

COLUMN 5 - THE RESULTS FROM QUESTION F 21, "WHAT IS THE SECOND BEST TRAINING METHOD TO TEACH THIS TASK?" ARE PRESENTED IN THIS COLUMN. AS IN COLUMN 4, ALL OF THE TASK RECOMMENDATIONS COMPOSING EACH ACTIVITY WERE SYNTHESIZED TO OBTAIN AN OVER-ALL RECOMMENDATION AT THE ACTIVITY LEVEL.

COLUMN 6 - THIS LAST COLUMN OF TABLE I PRESENTS THE RESULTS FROM QUESTION F 19A FOR ENLISTED AND F 19B FOR OFFICERS. AS IN THE PREVIOUS COLUMNS THE INFORMATION IS PRESENTED AT THE ACTIVITY LEVEL.

A BRIEF LOOK AT TRAINING FOR MINE WARFARE PERSONNEL

THERE ARE AT LEAST TWO WAYS OF APPROACHING TRAINING FOR A PARTICULAR JOB. ONE WAY IS TO ANALYZE THE JOB IN QUESTION TO OBTAIN THE JOB DESCRIPTION AND THE JOB SPECIFICATION AND THEN TO REVIEW THE TRAINING CURRICULA AT THE APPROPRIATE TRAINING SCHOOL TO ATTEMPT TO ASCERTAIN IF THE METHOD AND CONTENT OF TRAINING IS COMMENSURATE WITH THE DUTIES AND RESPONSIBILITIES OF THE JOB IN QUESTION. THIS APPROACH TO TRAINING IS AIMED AT INSURING THAT TRAINING IN SCHOOLS IS ADEQUATELY PREPARING THE MAN FOR CERTAIN JOBS THAT HE WILL HOLD IN THE FLEET.

THE OTHER WAY OF LOOKING AT TRAINING FOR A PARTICULAR JOB IS TO CONSIDER TRAINING THAT EXISTS WHILE THE MAN IS ON THE JOB AND AFTER HE HAS GRADUATED FROM THE TRAINING SCHOOL. THIS INVOLVES TRAINING AT A PARTICULAR SKILL LEVEL FOR A PARTICULAR JOB.

BEFORE WE PROGRESS FURTHER WITH A DISCUSSION OF EACH OF THESE TWO WAYS OF LOOKING AT TRAINING, IT SEEMS APPROPRIATE FIRST TO MENTION SOME

TABLE I TRAINING RECOMMENDATIONS AS GIVEN BY THE INTERVIEWEES

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
AM/BM	PREPARES FOR ACOUSTIC SWEEP	WITH PROPER EXPERIENCE BOOT CAMP TRAINING IS SUFFICIENT	PRACTICE ON SHIP	SEA LAB.	BEFORE OR AFTER COMING TO UNIT BUT WHILE STILL NON-RATED
	STREAMS ACOUSTIC HAMMER	FACTORY SCHOOL TRAINING	PRACTICE ON SHIP	SEA LAB.	AFTER SOME EXPERIENCE, BUT STILL NON-RATED
	RECOVERS ACOUSTIC HAMMER	ONLY BOOT CAMP TRAINING NECESSARY	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE, BUT WHILE STILL NON-RATED
	INSPECTS AND MAINTAINS ACOUSTIC HAMMER	FACTORY SCHOOL TRAINING	PRACTICE ON SHIP	SEA LAB.	AFTER SOME EXPERIENCE, BUT WHILE STILL NON-RATED
	PREPARES FOR JIG SWEEP	CLASS C SCHOOL TRAINING	SEA LAB.	PRACTICE ON SHIP	BEFORE OR AFTER COMING TO UNIT, BUT WHILE STILL NON-RATED
	STREAMS OPEN JIG SWEEP	WITH PROPER EXPERIENCE ACTIVITY CAN BE PERFORMED WITH ONLY BOOT CAMP TRAINING	PRACTICE ON SHIP	SEA LAB.	AFTER SOME EXPERIENCE, BUT WHILE STILL NON-RATED
	RECOVERS OPEN JIG SWEEP	FACTORY SCHOOL TRAINING	PRACTICE ON SHIP	SEA LAB.	AFTER COMING TO UNIT, BUT WHILE STILL NON-RATED

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
AM/BM	Prepares to stream "0" type gear	Class C School training	Sea Lab.	Practice on ship	After some experience but still non-rated
	Streams "0" type gear	Only boot camp training is necessary to perform activity but Class C School training is helpful	Practice on ship	Demonstration	Before or after coming to unit, but while still non-rated
	Recovers "0" type gear	Boot camp training only	Practice on ship preceded by demonstration	Demonstration	Before coming to unit
	Maintains "0" type gear	Shipboard training	Practice on ship	Lectures	After some experience but while still non-rated
	Prepares for magnetic sweep	Only boot camp training	Demonstration	Practice on ship and movies	Before coming to unit or after, but while still non-rated
	Streams magnetic tail	Only boot camp training	Sea Lab.	Practice on ship	After some experience but while still non-rated
	Retrieves magnetic tail	Only boot camp is necessary to perform activity	Demonstration	Practice on ship	Before coming to unit

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
AM/BM	Rigs and plants dan buoys	Class C School training	Sea Lab.	Practice on ship	After some experience but while still non-rated
	Recovers dan buoy	Formal Fleet training school (not on ship)	Practice on ship	Sea Lab.	After some experience but while still non-rated
	Stands "O" type gear minesweeping watch	Only boot camp training	Practice on ship	Lectures	Before coming to unit

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
AM/EM	Prepares for acoustic sweep	Class A School	Practice on ship	Demonstration	After some experience but while still non-rated
	Hooks up acoustic hammer	Boot camp training	Practice on ship	Demonstration	Before coming to unit
	Inspects and maintains acoustic controller	Class C School	Demonstration	Practice on ship	Before coming to unit
	Inspects and maintains acoustic hammer	Class C School	Practice on ship	Demonstration	After some experience but while still non-rated
	Prepares for magnetic sweep	Class C School and Factory School	Practice on ship	Sea Lab.	After some experience but while still non-rated
	Hooks up magnetic tail	Class A School	Demonstration	Practice on ship	Before coming to unit
	Operates minesweeping winch	Class C School training is helpful but with proper experience activity can be performed with only boot camp training	Practice on ship	Sea Lab.	Before coming to unit or after some experience but while still non-rated

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
AM/EM	INSPECTS AND MAINTAINS MK VI CONTROLLER	CLASS A AND CLASS C SCHOOL TRAINING	SEA LAB	DEMONSTRATION	BEFORE COMING TO UNIT
	INSPECTS AND MAINTAINS SWEEP GENERATOR AND EXCITORS	CLASS A AND CLASS C SCHOOL TRAINING	SEA LAB.	DEMONSTRATION	BEFORE COMING TO UNIT
	INSPECTS AND MAINTAINS MAGNETIC TAIL	FACTORY SCHOOL	DEMONSTRATION	CUT-AWAY MODELS	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	INSPECTS AND MAINTAINS MAIN MAGNETIC DISTRIBUTION BOARD	CLASS A SCHOOL TRAINING	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	OPERATES DEGAUSSING SYSTEM	CLASS A SCHOOL TRAINING	DEMONSTRATION	LECTURES	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	INSPECTS AND MAINTAINS DEGAUSSING SYSTEM	CLASS A SCHOOL TRAINING	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	PLACES GENERATOR ON SPECIAL POWER	CLASS A SCHOOL TRAINING	PRACTICE ON SHIP	DEMONSTRATION	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	SETS UP AND OPERATES MAIN MAGNETIC DISTRIBUTION BOARD	CLASS A SCHOOL TRAINING	PRACTICE ON SHIP	DEMONSTRATION	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
AM/MS Officer	Supervises preparation for acoustic sweep	Mine Warfare School (Countermeasures Course)	Sea Lab	Demonstration	Ensign
	Supervises streaming of acoustic hammer	Mine Warfare School (Countermeasures Course)	Sea Lab.	Demonstration	Ensign
	Supervises recovery of acoustic hammer	Mine Warfare School (Countermeasures Course)	Practice on ship	Demonstration	Ensign
	Supervises preparation for jig sweep	Considerable experience in Naval seamanship; Mine Warfare School (Countermeasures Course)	Sea Lab.	Practice on ship	Before coming to unit
	Supervises streaming of jig sweep	Mine Warfare School (Countermeasures Course)	Practice on ship	Sea Lab.	Ensign, before coming to unit
	Supervises recovery of jig sweep	None	Practice on ship	Demonstration	Ensign, before coming to unit
	Supervises preparation for "O" type sweep	Mine Warfare School (Countermeasures Course)	Sea Lab.	Practice on ship	Ensign, before coming to unit

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
AM/MS Officer	Supervises streaming of "O" type sweep	Mine Warfare School (Countermeasures Course)	Demonstration	Practice on ship	- - -
	Supervises recovery of "O" type sweep	Mine Warfare School (Countermeasures Course)	Practice on ship	Demonstration	- - -
	Supervises preparation for magnetic sweep	Mine Warfare School (Countermeasures Course)	Sea Lab.	Demonstration	Ensign
	Supervises streaming of magnetic tail	Mine Warfare School (Countermeasures	Sea Lab	Practice on ship	Ensign, before coming to unit
	Supervises recovery of magnetic tail	None	Practice on ship	Sea Lab.	- - -
	Supervises preparation of dan buoys	Ten years experience in deck seamanship desirable for WO. Desirable that LTJG be a graduate of Mine Warfare School (Countermeasures Course)	Demonstration	Practice on ship	After 10 years' experience, while man is Petty Officer. LTJG, Mine Warfare School
	Supervises planting dan buoys	Mine Warfare School (Countermeasures Course)	Sea Lab	Practice on ship	Ensign, plus six months, before coming to unit

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
AM/MS Officer	Supervises recovery of dan buoys	Mine Warfare School (Countermeasures Course)	Sea Lab.	Practice on ship	Before coming to unit

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
AMS/BM	PREPARES FOR ACOUSTIC SWEEP	CLASS C SCHOOL	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT STILL NON-RATED
	STREAMS ACOUSTIC HAMMER	CLASS C SCHOOL	SEA LAB.	PRACTICE ON SHIP	BEFORE COMING TO UNIT
	RECOVERS ACOUSTIC HAMMER	CLASS C SCHOOL	SEA LAB.	PRACTICE ON SHIP	BEFORE COMING TO UNIT
	INSPECTS AND MAINTAINS ACOUSTIC HAMMER	FACTORY SCHOOL TRAINING	PRACTICE ON SHIP	SEA LAB.	AFTER SOME EXPERIENCE, BUT WHILE STILL NON-RATED
	PREPARES FOR JIG SWEEP	CLASS C SCHOOL	PRACTICE ON SHIP	DEMONSTRATION	BEFORE COMING TO UNIT
	STREAMS JIG SWEEP	CLASS C SCHOOL	SEA LAB.	DEMONSTRATION	BEFORE COMING TO UNIT; AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	RECOVERS JIG SWEEP	CLASS C SCHOOL	PRACTICE ON SHIP	DEMONSTRATION	BEFORE COMING TO UNIT
	PREPARES TO STREAM "O" TYPE GEAR	CLASS C SCHOOL	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED

BILLET	ACTIVITY	NAVY TYPE TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
AMS/BM	STREAMS "O" TYPE GEAR	CLASS C SCHOOL OR CLASS A SCHOOL	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED AND BEFORE COMING TO UNIT
	RECOVERS "O" TYPE GEAR	CLASS C SCHOOL	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE
	MAINTAINS "O" TYPE GEAR	CLASS A SCHOOL	PRACTICE ON SHIP	DEMONSTRATION	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED AND BEFORE COMING TO UNIT
	PREPARES FOR MAGNETIC SWEEP	CLASS C SCHOOL	SEA LAB.	PRACTICE ON SHIP	BEFORE COMING TO UNIT
	STREAMS MAGNETIC TAIL	CLASS C SCHOOL	PRACTICE ON SHIP	SEA LAB.	WITH SOME EXPERIENCE BUT STILL NON-RATED, OR THIRD CLASS
	RECOVERS MAGNETIC TAIL	CLASS C SCHOOL	PRACTICE ON SHIP	SEA LAB.	AFTER SOME EXPERIENCE BUT STILL NON-RATED
	RIGS AND PLANTS DAN BUOYS	CLASS C SCHOOL	DEMONSTRATION	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT STILL NON-RATED

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
AMS/BM	RECOVERS DAN BUOYS	CLASS C SCHOOL	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	STANDS "O" TYPE GEAR MS WATCH	ONLY BOOT CAMP TRAINING	PRACTICE ON SHIP	SEA LAB.	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
AMS/EM	Prepares for acoustic sweep	Class C School training	Demonstration	Movies and cut-away models	When Third Class Petty Officer
	Hooks up acoustic hammer	Boot camp training	Practice on ship	Demonstration	Before coming to unit
	Inspects and maintains acoustic controller	Class C School training helpful but activity can be performed with only Class A School training	Demonstration	Practice on ship	After some experience but while still non-rated
	Inspects and maintains acoustic hammer	Class C School training	Practice on ship	Demonstration	After some experience but while still non-rated
	Prepares for magnetic sweep	Class A School training or Class C School training	Sea Lab.	Practice on ship	After some experience but while still non-rated or Third Class
	Hooks up magnetic tail	Class A School	Sea Lab.	Practice on ship	Before coming to unit or after some experience but while still non-rated

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
AMS/EM	OPERATES MINESWEEPING WINCH	CLASS C SCHOOL TRAINING IS HELPFUL, BUT WITH PROPER EXPERIENCE ACTIVITY CAN BE PERFORMED WITH ONLY BOOT CAMP TRAINING	PRACTICE ON SHIP	SEA LAB.	BEFORE COMING TO UNIT OR AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	INSPECTS AND MAINTAINS MK VI CONTROLLER	CLASS A AND CLASS C SCHOOL TRAINING	SEA LAB.	DEMONSTRATION	BEFORE COMING TO UNIT
	INSPECTS AND MAINTAINS SWEEP GENERATOR AND EXCITERS	CLASS A AND CLASS C SCHOOL TRAINING	SEA LAB.	DEMONSTRATION	BEFORE COMING TO UNIT
	INSPECTS AND MAINTAINS MAGNETIC TAIL	CLASS C SCHOOL TRAINING	DEMONSTRATION	SEA LAB.	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	INSPECTS AND MAINTAINS MAIN MAGNETIC DISTRIBUTION BOARD	CLASS A SCHOOL TRAINING	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	OPERATES DEGAUSSING SYSTEM	CLASS A SCHOOL TRAINING	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	INSPECTS AND MAINTAINS DEGAUSSING SYSTEM	CLASS A SCHOOL TRAINING	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
AMS/MS Officer	Supervises preparation for acoustic sweep	Mine Warfare School (Countermeasures Course)	Sea Lab.	Demonstration	Ensign
	Supervises streaming of acoustic hammer	Mine Warfare School (Countermeasures Course)	Sea Lab.	Demonstration	Ensign
	Supervises recovery of acoustic hammer	Mine Warfare School (Countermeasures Course)	Practice on ship	Demonstration	Ensign
	Supervises preparation for jig sweep	Considerable experience in Naval Seamanship; Mine Warfare School (Countermeasures Course)	Sea Lab.	Practice on ship	Before coming to unit
	Supervises streaming of jig sweep	Mine Warfare School (Countermeasures Course)	Practice on ship	Sea Lab.	Ensign, before coming to unit
	Supervises recover of jig sweep	None	Practice on ship	Demonstration	Ensign, before coming to unit
	Supervises preparation for "O" type sweep	Mine Warfare School (Countermeasures Course)	Sea Lab.	Practice on ship	Ensign, before coming to unit

Billet	Activity	Navy Type Training	Best Method	Nest Best Method	When Given
AMS/MS Officer	Supervises streaming of "O" type sweep	Mine Warfare School (Countermeasures Course)	Demonstration	Practice on ship	- - -
	Supervises recovery of "O" type sweep	Mine Warfare School (Countermeasures Course)	Practice on ship	Demonstration	- - -
	Supervises preparation for magnetic sweep	Mine Warfare School (Countermeasures Course)	Sea lab	Demonstration	Ensign
	Supervises streaming of magnetic tail	Mine Warfare School (Countermeasures Course)	Sea lab	Practice on ship	Ensign, before coming to unit
	Supervises recovery of magnetic tail	None	Practice on ship	Sea lab	- - -
	Supervises preparation of danbuoys	Ten years experience in deck seamanship desirable for WO. Desirable that LTJG be a graduate of Mine Warfare School (Countermeasures Course)	Demonstration	Practice on ship	After 10 years' experience, while man is Petty Officer. LTJG, Mine Warfare School

BILLET	ACTIVITY	NAVY TYPE TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
AMS/MS OFFICER	SUPERVISES PLANTING DAN BUOYS	MINE WARFARE SCHOOL (COUNTERMEASURES COURSE)	SEA LAB.	PRACTICE ON SHIP	ENSIGN, PLUS SIX MONTHS, BEFORE COMING TO UNIT
	SUPERVISES RECOVERY OF DAN BUOYS	MINE WARFARE SCHOOL (COUNTERMEASURES COURSE)	SEA LAB.	PRACTICE ON SHIP	BEFORE COMING TO UNIT

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
Aviation Squadron/ Mining Officer	Prepares annex to operation orders for aerial minings	Flight training, Mine Warfare School	Demonstration	Practice on ship	Before coming to unit
	Prepares and delivers lectures on mine warfare to squadron personnel	Flight training and Mine Warfare School	Lectures	Movies	One year after flight training and three years after mine warfare school

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
DM/MINING OFFICER	SUPERVISES MINE LAYING OPERATIONS	SHOULD ATTEND NAVAL SCHOOL MINEWARFARE, YORKTOWN, VIRGINIA	PRACTICE ON SHIP	SEA LAB.	ONE YEAR AFTER COMMISSION

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
DMS/BM	PREPARES "S" TYPE "C" GEAR	FACTORY SCHOOL TRAINING	PRACTICE ON SHIP	DEMONSTRATION	AFTER COMING TO UNIT BUT WHILE STILL NON-RATED
	STREAMS "S" TYPE "C" GEAR	CLASS C SCHOOL	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	RECOVERS "S" TYPE "C" GEAR	CLASS C SCHOOL	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
JII-UNIT/ O IN C	SUPERVISES REFRESHER TRAINING OF AIRCRAFT CARRIER MINE PERSONNEL	SHOULD ATTEND NAVAL SCHOOLS MINE WARFARE, YORKTOWN, VIRGINIA	LECTURES	PRACTICE ON SHIP	BEFORE COMING TO UNIT AND WHEN WARRANT
	SUPERVISES PREPARATION OF AERIAL DRILL MINES FOR AERIAL MINE LAYING EXERCISE, INCLUDING ISSUING	ONLY BOOT CAMP TRAINING NECESSARY TO PERFORM ACTIVITY	PRACTICE ON SHIP	SEA LAB.	BEFORE COMING TO UNIT
	SUPERVISES INSPECTION OF DRILL MINES RECOVERED FROM MINE PLANTS	OFFICERS' FAMILIARIZATION PERIOD. MINE WARFARE SCHOOL	PRACTICE ON SHIP	SEA LAB.	ONE YEAR AFTER COMMISSION
	OBSERVES OPERATIONAL READINESS DRILLS OF CARRIERS	OFFICERS' FAMILIARIZATION PERIOD. MINE WARFARE SCHOOL	LECTURES	PRACTICE ON SHIP	BEFORE COMING TO UNIT AND WHEN WARRANT

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
MDU/En-listed man	Renders contact mine safe and disposes of explosive	Class C School	Sea Lab.	Demonstration	Before coming to unit, Third Class Petty Officer
	Renders magnetic mine safe MK 25	Class C School	Demonstration	Lectures	Before coming to unit
	Renders foreign mine safe (Russian contact mine)	Class C School	Sea Lab.	Demonstration	First Class Petty Officer
	Disposes of Japanese mine	Formal Fleet training School (not on ship)	Sea Lab.	Practice on ship	Third Class Petty Officer
	Renders torpedo safe	Class C School	Sea Lab.	Demonstration	Third Class Petty Officer
	Renders bomb safe	At least Class C School	Sea Lab.	Practice on ship	Third Class Petty Officer
	Streams out and disposes of torpedo explosive	Class C School	Sea Lab.	Demonstration and Practice on ship	Third Class Petty Officer
	Removes live mine from sweep gear	Class B School	Sea Lab.	Practice on ship	Before coming to unit, after some experience but while still non-rated

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
MDU/Enlisted	Recovers M/S gear lost due to enemy action	Only boot camp training	Practice on ship	Lectures	Before coming to unit
	Prepares experimental underwater explosive charge	Formal Fleet Training School (not on ship)	Sea Lab.	Practice on ship	Second Class Petty Officer
	Tests mine detector equipment	Class C School	Sea Lab.	Practice on ship	Third Class Petty Officer before coming to unit
	Recovers Mark 25 drill mine	Formal Fleet Training School	Sea Lab.	Practice on ship	Third Class Petty Officer

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
MDU/OFFICER	PLANS AND PREPARES OPERATION AND WRITES MINE DISPOSAL ANNEX TO MINE WARFARE EXERCISE OPERATION	EODS	PRACTICE ON SHIP	SEA LAB.	LTJG

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
MINE DIV./ COMMANDER	CONDUCTS M/S READINESS INSPECTIONS	GENERAL LINE SCHOOL AND MINE WARFARE SCHOOL	PRACTICE ON SHIP	LECTURES	THREE YEARS AFTER MAKING LTJG
	SUPERVISES SWEEPING MISSIONS	SHOULD BE GIVEN THE STAFF COURSE AT THE NAVAL SCHOOLS MINE WARFARE, YORKTOWN, VIRGINIA	PRACTICE ON SHIP	SEA LAB.	THREE YEARS AFTER MAKING LTJG

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
MINE FORCE TYPE COMM. STAFF OFFICER	PREPARES DEFENSIVE AND OFFENSIVE MINE WARFARE PLANS - SURFACE	SHOULD ATTEND POST-GRADUATE MINE WARFARE SCHOOL OR INTELLIGENCE SCHOOL	LECTURES AND DEMONSTRATION	MOVIES	LTJG

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
MSB/BM	PREPARES 5-G TYPE GEAR FOR STREAMING	CLASS C SCHOOL	PRACTICE ON SHIP	SEA LAB OR MOVIES	AFTER SOME EXPERIENCE, BUT STILL NON-RATED
	STREAMS 5-G TYPE GEAR	CLASS C SCHOOL OR FACTORY SCHOOL	SEA LAB.	DEMONSTRATION	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	RETRIEVES 5-G TYPE GEAR	BOOT CAMP ONLY	SEA LAB.	PRACTICE ON SHIP	BEFORE COMING TO UNIT
	STREAMS MAGNETIC TAIL	FACTORY SCHOOL	SEA LAB.	DEMONSTRATION	AFTER SOME EXPERIENCE BUT STILL NON-RATED
	RECOVERS MAGNETIC TAIL	CLASS C SCHOOL	PRACTICE ON SHIP	SEA LAB.	AFTER SOME EXPERIENCE, BUT STILL NON-RATED
	RIGS, PLANTS, AND RETRIEVES DAN BUOYS	BOOT CAMP ONLY	SEA LAB.	DEMONSTRATION	- - -
	REPLACES LOST "O" TYPE GEAR	BOOT CAMP ONLY	SEA LAB.	DEMONSTRATION	BEFORE COMING TO UNIT

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
MSB/EM	SETS-UP AND SECURES MAGNETIC SWEEP PANEL	CLASS A SCHOOL	SEA LAB.	DEMONSTRATION	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	OPERATES AND MAINTAINS DEGAUSSING SYSTEM	CLASS A SCHOOL	SEA LAB.	DEMONSTRATION	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
NAV. ORD. FAC./MIN-ING OFFICER	Supervises running of aircraft mine shop	Should attend post-graduate Mine School	Lectures and practice on ship	Lectures and movies	Two years after making LTJG

BILLET	ACTIVITY	NAVY TYPE TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
MN	ASSEMBLES OR DIS-ASSEMBLES MARK 6 MINE (ALL MODS. EXCEPT 14 AND EXP.)	FACTORY SCHOOL	SEA LAB.	PRACTICE ON SHIP	BEFORE COMING TO UNIT
	ASSEMBLES OR DIS-ASSEMBLES MARK 6 EXPERIMENTAL MINE	CLASS B SCHOOL, MINE WARFAR SCHOOL	SEA LAB.	PRACTICE ON SHIP	SECOND CLASS PETTY OFFICER
	ASSEMBLES OR DIS-ASSEMBLES MARK 10-0 OR MARK 10-1 MINE	CLASS A SCHOOL	SEA LAB.	DEMONSTRATION	BEFORE COMING TO UNIT
	ASSEMBLES OR DIS-ASSEMBLES MARK 10 MINES	CLASS A SCHOOL	PRACTICE ON SHIP	DEMONSTRATION	AFTER SOME EX-PERIENCE BUT WHILE STILL NON-RATED
	ASSEMBLES OR DIS-ASSEMBLES MARK 12-0 AND MARK 12-3 MINES	CLASS A SCHOOL	SEA LAB.	PRACTICE ON SHIP	BEFORE COMING TO UNIT
	ASSEMBLES OR DIS-ASSEMBLES MARK 13-5, MARK 13-6, AND MARK 25-3 MINES	CLASS A SCHOOL	DEMONSTRATION	PRACTICE ON SHIP	BEFORE COMING TO UNIT

BILLET	ACTIVITY	NAVY TYPE TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
MN	ASSEMBLES OR DIS-ASSEMBLES MARK 16-1 MINE	CLASS A SCHOOL, CLASS B SCHOOL	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	ASSEMBLES OR DIS-ASSEMBLES MARK 25-0 AND MARK 39-0 MINES	CLASS A SCHOOL	PRACTICE ON SHIP	DEMONSTRATION	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED AND BEFORE COMING TO UNIT
	ASSEMBLES OR DIS-ASSEMBLES MARK 25-1 & MARK 36-2	CLASS A SCHOOL, FORMAL FLEET SCHOOL	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED AND BEFORE COMING TO UNIT
	ASSEMBLES OR DIS-ASSEMBLES MARK 25-2 AND MARK 36-3	CLASS A SCHOOL CLASS B SCHOOL	SEA LAB.	DEMONSTRATION	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED AND BEFORE COMING TO UNIT
	ASSEMBLES OR DIS-ASSEMBLES MARK 26-0	CLASS A SCHOOL	SEA LAB.	DEMONSTRATION	BEFORE COMING TO UNIT
	ASSEMBLES OR DIS-ASSEMBLES MARK 27-0	CLASS A SCHOOL	DEMONSTRATION	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
MN	Assembles or disassembles Mark 36-1	Class C School	Sea Lab.	Practice on ship	After some experience but while still non-rated
	Assembles or disassembles Mark 6 (All Mods)	Class A School	Practice on ship	Demonstration	After some experience but while still non-rated
	Assembles or disassembles Mark 10-5	Boot camp only	Sea Lab.	Practice on ship	After some experience but while still non rated
	Assembles or disassembles battery section	Class A School	Sea Lab.	Demonstration	Before coming to unit and after some experience but while still non-rated
	Assembles or disassembles floats	Class A School	Sea Lab.	Practice on ship	After some experience but while still non-rated
	Maintains Mark VI and XVI Mine cases and anchors	Boot camp, Class C School	Practice on ship	Demonstration	After some experience but still non-rated and before coming to unit

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
MN	Maintains Mine tracks	Boot camp only	Demonstration	Practice on ship	Boot camp only
	Charges MK 27 propulsion batteries	Class A School	Sea Lab.	Practice on ship	After some experience but while still non-rated
	Handles batteries	Class A School	Sea Lab.	Practice on ship	After some experience but while still non-rated
	Maintains Mark 27 Head	Class A School	Sea Lab.	Demonstration	Before coming to unit
	Overhauls Mark 16 mine case	Class A School	Sea Lab.	Practice on ship	After some experience but non-rated
	Overhauls Mark VI anchor	Class A School	Practice on ship	Sea Lab.	Before coming to unit
	Overhauls Mark 10 anchor	Class A School	Sea Lab.	Practice on ship	Before coming to unit
	Modifies Mark 12-0 and mark 12-1 depth charge pistol	Class A School	Practice on ship	Sea Lab.	After some experience but while still non-rated
	Overhauls mark 6-2 extender	Factory School	Demonstration	Practice on ship	Before coming to unit
	Modified terminal block (TB 19-0)	Boot camp only	Practice on ship	Sea Lab.	After some experience but non-rated

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
MN	Reworks and tests mark 13-0, mark 13-1, or mark 15-0 control box	Factory School	Practice on ship	Demonstration	After some experience but still non-rated
	Overhauls and tests hydrostats for mark 10 mines	Class A School	Sea Lab.	Practice on ship	After some experience but while still non-rated
	Overhauls mark 27 exercise head	Boot camp only	Sea Lab.	Practice on ship	After some experience but while still non-rated
	Overhauls and tests mark 27 exercise battery section	Boot camp only	Practice on ship	Sea Lab.	After some experience but while still non-rated
	Repairs mark 27 propulsion batteries	Class A School	Sea Lab.	Practice on ship	After some experience but while still non-rated
	Prepares to plant mark 6 drill mine	Class A School	Demonstration	Lectures	After some experience but while still non-rated
	Plants mark 6 drill mines	Boot camp or Class A School	Demonstration	Practice on ship	Before coming to unit
	Recovers mark 6 drill mines	Boot camp only	Practice at sea	Movies	After some experience but while still non-rated

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
MN	SETS-UP TURNTABLE	BOOT CAMP ONLY	PRACTICE ON SHIP	DEMONSTRATION	BEFORE COMING TO UNIT
	TESTS A-3 FIRING MECHANISM	CLASS A SCHOOL	PRACTICE ON SHIP	DEMONSTRATION	BEFORE COMING TO UNIT
	TESTS A-5 FIRING MECHANISM	CLASS A SCHOOL	DEMONSTRATION	MOVIES AND LECTURES	AFTER SOME EXPERIENCE BUT STILL NON-RATED
	TESTS A-6 AND A-8 FIRING MECHANISM	CLASS A SCHOOL, FACTORY SCHOOL	PRACTICE ON SHIP	SEA LAB.	AFTER SOME EXPERI- BUT WHILE STILL NON-RATED
	TESTS K-4-1 FIRING MECHANISM	CLASS A SCHOOL CLASS C SCHOOL	PRACTICE ON SHIP	DEMONSTRATION	BEFORE COMING TO UNIT
	TESTS M-3 FIRING MECHANISM	CLASS A SCHOOL	PRACTICE ON SHIP	DEMONSTRATION	- - -
	TESTS M-5 FIRING MECHANISM	CLASS A SCHOOL	PRACTICE ON SHIP	SEA LAB.	BEFORE COMING TO UNIT
	TESTS M-6 FIRING MECHANISM	CLASS A SCHOOL, CLASS C SCHOOL	SEA LAB.	PRACTICE ON SHIP	- - -
	TESTS M9-0 FIRING MECHANISM	CLASS A SCHOOL	SEA LAB.	PRACTICE ON SHIP	BEFORE COMING TO UNIT, AND AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
MN	Test M9-1 firing mechanism	Factory School	Practice on ship	Demonstration	After some experience but still non-rated
	Tests M-11 firing mechanism	Class A School, Factory School	Practice on ship	Sea Lab.	After some experience but while still non-rated
	Tests clock delay (CD4, CD7, CD8, CD10)	Class A School	Demonstration	Movies	After some experience but while still non-rated
	Tests CD-12 clock delay	Class A School	Sea Lab.	Practice on ship	After some experience but while still non-rated
	Tests CD-14 clock delay	Class A School	Practice on ship	Sea Lab.	Before coming to unit
	Performs clock timing test for all CD's	Class A School	Demonstration	Practice on ship at sea	After some experience but not yet rated
	Tests batteries	Class A School	Sea Lab.	Demonstration	After some experience but while still non-rated
	Tests cables	Boot camp only and Formal Fleet School	Demonstration	Practice on ship	After some experience but while still non-rated

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
MN	Tests circuit breaks	Class A School	Demonstration	Lectures	After some experience but while still non-rated
	Tests control boxes	Class A School Factory School	Practice on ship	Demonstration	After some experience but while still non-rated
	Tests mark 3 sensitivity switch	Class A School	Demonstration	Lecture	Before coming to unit
	Tests mark 5 sensitivity switch	Class A School	Demonstration	Lecture	Before coming to unit
	Tests HS-2 hydrostatic switch	Class A School	Demonstration	Lecture	Before coming to unit
	Test MI-2 microphone	Class A School	Demonstration	Lecture	Before coming to unit
	Tests search coils	Class A School, Factory School	Practice on ship	Demonstration	After some experience but while still non-rated
	Tests SR7-3 sensitrol relay	Class A School	Practice on ship	Sea Lab.	After some experience but while still non-rated
	Tests sterilizer (SD-4)	Class A School	Demonstration	Lecture	After some experience but while still non-rated

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
MN	Tests terminal boards	Class A School	Demonstration	Lecture	After some experience but while still non-rated
	Tests ship's eliminators (SE-1 and SE-2)	Class A School	Demonstration	Lecture	After some experience but while still non-rated
	Tests SE-3 ship's eliminator	Class A School	Sea Lab.	Demonstration	After some experience but while still non-rated
	Tests time delays	Class A School	Demonstration	Lecture	Before coming to unit
	Tests anti-counter-mining devices	Class A School	Demonstration	Movies	After some experience but while still non-rated
	Tests extender mechanism	Class A School, Factory School	Demonstration	Practice on ship	After some experience but not yet rated
	Tests mark 6-14 case and anchor	Class A School	Practice at sea	Demonstration	After some experience but still not rated
	Tests mark 10 anchor	Boot camp, Factory School	Practice on ship	Sea Lab.	Before coming to unit

Billet	Activity	Navy Type Training	Best Method	Next Best Method	When Given
MN	Tests Mark 12-1 float	Factory School	Demonstration	Cut away models	Before coming to unit
	Makes vibration test of components (Mark 25 mine)	Class A School	Practice on ship	Sea Lab.	Before coming to unit
	Tests Mark 1 Hydrostat	Class A School	Sea Lab.	Practice on ship	After some experience but still non-rated
	Performs ordalt and rebalances mine case (mark 10 mine)	Class A School	Sea Lab.	Demonstration	After some experience but still non-rated
	Gauges mine case	Boot camp only	Demonstration	Sea Lab.	After some experience while man is still non-rated
	Makes vacuum test of mine case	Boot camp only	Sea Lab.	Practice on ship	Before coming to unit
	Tests mark 27 afterbodies	Class C School	Practice on ship	Sea Lab.	After some experience but while still non-rated
	Tests mark 27 exercise head	Class A School	Sea Lab.	Practice on ship	After some experience but while still non-rated, and before coming to unit

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
MN	Tests gyro unit (Mark 27 mine)	Class C School	Sea Lab.	Practice on ship	When Third Class Petty Officer
	Tests mark 27 battery compartment	Class A School	Sea Lab.	Practice on ship	After some experience but while still non rated
	Tests Mark 3 release pistol	Class A School	Practice on ship	Demonstration	After some experience but while still non-rated
	Tests Mark 12 release pistol	Class A School	Sea Lab.	Demonstration	Before coming to unit
	Tests Mark 1-1 detonator	Class A School	Practice on ship	Demonstration	After some experience but while still non-rated
	Tests clock starter	Class A School	Sea Lab.	Practice on ship	Before coming to unit
	Performs operational test on Mark 6 mines (All mods except 14)	Class A School	Practice at sea	Demonstration	After some experience but still non-rated
	Performs operational test on Mark 10 mines (Mods 3,5,7, and 9)	Class C School	Demonstration	Movies	Before coming to unit

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
MN	PERFORMS OPERATIONAL TEST ON MARK 13-6 AND MARK 25-3 MINES	CLASS A SCHOOL	PRACTICE ON SHIP	DEMONSTRATION	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	PERFORMS OPERATIONAL TEST ON MARK 25-0 AND MARK 39-0 MINES	CLASS A SCHOOL	SEA LAB. AND TRAINING ON SHIP	DEMONSTRATION	BEFORE COMING TO UNIT AND AFTER SOME EXPERIENCE BUT STILL NON-RATED
	PERFORMS OPERATIONAL TEST ON MARK 25-1 AND MARK 36-2 MINES	FACTORY SCHOOL	SEA LAB.	PRACTICE ON SHIP	BEFORE COMING TO UNIT
	PERFORMS OPERATIONAL TEST ON MARK 25-2 AND MARK 36-3 MINES	CLASS A SCHOOL	PRACTICE ON SHIP	DEMONSTRATION	BEFORE COMING TO UNIT
	PERFORMS OPERATIONAL TEST ON MARK 26-1 AND MARK 36-1 MINES	CLASS A SCHOOL	SEA LAB.	DEMONSTRATION	BEFORE COMING TO UNIT
	PERFORMS OPERATIONAL TEST ON MARK 27 MINE	CLASS B SCHOOL	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT STILL NON-RATED
	TESTS MARK 6-14 CASE AND ANCHOR	CLASS A SCHOOL	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT STILL NON-RATED
	MAINTAINS TEST SETS	CLASS A SCHOOL	SEA LAB.	PRACTICE ON SHIP	AFTER COMING TO UNIT BUT STILL NON-RATED

BILLET	ACTIVITY	TYPE NAVY TRAINING	BEST METHOD	NEXT BEST METHOD	WHEN GIVEN
MN	REQUALIFIED CLASS B MINEMAN IN AERIAL MINES	CLASS A SCHOOL	SEA LAB. AND DEMONSTRATION	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT STILL NON-RATED. WARRANTS SHOULD BE TRAINED WHEN THEY ARE CPO'S
	CONDUCTS LOADING DRILLS ON AERIAL MINES	CLASS C SCHOOL	SEA LAB. AND DEMONSTRATION	PRACTICE ON SHIP AND CUT AWAY MODELS	SECOND CLASS PETTY OFFICER
	CONSTRUCTS TRAINING AIDS FOR A-8 MECHANISM	CLASS A SCHOOL	SEA LAB.	PRACTICE ON SHIP	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	PROCURES SPARE PARTS	BOOT CAMP ONLY	PRACTICE ON SHIP	DEMONSTRATION	AFTER SOME EXPERIENCE BUT WHILE STILL NON-RATED
	MAKES INVENTORIES	CLASS A SCHOOL	PRACTICE ON SHIP OR SEA LAB	DEMONSTRATION	BEFORE COMING TO UNIT
	MODIFIED ORDNANCE PAMPHLETS	BOOT CAMP ONLY	PRACTICE ON SHIP	DEMONSTRATION	BEFORE COMING TO UNIT
	CONDUCTS OPERATIONAL TRAINING FOR SHOP PERSONNEL	CLASS C SCHOOL	SEA LAB.	PRACTICE ON SHIP	THIRD CLASS PETTY OFFICER

Billet	Activity	Type Navy Training	Best Method	Next Best Method	When Given
MN	Supervises transporting of mark 27 mines to planting vessels	Formal Fleet training	Demonstration	Practice on ship	After some experience but while still non-rated
	Delivers drill mines for aerial loading drill	Class C School	Sea Lab.	Practice on ship	After some experience but while still non-rated
	Maintains Mark 10-1 case	Class A School	Sea Lab.	Practice on ship	Before coming to unit
	Maintains Mark 10-3 case	Class A School	Sea Lab.	Practice on ship	After some experience but while still non-rated
	Maintains Mark 25 mine case	Class A School and Class C School	Practice on ship	Demonstration	After some experience but while still non-rated
	Maintains Mark 36-2 mine	Boot camp only	Demonstration	Practice on ship	- - -

RATHER COMPLEX PROBLEMS WHICH BEAR ON ANY TRAINING RECOMMENDATIONS.

(1) THE BILLET PROBLEM. THERE IS NO CLEAR CUT DEFINITION OR UNDERSTANDING OF WHAT IS MEANT BY "BILLET" IN THE NAVY. IT IS NOT A JOB, IT IS NOT A MAN, IT IS NOT A RATING, IT IS NOT A PAY GRADE, IT IS NOT A SPOT IN ANY TABLE OF ORGANIZATION. THE CONNOTATION OBTAINED FROM "BILLET" SEEMS TO FLUCTUATE FROM ONE MAN TO THE NEXT, FROM ONE BASE TO THE NEXT, AND FROM ONE NAVY BUREAU TO THE NEXT. SINCE THERE IS LITTLE UNDERSTANDING AS TO WHAT IS MEANT BY "BILLET" IT IS DIFFICULT TO WRITE BILLET DESCRIPTIONS AND SPECIFICATIONS AND TRAINING RECOMMENDATIONS FOR BILLETS. PSYCHOLOGICAL RESEARCH ASSOCIATES THEREFORE FOR RESEARCH PURPOSES REDEFINED "BILLET" IN ORDER TO OBTAIN SOME USE FROM THE TERM. BILLET WAS DEFINED AS A GROUP OF ACTIVITIES WHICH TAKES UP ALL OF ONE MAN'S TIME. THIS CONCEPT OF THE WORD IMPLIES THAT THERE MAY NOT NECESSARILY BE A BILLET RELATIONSHIP WITH RATING AND PAY GRADE.

(2) THE PAY GRADE PROBLEM. PAY GRADE SEEMS TO IMPLY EITHER A LEVEL OF SKILL OR A LEVEL OF RESPONSIBILITY. THIS IS NOT NECESSARILY SO AND IN FACT IT SEEMS TO BE MORE THE EXCEPTION THAN THE RULE. IT CAN BE SEEN FROM THE SPECIFICATIONS PRESENTED IN TECHNICAL REPORT - PART II FOR ALMOST ANY BILLET AND ACTIVITY, THAT MOST PAY GRADES DO MOST ACTIVITIES. THAT IS, A PARTICULAR JOB ASSIGNMENT IS BASED ON THE MAN'S INDIVIDUAL SKILL AND NOT ON

HIS PAY GRADE. THEREFORE, WHAT DO MN'S DO? ANY ACTIVITY AND EVERY ACTIVITY THAT IS LISTED FOR MN. WHAT DO MN2'S DO? ANY ACTIVITY AND EVERY ACTIVITY THAT IS LISTED FOR MN. AND THE SAME CAN BE SAID FOR ALMOST ANY PAY GRADE IN MINE WARFARE. BUT WHAT DOES A MN2 DO? HE MAY DO ANY OF THE ACTIVITIES LISTED FOR MN BUT HE IS DOING THE ACTIVITY FOR WHICH HE HAS OBTAINED THE MOST SKILL. THIS SKILL MOST PROBABLY WAS OBTAINED BY HIM BY CONSTANT REPETITION OF THE ACTIVITY. PAY GRADE LEVELS ARE BASED ON (A) TIME IN GRADE, AND (B) SCORE ON QUALIFYING EXAMINATIONS. THE QUALIFYING EXAMINATIONS HAVE LITTLE RELATIONSHIP TO WHAT THE MAN MAY BE DOING ON THE JOB. THEY IN NO WAY MEASURE WHAT THE MAN IS EXPECTED TO PRODUCE OR HIS EXPECTED PROFICIENCY ON HIS JOB. SINCE THEY DO NOT MEASURE THE MAN'S JOB PERFORMANCE, THEY SIMPLY ARE A MEASURE OF EITHER (1) THE MAN'S INTELLIGENCE, (2) MEMORY FROM THE TRAINING SCHOOLS, OR (3) MEMORIZING ABILITY FROM A PERUSUAL OF THE OP'S PRIOR TO THE EXAMINATION. IF A MAN OBTAINS THE NEXT HIGHEST PAY GRADE BY PASSING THE QUALIFYING EXAMINATION IT IN NO WAY MEANS THAT HE WILL HAVE A MORE RESPONSIBLE JOB OR THAT HIS SKILL LEVEL HAS BEEN INCREASED. THEREFORE TO SET UP A TRAINING CURRICULA FOR A PARTICULAR PAY GRADE MAKES NO SENSE AND IS A WASTE OF TIME. IN RELATION TO ACTUAL PRACTICE IN THE FLEET SUCH CURRICULA WOULD BE MEANINGLESS.

(3) THE CLASS A AND CLASS B TICKET PROBLEM. THE BUREAU OF ORDNANCE RESTRICTS THE JOB A MN CAN PERFORM TO A LARGE EXTENT BY REQUIRING

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TABLE II - TRAINING CURRICULA REVIEWED BY PSYCHOLOGICAL RESEARCH ASSOCIATES

COURSE	TIME	FOR	DATE
ADVANCED MINES COURSE	13 WEEKS		
AUTOMATIC DEGAUSSING EQUIPMENT	5 WEEKS		
AVIATION MINES	6 WEEKS	AVIATION ORDNANCEMEN	MAY 1951
AVIATION OFFICER'S FAMILIARIZATION COURSE	3 WEEKS	OFFICERS	
CLARIFICATION OF INSTRUCTIONAL MATERIAL FOR ALL MINES COURSES		O'S IN C AND MINE INSTRUCTORS	AUG. 1952
INDUSTRIAL DEGAUSSING COURSE	8 WEEKS	OFFICERS AND CIVILIANS	JULY 1952
BOATSWAIN'S MATES - MINESWEEPING	7 WEEKS	BM'S	JUNE 1951
SENIOR OFFICER'S INTRODUCTORY MINE WARFARE COURSE - INFORMATION		OFFICERS	OCT. 1952
ELECTRICIAN'S MATES - MINESWEEPING	7 WEEKS	EM'S	JUNE 1951
SENIOR OFFICERS, MINE WARFARE INTRODUCTORY COURSE - TENTATIVE CURRICULUM	2 WEEKS	OFFICERS	
NON-INDUSTRIAL DEGAUSSING COURSE	8 WEEKS	OFFICERS AND CIVILIANS	JULY 1952
TRAINING DEGAUSSING AND DEPERMING ELECTRICIANS (EM-4664)	7 WEEKS	EM	

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A SERIES OF EXAMINATIONS WHICH RESULT IN TWO LEVELS OF QUALIFICATIONS TO TAKE APART AND REPAIR CERTAIN MINE EQUIPMENT. ONCE OBTAINED THE TICKETS HAVE TO BE RENEWED PERIODICALLY. CONSEQUENTLY WITHOUT ANY SKILL BEING LOST A MN MAY NOT BE ALLOWED TO PERFORM THE JOB WHICH HE WAS FORMERLY PERFORMING BECAUSE OF A LAPSE IN HIS QUALIFICATIONS. IF A MAN HAS NOT RECEIVED HIS CLASS A OR CLASS B TICKET, TO PERFORM CERTAIN ACTIVITIES, ALL THE TRAINING IN THE WORLD WOULD NOT LET HIM PERFORM THEM.

WITH RESPECT TO THE TRAINING CARRIED ON AT U. S. NAVAL SCHOOLS, MINE WARFARE, YORKTOWN, VIRGINIA, PSYCHOLOGICAL RESEARCH ASSOCIATES HAS REVIEWED THE CURRICULA LISTED IN TABLE II, COMPARING THEM TO BILLET DESCRIPTIONS IN TECHNICAL REPORT - PART II AND TO FREQUENT OBSERVATIONS AND INTERVIEWS OF MINE WARFARE PERSONNEL THROUGHOUT THE COURSE OF THIS RESEARCH. SEVERAL RECOMMENDATIONS CAN BE MADE, MOST OF WHICH ARE OF A MINOR CHARACTER. PSYCHOLOGICAL RESEARCH ASSOCIATES BELIEVES THAT THE MAJOR PROBLEM LIES IN ON-THE-JOB TRAINING, THAT IS TRAINING IN THE FLEET AFTER THE MAN HAS GRADUATED FROM THE MINE WARFARE SCHOOL.

IN GENERAL, THE TRAINING BEING GIVEN AT U. S. NAVAL SCHOOLS, MINE WARFARE SEEMS TO BE ALMOST AS ADEQUATE AS CAN BE EXPECTED UNDER THE ADVERSE CIRCUMSTANCES WITH WHICH THE SCHOOL IS FACED, AND WITH THE GENERALLY LOW QUALIFICATIONS OF THE MEN WHO ARE SENT TO THE SCHOOL. A GREAT DEAL OF COMMENT HAS BEEN MADE CONCERNING THE SCHOOL'S STRONG EMPHASIS ON THE MORE THEORETICAL ASPECTS OF MINE WARFARE IN THE ENLISTED MEN'S COURSES RATHER THAN ON THE MORE PRACTICAL ASPECTS; HOWEVER IN PSYCHOLOGICAL RESEARCH

ASSOCIATES' OPINION, THIS IS NOT A STRONG CRITICISM. WITH THE MYRIAD OF POSSIBLE ACTIVITIES WITH WHICH THE MEN MAY BE FACED ONCE THEY GRADUATE FROM THE SCHOOL, THE SCHOOL SEEMS TO BE FOLLOWING GOOD LEARNING THEORY. SEVERAL RECOMMENDATIONS CAN BE MADE:

(A) ALTHOUGH SOLDERING IS REQUIRED OF MANY MN IN THEIR JOBS, NOWHERE ARE THEY TAUGHT HOW TO SOLDER. SOLDERING APPEARS TO BE SIMPLE AND SO IT IS EXPECTED THAT THE MN WILL BE ABLE TO LEARN IT EASILY ON THE JOB. MOST SOLDERING THAT THE MN DOES, HOWEVER, IS OF A VERY METICULOUS TYPE. IT IS RECOMMENDED THAT SOLDERING BE INCLUDED IN THE BASIC COURSE FOR MINEMEN.

(B) IN COUNTERMEASURES, THE MAN'S ABILITY TO DETECT AND DESTROY FOREIGN OR EVEN FRIENDLY MINES IS HANDICAPPED BECAUSE THE CHARACTERISTICS OF MINES ARE NOT STRESSED. THIS MAY NOT BE THE FAULT OF THE SCHOOL SINCE THE CHARACTERISTICS OF FOREIGN MINES MAY NOT BE AVAILABLE TO THEM. ANY ANY RATE, SOME MEANS SHOULD BE MADE TO OBTAIN THIS INFORMATION AND TO TEACH IT.

THE MOST FRUITFUL AREA OF TRAINING PERSONNEL FOR MINE WARFARE JOBS IN PSYCHOLOGICAL RESEARCH ASSOCIATES' OPINION IS IN THE TRAINING WHICH SHOULD TAKE PLACE AFTER THE MAN HAS GRADUATED FROM U. S. NAVAL SCHOOLS, MINE WARFARE, AND HAS BEEN ASSIGNED TO A UNIT. IN ORDER FOR EACH MAN TO OBTAIN A HIGH LEVEL OF PROFICIENCY AND FOR HIM TO BE ABLE TO KEEP THAT LEVEL OF PROFICIENCY UP, IT IS NECESSARY TO HAVE A CONTINUING TRAINING PROGRAM AT THE UNIT LEVEL. THIS DOES NOT MEAN THE CONSTRUCTION AND IMPLEMENTATION OF A TRAINING PROGRAM FOR A PARTICULAR RATE, RATING, PAY GRADE OR

BILLET IN ALL CASES, BUT RATHER A TRAINING PROGRAM FOR AN ACTIVITY OR ACTIVITIES THAT A MAN PERFORMS OR WILL PERFORM. THIS APPROACH MAY BE IN CONFLICT WITH NAVY POLICY BUT IT IS NOT IN CONFLICT TO NAVY PRACTICE. IN PRACTICE, NAVY PERSONNEL ARE EXPECTED TO BE PROFICIENT IN THE ACTIVITIES OF THEIR BILLET TO WHICH THEY ARE ASSIGNED. EXCEPT TO PASS THE QUALIFYING EXAMINATIONS TO OBTAIN AN INCREASE IN PAY GRADE, MANY MEN ASSIGNED TO MINE WARFARE ARE NOT EXPECTED OR REQUIRED TO PERFORM PROFICIENTLY ALL OF THE ACTIVITIES OF THEIR BILLET.

CONSTRUCTION OF A TRAINING PROGRAM FOR A PARTICULAR PAY GRADE OF A RATING WOULD BE OF EXTREMELY LITTLE VALUE. THERE IS VERY LITTLE RELATIONSHIP BETWEEN THE PAY GRADE OF A MAN AND THE TYPE OF WORK WHICH HE PERFORMS, OR IS EXPECTED TO PERFORM PROFICIENTLY.

THERE ARE SOME CASES WHERE MEN DO NOT HAVE AN OPPORTUNITY TO BECOME PROFICIENT IN EVEN ALL OF ONE ACTIVITY OF THEIR BILLET. FOR EXAMPLE, IN MANY CASES, MN ASSIGNED TO A MINE MECH SHOP PERFORM ONLY ONE TASK OR SUBTASK OF THEIR ACTIVITY. TO THE NEGLECT OF THE REMAINING OPERATIONS IN THE ACTIVITY, THESE MN BECOME VERY PROFICIENT IN ONE SMALL PART OF THE TOTAL BILLET AND ONLY A PART OF A PARTICULAR ACTIVITY. ALTHOUGH THIS MAY BE THE MOST EXPEDIENT MEANS OF MASS ASSEMBLING AND TESTING OF MINES, IT IS NOT THE MOST EXPEDIENT MEANS OF KEEPING UP A MN'S PROFICIENCY IN A VARIETY OF TASKS. A TRAINING PROGRAM CONSTRUCTED ON AN ACTIVITY BASIS WOULD HELP REMEDY THIS SITUATION.

MINEMEN ASSIGNED TO DM'S HAVE VERY LITTLE OPPORTUNITY, IF ANY, OF EVER BECOMING PROFICIENT IN ANY OF THE ACTIVITIES OF THEIR BILLET. IT

WOULD BE VERY DIFFICULT TO TRAIN THESE MEN ON ANY BASIS, SINCE THERE WOULD BE NO ONE TO CONDUCT THE TRAINING. ON BOARD DM'S MN ARE RARELY ASSIGNED TO MN ACTIVITIES. PSYCHOLOGICAL RESEARCH ASSOCIATES HAS STATED BEFORE, THAT IN ITS OPINION MN SHOULD NOT BE ASSIGNED TO DM'S.

OTHER PERSONNEL ARE EXPECTED TO BE PROFICIENT IN ALL OF THE ACTIVITIES IN THEIR BILLET. ELECTRICIAN'S MATES WOULD FALL IN THIS CATEGORY. MINE-SWEEPING BOATSWAIN'S MATES WOULD BE ANOTHER. THE JOBS FOR THESE MEN ARE ORGANIZED SOMEWHAT DIFFERENTLY. THERE IS ONLY ONE EM ABOARD MOST MINE-SWEEPING BOATS. HE MUST THEREFORE BE PROFICIENT IN ALL ACTIVITIES OF HIS BILLET. CERTAINLY A TRAINING PROGRAM ORGANIZED ON AN ACTIVITY BASIS WOULD BE OF GREAT BENEFIT FOR BM'S AND EM'S AS WELL. THESE MEN WOULD BE TRAINED WHILE ASSIGNED TO THEIR UNIT ON ALL ACTIVITIES OF THEIR BILLET, TAKEN ONE AT A TIME. THE FINAL PRODUCT SHOULD BE A MAN GREATLY IMPROVED IN PROFICIENCY.

TO SUMMARIZE, PSYCHOLOGICAL RESEARCH ASSOCIATES RECOMMENDS THAT THE NEXT PHASE OF PERSONNEL STUDIES IN MINE WARFARE IN THE TRAINING AREA SHOULD BE THE DEVELOPMENT OF A TRAINING PROGRAM TO BE GIVEN TO MEN WHO ARE ALREADY ASSIGNED TO MINE WARFARE BILLETS AND WHO HAVE GRADUATED FROM THE MINE WARFARE SCHOOL. FOR ALL MINE WARFARE BILLETS, IT IS RECOMMENDED THAT THE TRAINING PROGRAMS BE DEVELOPED ON AN ACTIVITY BASIS. THE LIST OF ACTIVITIES FOR EACH OF THESE BILLETS IS PRESENTED IN PERSONNEL STUDIES IN MINE WARFARE, TECHNICAL REPORT - PART II. IN DEVELOPING A TRAINING PROGRAM OF THIS NATURE, IT SHOULD BE RECOGNIZED THAT ALMOST ALL PAY GRADES (AND IN SOME INSTANCES SEVERAL RATES) MAY BE PERFORMING A PARTICULAR ACTIVITY OF A BILLET. THE END PRODUCT WOULD NOT BE MORE PROFICIENT FIRST CLASS PETTY OFFICERS, BUT

WOULD BE AN INCREASED PROFICIENCY IN ALL MINE WARFARE ACTIVITIES.

IN TRAINING IN MINE WARFARE, PSYCHOLOGICAL RESEARCH ASSOCIATES HAS ONLY GIVEN ITS RECOMMENDATIONS BASED UPON ITS TWO YEARS' EXPERIENCE IN THE FIELD, AND UPON THE AMOUNT OF TIME AND MONEY WHICH WAS ALLOTED TO US. A COMPREHENSIVE PROGRAM TO SET UP TRAINING REQUIREMENTS FOR MINE WARFARE ACTIVITIES IS THE NEXT LOGICAL AND NECESSARY STEP IN THESE STUDIES.

WITH RESPECT TO OFFICER TRAINING IN MINE WARFARE, PSYCHOLOGICAL RESEARCH ASSOCIATES RECOMMENDS THAT SEVERAL MEASURES BE TAKEN TO INCREASE THE PROFICIENCY OF OFFICERS ASSIGNED TO MINE WARFARE BILLETS. AGAIN, THE MOST CRUCIAL AREA, IT SEEMS TO US, IS TRAINING IN THE FLEET AND AT THE NAVAL ACADEMY AND IN GENERAL LINE SCHOOL, RATHER THAN ANY MEASUPES THAT COULD BE TAKEN AT U. S. NAVAL SCHOOLS, MINE WARFARE, YORKTOWN, VIRGINIA. BEFORE ANY GREAT INCREASE IN THE PROFICIENCY OF OFFICERS ON MINE WARFARE STAFFS CAN BE OBTAINED, HOWEVER, THERE MUST BE A CHANGE OF ATTITUDE ON THE PART OF HIGHER RANKING OFFICERS CONCERNING THE IMPORTANCE OF MINE WARFARE. JUNIOR OFFICERS CANNOT TAKE SERIOUSLY THEIR RESPONSIBILITIES ASSIGNED TO THEM IN MINE WARFARE IF THE IMPORTANCE OF MINE WARFARE IS NOT UNDERSTOOD OR TAKEN SERIOUSLY BY THEIR SUPERIORS. IT IS DIFFICULT ALSO FOR THESE JUNIOR OFFICERS TO WANT TO BECOME PROFICIENT IF THIS PROFICIENCY IS IN ITSELF A "KISS OF DEATH" TO THEIR CAREERS. IT SEEMS TO PSYCHOLOGICAL RESEARCH ASSOCIATES THAT PROFICIENCY AND EXPERIENCE IN THE FIELD OF MINE WARFARE IS OFTEN MORE A DETRIMENT TO THE CAREER OF A NAVAL OFFICER THAN A HELP. AS LONG AS SENIOR OFFICERS AND PROMOTION BOARDS GIVE LITTLE RECOGNITION TO MINE WARFARE, NO TRAINING PROGRAM CAN BE TRULY EFFECTIVE.

IT SEEMS LITTLE REASON TO BELIEVE THAT AN ORIENTATION TO MINE WARFARE PROCEDURES AND OPERATIONS WOULD NOT BE BENEFICIAL FOR INCLUSION IN THE CURRICULA OF THE NAVAL ACADEMY. RATHER THAN IGNORED, IT SEEMS THAT MINE WARFARE SHOULD BE PLACED IN ITS PROPER PERSPECTIVE IN THESE CURRICULA.

IT IS ALSO SUGGESTED THAT MINE WARFARE PROCEDURES AND OPERATIONS BE INCLUDED IN THE CURRICULA AT GENERAL LINE SCHOOL. IT IS BELIEVED THAT THIS INCLUSION WOULD HELP IN MAKING THE ATTITUDINAL CHANGES THOUGHT NECESSARY AS EXPLAINED IN THE PREVIOUS PARAGRAPHS. THE IMPORTANCE OF MINE WARFARE SHOULD BE STRESSED TO ALL OFFICERS, WHETHER THEY BE OR ARE GOING TO BE ASSIGNED TO MINE WARFARE ITSELF OR TO OTHER UNITS OF THE FLEET. IN A SENSE THIS WOULD BE A GENERAL EDUCATION OF ALL OFFICERS ASSIGNED TO THE FLEET.

CONCENTRATED TRAINING, IT IS BELIEVED, SHOULD BE GIVEN TO OFFICERS WHOSE PRIMARY RESPONSIBILITY IS IN MINE WARFARE. CERTAIN REQUIREMENTS AS TO THEIR FORMAL TRAINING HAVE ALREADY BEEN SET UP (TABLE III PRESENTS THE BILLETS DESIGNATED AS REQUIRING OFFICERS EXPERIENCED IN MINE WARFARE FOR THE ATLANTIC FLEET), HOWEVER, THE OFFICERS IN QUESTION HAVE LITTLE OPPORTUNITY TO MAINTAIN THEIR PROFICIENCY. A TRAINING PROGRAM ON A CONTINUING BASIS SEEMS DESIRABLE. IT IS SUGGESTED THAT THE METHOD OF SETTING UP THIS PROGRAM BE SIMILAR TO THE METHOD SUGGESTED FOR SETTING UP A TRAINING PROGRAM FOR ENLISTED MEN, I. E., BY TAKING THE BILLET ACTIVITIES LISTED IN VOLUMES I AND II OF TECHNICAL REPORT - PART II AND CONSTRUCTING A TRAINING PROGRAM FOR EACH ACTIVITY. UNFORTUNATELY AS MANY OF THESE BILLETS ARE ONE OF A KIND, THE PROBLEM FOR OFFICERS IS MUCH MORE DIFFICULT THAN IT IS FOR ENLISTED. WE ASSUME, HOWEVER, THAT MORE OFFICERS IN THE FUTURE WILL BE

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TABLE III - BILLETS DESIGNATED AS REQUIRING OFFICERS EXPERIENCED IN MINE WARFARE

NUMBER OF EXISTING BILLETS ON STAFFS OF FLEET, TYPE FRONTIER AREA, AND OPR. COMMANDERS FILLED BY OFFICERS TRAINED IN MINE WARFARE.

COMMAND	BILLET DESCRIPTION	NO. OF BILLETS	TYPE	COURSE
CONCLANT FLT	ASST. ASW (MINE WARFARE AND HARBOR DEFENSE)	1	1100/2	C
	ASST. FOR OPERATIONAL REP.	1	1100/2	A*
	SPECIAL PLANS	1	1100/2	C
COMSECOND FLT	MINE WARFARE OFF.	1	1100/3	C
COMPHIBLANT	NONE			
COMSERVANT	MWO	1	1100/3	C
COMDESFLAT-6	OPRS. O	1	1100/2	B#
COMSUBLANT	MWO	1	1120/3	B
SUBRON COMDRS.	OPRS. O	6	1120/3	C
COMBATOMLANT	ASST. OPRS. O	1	1100/3	C
COMOPDENFOR	EXO	1	1100/2	C
(MW EVAL SET)	MWO	1	1100/3	A
	PROJECTS O	1	1100/4	B
	PROJECTS O	1	1120/4	B
COMINLANT	C/S	1	1100/1	C
	OPRS. O	1	1100/1	C
	OPER. READINESS O	1	1100/2	C
	ASST. FOR TNG.	1	1100/3	C
	PLANS O	1	1100/2	C
	INTELL. O	1	1630/3	C

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COMMAND	BILLET DESCRIPTION	NO. OF BILLETS	YPE	COURSE
	MWO	1	1100/2	A
	MINE CTRMS	1	1100/3	B
	MINING O	1	1100/3	B
	AERIAL MIN. O	1	1300/3	C
	LOGISTIC O	1	1400/2	C
	ASST. MAINT. O (ORD, DEGAUSSING M/S MATERIAL)	1	1100/4	C
MINRON-4	C.O.	1	1100/1	C
	OPRS. O	1	1100/3	A
MINRON-8	C.O.	1	1100/1	C
	OPRS. O	1	1100/3	C
	MW O	1	1100/4	A
MINRON-6	CO	1	1100/1	C
	OPRS. O	1	1100/3	C
MSBRON-10	CO	1	1100/3	B
MIN DIV-2	CO	1	1100/1	C
	OPRS. O	1	1100/4	C
MIN DIV 41, 42, 43, 44	CO	4	1100/3	C
MIN DIV 62	CO	1	1100/1	C
MIN DIV 61, 62	OPRS. O	2	1100/4	C
MIN DIV 81 82, 83 84, 85	CO	5	1100/3	C
	OPRS. O	5	1100/5	C
MSB DIV 101	ASST. DIV. CO.	1	1100/5	C

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COMMAND	BILLET DESCRIPTION	NO. OF BILLETS	TYPE	COURSE
MSB DIV 102	CO	1	1100/4	C
COMEASTSEAFRON	MWO	1	1100/1	B%
	ASST. HDO	1	1100/3	C
HD6 PORTSMOUTH	M CTR O	1	1100/4	B
HD6 BOSTON	M CTR. O	1	1100/4	B
HD6 NEWPORT, RI	M CTR. O	1	1100/4	B
HD6 BROOKLYN	M CTR. O	1	1100/4	B
HD6 NORFOLK	M CTR. O	1	1100/4	B
HD6 FORT MILES	M CTR. O	1	1100/2	B
HD6 NAV BASE, CHARLESTON	M CTR. O	1	1100/4	B
HD6 NAV KEY WEST	M CTR. O	1	1100/5	B%
COMCARIBSEAFRON	GRAD. COURSE IN MW, NO BILLET	1	1100/5	B%

TOTAL A - 5
B - 16
C - 48

KEY - A - GRAD. OF PG COURSE
B - GRAD. OF A MW COURSE
C - GRAD. OF STAFF OFF. COURSE
* - ULTIMATELY FILLED BY A: C OK FOR INTERIM
# - DESIGNATED TO REPRESENT CONDESLANT IN MW MATTERS
% - FILLED ONLY UPON MOBILIZATION

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REGULAR OFFICERS, AND THAT AS CAREER MEN THEY WILL BE BETTER MOTIVATED TO OBTAIN A HIGH PROFICIENCY LEVEL. CONSEQUENTLY IF THE CLIMATE IN WHICH THEY WORK RECOGNIZES THE IMPORTANCE OF MINE WARFARE AND GIVES CREDIT FOR PROFICIENCY IN MINE WARFARE BILLETS, THEN THE JOB OF TRAINING WILL BECOME IMMEASURABLY EASIER. FOR OFFICERS, PSYCHOLOGICAL RESEARCH ASSOCIATES CANNOT OVERSTRESS THE IMPORTANCE OF A CHANGE OF CLIMATE WITH RESPECT TO THE IMPORTANCE AND SIGNIFICANCE OF MINE WARFARE AS A FACTOR OF EFFECTING AN INCREASE IN PROFICIENCY.

CHAPTER III

RECOMMENDATIONS REGARDING SELECTION STANDARDS

During the course of Psychological Research Associates' two years study in PERSONNEL STUDIES IN MINE WARFARE, a great deal of information has been obtained from the interviews of mine warfare personnel as well as from observations concerning the selection standards of personnel assigned to mine warfare. In contrast to the criterion development problem to be presented in Technical Report - Part V, no detailed research study has been done which would allow a detailed set of selection standards for personnel to be assigned to U. S. Naval Schools, Mine Warfare and to mine warfare billets in the Fleet. The Billet Specifications following the Billet Descriptions, presented in Technical Report - Part II, may be used as a first step in setting up selection standards. The following information is presented under the Specifications for each activity of each billet interviewed:

I. RATE AND PAY GRADE:

Current
Recommended
Possible

II. EDUCATION:

Civilian
Navy

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level
Manuals
Check-off lists
Tools

IV. PHYSICAL REQUIREMENTS:

TALKING
SEEING
HEARING
EFFORT

V. SUPERVISION

TYPE
BY

VI. DANGERS - EFFECT OF ERRORS:

MATERIAL LOSS
PERSONAL INJURY
SAFETY PRECAUTIONS

IN ADDITION TO THE SPECIFICATION INFORMATION OTHER RECOMMENDATIONS CAN BE MADE WHICH MAY HELP IN SETTING UP SELECTION STANDARDS.

(1) COLOR BLINDNESS - AT THE PRESENT TIME THERE IS NO REQUIREMENT THAT ENLISTED MEN WHO ARE TO BE ASSIGNED TO THE MINE WARFARE SCHOOL OR TO MINE WARFARE BILLETS BE ABLE TO DISTINGUISH COLORS. COLOR BLIND MEN ARE AT THE MINE WARFARE SCHOOL AT THE PRESENT TIME AS WELL AS IN THE FLEET. FOR ALL ENLISTED MINE WARFARE BILLETS THIS IS A PARTICULAR HANDICAP TO THEM. IT IS ALMOST AN IMPOSSIBLE HANDICAP FOR MN AND A GREAT HANDICAP FOR EM'S AND TO A CERTAIN EXTENT FOR BM'S. IN EITHER MINING OR MINE COUNTERMEASURES, A GREAT MANY ACTIVITIES REQUIRE A MAN TO DISCRIMINATE COLOR CODES. IT IS BELIEVED THAT IN TIME BM'S COULD LEARN TO DISTINGUISH COLORED FLAGS AND ROPES SINCE MOST OF THESE COLORS ARE OF A DIFFERENT SATURATION. IN THE CASE OF MN, HOWEVER, THE COLOR CODED SMALL

TERMINAL WIRES ARE DIFFICULT TO DISTINGUISH EVEN TO THE PERSON WITH NORMAL COLOR VISION; TO THE COLOR BLIND PERSON THE SATURATIONS OF THE COLOR CODES ARE SO CLOSE THAT IT SEEMS IMPOSSIBLE FOR HIM TO DO AN ADEQUATE JOB. IT IS THEREFORE RECOMMENDED THAT ALL PERSONNEL BE TESTED FOR COLOR VISION BEFORE BEING SELECTED FOR THE MINE WARFARE SCHOOL, AND THAT COLOR VISION BE A REQUIREMENT FOR ENTRANCE TO THE SCHOOL.

(2) PROFICIENCY IN ELEMENTARY MATHEMATICS AND PHYSICS. IT HAS BEEN OBSERVED THAT A GREAT DEAL OF TIME IS USED IN THE MINE WARFARE SCHOOL IN TEACHING MN BASIC KNOWLEDGE OF MATHEMATICS, ELECTRICITY, AND PHYSICS. IN ORDER TO TRAIN MN IN THE ASSEMBLING, COMPONENT TESTING, AND OPERATIONAL TESTING OF MAGNETIC, PRESSURE, ACOUSTIC AND COMBINATION TYPE MINES, IT IS NECESSARY TO PRESEN THE THEORY OF THE FUNCTIONING OF THE MINE AND SOMEWHAT ADVANCED ASPECTS OF ELECTRICITY. THE COURSES ARE SET UP AT THE MINE WARFARE SCHOOL ON THE ASSUMPTION THAT A MAN ALREADY KNOWS SOME BASIC MATHEMATICS AND PHYSICS (OHM'S LAW). IT ASSUMES THAT THESE MEN HAVE THE EQUIVALENT OF A HIGH SCHOOL EDUCATION. SUCH IS NOT THE CASE AND THE SCHOOL MUST SPEND A CONSIDERABLE AMOUNT OF TIME ON BASIC KNOWLEDGE PREPARATORY TO BEGINNING THE COURSE. THE SCHOOL HAS DEVISED A BASIC PROFICIENCY EXAMINATION WHICH IS GIVEN TO ALL PROSPECTIVE MN UPON ENTERING THE SCHOOL. VERY FEW MEN ARE REJECTED FOR THE COURSE, (ALTHOUGH SOME PROBABLY SHOULD BE) BECAUSE OF THIS EXAMINATION, BUT RATHER IT SERVES TO GIVE THE INSTRUCTOR AN INDICATION

AS TO HOW BASIC HE MUST BEGIN HIS COURSE. IT SEEMS MUCH MORE PROFITABLE THAT THESE EXAMINATIONS SHOULD BE GIVEN TO THE MEN BEFORE THEY ARE SELECTED FOR THE SCHOOL AND THAT THESE SCORES BE USED AS A SELECTION STANDARD.

(3) THE MN MUST BE MODERATELY SKILLED IN A VARIETY OF FIELDS: ELECTRICITY, SOLDERING, CARPENTRY, WELDING, BASIC ELECTRONICS, MECHANICS, AND MATHEMATICS. IT IS RECOMMENDED THAT AN ATTEMPT BE MADE TO EXAMINE CAREFULLY THE CIVILIAN BACKGROUND OF ALL PERSONNEL IN AN ATTEMPT TO ASSIGN PERSONNEL TO BE SCHOOLED FOR MN WHO ALREADY HAVE SOME SKILLS OR AT LEAST HAVE INTEREST IN THESE FIELDS.

(4) GCT. PSYCHOLOGICAL RESEARCH ASSOCIATES IS NOT PREPARED TO RECOMMEND MINIMUM GCT STANDARDS FOR EACH BILLET OR ACTIVITY IN MINE WARFARE. IT IS PREPARED, HOWEVER, TO RECOMMEND THAT A STUDY OF SUCH BE MADE. FROM OUR EXPERIENCE, IT DOES NOT APPEAR THAT A HIGH GCT WILL NECESSARILY GUARANTEE A PROFICIENT MN. INTEREST AND PAST SKILLS MAINTAINED ABOVE SEEM TO HAVE MUCH MORE OF A BEARING ON HIS PROFICIENCY. IT WILL BE SHOWN IN THE CRITERION STUDY OF MN PRESENTED IN TECHNICAL REPORT - PART V, THAT THE CORRELATION BETWEEN GCT AND A CRITERION SCORE IS QUITE LOW (R EQUALS .20). THERE DOES SEEM TO BE SOME MINIMUM STANDARD OF GCT FOR MN, HOWEVER, BELOW WHICH SUCCESS COULD NOT BE ASSURED. THE SAMPLE INCLUDED IN THE CRITERION STUDY DID NOT INCLUDE THOSE MEN WHO HAD BEEN SELECTED FOR THE SCHOOL BUT WHO DID NOT GRADUATE.

THIS PROBLEM IS ALSO IMPORTANT IN SETTING SELECTION STANDARDS FOR ELECTRICIAN'S MATES AND TO A LESSER EXTENT FOR BOATSWAIN'S MATES.

(5) OFFICERS ASSIGNED TO MINE WARFARE BILLETS WOULD FOR THE MOST PART HAVE A DECIDED ADVANTAGE IF THEY HAD AN ENGINEERING BACKGROUND. IT IS SUGGESTED THAT ONLY OFFICERS HAVING THIS TYPE OF BACKGROUND BE SENT TO THE MINE WARFARE SCHOOL FOR TRAINING LEADING TO THE MORE TECHNICAL BILLETS IN MINE WARFARE.