PERSONNEL STUDIES IN MINE WARFARE

TECHNICAL REPORT—PART I

PROCEDURES, MANUALS AND FORMS FOR INTERVIEWING, TABULATING AND COMPILING BILLET ANALYSIS INFORMATION

By:
MILTON H. IREDELL
HARRY J. OLDER
JOHN A. SCOPINO
ANDREW C. HILTON

A RESEARCH PROJECT CONDUCTED FOR THE DEPARTMENT OF THE NAVY UNDER CONTRACT Nonr 902 (00).
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PSYCHOLOGICAL RESEARCH ASSOCIATES
1025 CONNECTICUT AVENUE, NORTHWEST WASHINGTON 6, D. C.

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The opinions or assertions contained herein are the private ones of the writers and are not to be construed as official or reflecting the views of the Department of the Navy or the Naval Service at large.

PSYCHOLOGICAL RESEARCH ASSOCIATES
1025 Connecticut Avenue, N. W.
Washington 6. D. C.

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CDR. J. T. Reid, Logistics Officer

LCDR. K. B. Brown, Operational Readiness Officer

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CHAPTER I

INTRODUCTION

Objectives

Under contract Nonr 902 (00), Psychological Research Associates is conducting a series of personnel studies in the field of mine warfare both in mining and mine countermeasures. When the project was begun, four primary objectives were listed.

1. Billet analysis, including billet descriptions and billet specifications, for officer and enlisted billets in mine warfare.

This objective, though very important in itself, would serve as a base from which to build procedures to obtain all the objectives of this research. It was proposed to study all officer and enlisted billets important to mine warfare operations with the goal of describing these billets in terms which would make it possible to identify readily the persons suitable for filling these billets with respect to training, experience, physical qualifications and other pertinent factors. The procedure would involve obtaining a detailed and specific description of the activities and tasks of these billets and then

determining the specifications of the personnel to fill the billets. In addition, other information would be obtained in the interviews for use by the Bureau of Naval Personnel. In order to accomplish this step it was planned to use either the traditional job analysis techniques or new techniques which would be devised to meet the special situations involved. In connection with this objective, the goal was set to develop techniques for billet analysis in this study which would be appropriate for use with other Navy billets. In addition it was believed that any continuing program of billet analysis of the type referred to here would require highly efficient methods of collecting, analyzing, summarizing, presenting, and coding the billet information. Consequently, procedures would have to be developed to handle these data.

2. Well defined measures of performance on certain key mine warfare jobs.

It was planned to study the present methods for assessing proficiency in the more critical mine warfare billets. Tests would be made to evaluate the reliability and the validity of these measures. For those billets judged to be of critical importance for which adequate performance standards were not available efforts would be made to construct such measures and subject them to evaluation. Throughout this phase emphasis would be on on-the-job

performance wherever possible rather than on paper and pencil tests of theoretical knowledge; it was felt that only through billet behavior measures could operational proficiency be adequately predicted.

3. Recommendations for selection standards for various mine warfare billets.

Consideration would be given to selection standards as they relate not only to billets but to the activities comprising the various mine warfare billets. It was felt that with highly technical jobs such as some of those essential to mine warfare, highly specialized selection and classification procedures might result in a considerable increase in performance.

4. Recommendations concerning training.

It was believed that compilations of information concerning each objective outlined above would lead directly to recommendations for training in each of the areas studied. An attempt would be made to make these training recommendations as specific as possible so that they could be translated directly into syllabus content for inclusion in both schools and on-the-job training programs.

Scope of the Report

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).

Technical Report - Part II - Mine Warfare Billet Descriptions and Specifications (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 Certain Key Mine Warfare Billets. (Classification undetermined).

The present report, Technical Report - Part I - Procedures, Manuals, and Forms for Interviewing, Tabulating, and Compiling Billet Analysis Information, will include a discussion of the initial phase of the research designed to attain several of the above objectives and to be used as a base for the other objectives and by-products of the research. The latter are presented in the appendices of this report.

During the course of this project the Bureau of Naval Personnel requested that Psychological Research Associates study and make recommendations concerning requirements that personnel should meet in order to be designated "qualified in mine warfare". Through the interview procedure Psychological Research Associates had already obtained data related to this project; this problem was further

investigated and the resulting recommendations are presented in Appendix C of this report.

The interview procedure also produced considerable data which while not directly related to the primary objectives of this project were related to several areas of administrative concern within the mine forces. This information, compiled and subjected to preliminary analysis, is presented in Appendix D of this report.

Appendix E contains the revisions and modifications based upon our experiences, which were made to the operational Manual and Form.

The structure of the present report will follow in general the sequence in which activities of the project were undertaken by Psychological Research Associates. Background considerations will be discussed, followed by the development of interview techniques and the operational forms and procedures. Next, the methods of tabulation and analysis of the data will be presented followed by a description of the sample and the billet descriptions and specifications. A summary and conclusions will be presented in the final chapter.

CHAPTER II

BACKGROUND CONSIDERATIONS

The initial phases of the project centered around the development of background information which would permit the research to be directed in the most productive way. Such considerations were the determination of the requirements of the people who would use the information produced by the study, a search of the literature to determine the applicability of available job analysis techniques to the specific aims of this study, and the orientation and familiarization of the investigators with respect to the general area and functions of mine warfare.

Determining Needs

A fundamental premise of this study was that the end-product would be useful to the degree with which it met the needs of the naval agencies engaged in personnel activities. Therefore, considerable effort was made to determine the exact information that would have maximum usefulness to the Navy. To determine the needs of the naval personnel agencies, conferences were held with the following sections and branches in the Bureau of Naval Personnel:

Personnel Analysis Division

Training Research Branch
Classification and Survey Research
Billet and Qualification Research Branch

Qualifications Analysis Section
Manpower Analysis Section
Navy Job Classification Section
Organizational Analysis Section

These conferences resulted in the joint development of several questions which were used in the operational interview. Before the operational interview was administered, personnel from these agencies reviewed the manual and forms to be used, so that Psychological Research Associates would be certain that all areas of concern would be considered.

Search of Literature

A search of the literature of conventional job analysis methods was conducted to determine the usefulness of these methods to the billet analysis involved in this study. Also, naval and other government procedures were surveyed for the possibility of adapting them to the particular requirements of this study. This background search was necessary to determine whether or not new methods of data collection and analysis were needed to accomplish the goals of this project.

Familiarization

One important step was the familiarization of the investigators with mine warfare organizations and operations.

This was accomplished by several means including study of pertinent mine warfare and naval publications and conferences with the project liaison officer and other naval personnel. Personnel in the Bureau of Ordnance; Bureau of Ships; in the offices of the Chief of Naval Operations; Headquarters, Mine Forces, U.S. Atlantic Fleet; and U.S. Naval Schools, Mine Warfare, Yorktown, Virginia were interviewed concerning functions and problems regarding mine warfare activities.

In order to obtain as much pertinent orientation information as possible from the sources listed above, four interview forms, which are presented on pages 10, 11, 12, and 13, were developed and used. These four information forms were developed in order to obtain specific information about (a) countermeasures ships, (b) countermeasures gear, (c) what lays mines, and (d) types of mines.

The "Countermeasures Ships" Form was designed to obtain specific information as to the type, size, capabilities, total complement, and mine personnel complement of each of the ships used for mine countermeasures. In addition, general information was obtained concerning the type of mine countermeasures gear used on each of the ships.

Specific information concerning the mine countermeasures gear was obtained by using the "Countermeasures Gear" Form. This form covered the function, maintenance,

amount of spares carried, and personnel involved with each type of gear.

The "What Lays Mines" Form was devised in an attempt to obtain information concerning mine laying agencies. Specific information concerning capabilities of various types of layers, ranges, total personnel, and mine personnel involved were obtained.

Characteristics of mines, such as actuation, laying agency, classification, and tactical use, were obtained in the "Types of Mine" Form.

By these methods Psychological Research Associates personnel learned the objectives, methods, and technical operations of mine warfare. This information gave proper perspective to the major research yet to come.

PSYCHOLOGICAL RESEARCH ASSOCIATES

PROJECT: CLAM

CONFIDENTIAL
SECURITY INFORMATION
(WHEN FILLED IN)

COUNTERMEASURES SHIPS

TYPE: _____

DISPLACEMENT: _____ DRAFT _____

GEAR CARRIED:

1. "O" TYPE _____ SIZE _____
2. MAGNETIC _____ MK/MOD _____ CONTROLLER _____
3. ACOUSTIC _____ MK/MOD _____ CONTROLLER _____
4. UOL GEAR _____ MK/MOD _____

CAPABILITIES: _____

_____

_____

PERSONNEL ABOARD: _____

MINE PERSONNEL INVOLVED: _____

CAPABLE OF INDEPENDENT MISSION: _____

COMMENTS:

CONFIDENTIAL - SECURITY INFORMATION
(WHEN FILLED IN)

ITEM NO.____

PSYCHOLOGICAL RESEARCH ASSOCIATES

PROJECT: CLAM

CONFIDENTIAL
SECURITY INFORMATION
(WHEN FILLED IN)

COUNTERMEASURES GEAR

NAME: _____

TYPE SHIP CARRIED
ABOARD: _____

USED AGAINST: _____

_____

_____

WHO MAINTAINS: _____

SPARES CARRIED: _____

BUREAU COGNIZANCE: _____

WHO STREAMS: _____

_____

_____

COMMENTS:

CONFIDENTIAL - SECURITY INFORMATION
(WHEN FILLED IN)

ITEM NO.____

PSYCHOLOGICAL RESEARCH ASSOCIATES

PROJECT: CLAM

CONFIDENTIAL
SECURITY INFORMATION
(WHEN FILLED IN)

WHAT LAYS MINES

TYPE LAYER: _____

TYPES CAPABLE OF PLANTING: _____

_____

_____

_____

CAPACITY (EACH TYPE): _____

_____

_____

_____

_____

RANGE WITH LOAD: _____

PERSONNEL ABOARD: _____

MINE PERSONNEL INVOLVED: _____

_____

COMMENTS:

CONFIDENTIAL - SECURITY INFORMATION
(WHEN FILLED IN)

ITEM NO._____

PSYCHOLOGICAL RESEARCH ASSOCIATES

PROJECT: CLAM

CONFIDENTIAL
SECURITY INFORMATION
(WHEN FILLED IN)

TYPES OF MINES

MODEL NUMBER: _____

CLASSIFICATION: _____

HOW ACTUATED: _____

LAID BY: _____

_____

_____

_____

SPECIAL CHARACTERISTICS: _____

_____

_____

_____

TACTICAL USE: _____

_____

COMMENTS:

CONFIDENTIAL - SECURITY INFORMATION
(WHEN FILLED IN)

ITEM NO.____

CHAPTER III

PROCEDURES DEVELOPMENT

The search of the literature, consideration of the needs of the personnel agencies of the Navy, and an understanding of the nature of the problems involved in such a research study resulted in a scrappingof the traditional billet analysis procedures in favor of a new approach. The traditional job analysis procedures seemed not to fulfill the necessary prerequisites of this project because:

(a) The number and diversity of the billets and the activities and tasks within these billets demanded that there must be full coverage of the billets involved in mine warfare operations. With the number of teams made available by the Department of the Navy for a three month period of data collecting, it did not seem possible to obtain adequate coverage using traditional time and personnel consuming methods.

(b) The important information to be derived from such an analysis necessarily had to be unique to mine warfare. Usual billet analysis methods obtain

information about all aspects of jobs, important or unimportant, and do not focus on one function. Psychological Research Associates' responsibility was to determine the specifications, qualifications, training requirements, selection standards, etc. for personnel performing mine warfare duties, i.e., duties unique to mine warfare, and not to determine such factors for their entire billet, e.g., BM's may be assigned to scrape and paint the deck of their ship, but this duty is irrevelant or not unique to mine warfare. An approach was needed, it was believed, which would obtain detailed and specific information covering one major function, rather than global descriptions of all functions.

(c) Information had to be accurate as given in an interview. In the orthodox billet analysis procedure, accuracy of the interviewees' statements are checked with his immediate supervisor. Due to the staggering size of the problem already existing for interviewers with respect to number and types of billets, it did not seem possible to interview immediate supervisors concerning these billets. Another method of obtaining accuracy had to be found.

(d) Immediate supervisors were not always cognizant of the details of the tasks performed. Immediate supervisors many times were officers who were not familiar with the duties of their subordinates, e.g., an EM aboard an AMS. This is due partly to the limited training and qualifications of these officers resulting from the Navy policy of preventing specialization of officers, and partly because EM's aboard such a vessel are expected to proceed in their jobs without immediate supervision. This was, therefore, an additional reason why the traditional job analysis procedure of checking descriptions and specifications with immediate supervisors seemed inappropriate for our purposes.

(e) Specifications and other user information were needed at a task level rather than at a billet level. Orthodox procedure calls for a complete description from the interviewee of his job. The what, how, and why of the job are described, then specification questions are asked concerning the job as a whole. The requirements for this study were for the specifications to be obtained at a task and activity level, i.e., concerning the specifics of the job and not of the job as a whole.

This approach required that (a) more information than usual be obtained, and (b) new techniques be devised so that the specifications could be obtained at the task level in a reasonable time period.

(f) Tasks were often performed on a team basis rather than an individual basis. Most industrial jobs are arranged so that the people work alone. The orthodox job analysis method was set up to handle such jobs, and not jobs which are performed by teams where the same duties are performed by the team but where any one person may perform different parts of the job from day to day. A new approach was needed for the organization of jobs such as we found which calls for looking at jobs in terms of "What is done" as well as "Who does what".

(g) Relatively unskilled personnel must interview and record the billet analysis information. The traditional system of job analysis demands highly skilled job analysts to administer and record the interviews. In many industrial corporations the job analyst is a job title - a full time job. Since Navy personnel were to be used to collect the desired information, we had to assume that

they would be untrained and unskilled not only in job analysis procedures but also in interview and scientific control techniques as well. It seemed appropriate therefore to design a method that could be used by the Navy after a short but highly concentrated training period.

(h) The duties involved were of a highly technical nature. Many of the jobs which were to be analyzed in this study are typical in that a great deal of highly specialized knowledge is necessary in order to perform them. Since the activities and tasks were not readily comprehensible by either the interviewers or the research personnel, it was necessary to obtain the information on a more detailed and basic plane.

(i) The procedure must be capable of being applied to all jobs in the Navy. One of the basic tenets of this research, was that the techniques developed must be applicable to the entire Navy, i.e., the methods designed must be general enough to be used in collecting similar information concerning every billet in the Navy. Traditional job analysis methods are not so designed; there is one set of questions to be asked for clerical, supervisory,

and administrative positions and another set to be asked of factory positions.

Experimental Form A (MAAXFA)

The first form which was developed was designed for use in an individual (rather than group) interview. It was expected that one interviewer would record the obtained responses directly on the form. The entire form is presented on pages 20 through 28 in this chapter. Following is a brief description of each part of Experimental Form A.

Identifying Information. The grey sheet of the form was used to identify the interviewee, to obtain data concerning interviewees' qualifications and experiences, and to secure a list of his supervisors.

Activity Analysis - Description of Duties. Several of the sheets labeled "Activity Analysis - Description of Duties" were used to obtain information concerning the man's activities in his day-to-day work. Since all personnel on the ship were to be interviewed, this analysis was designed to yield information concerning all activities, rather than just those specific to mine warfare.

In a series of conferences with ships' officers and liaison officers determination was made as to which tasks were unique, relevant, or not relevant to mine warfare, and this information was entered in the columns on the right of the page.

CLAM - MAAXFA

EXPERIMENTAL FORM A

PSYCHOLOGICAL RESEARCH ASSOCIATES

PSYCHOLOGICAL RESEARCH ASSOCIATES

CLAM - MAAXFA

Date		
Place	Interview Number	Page Number
Inter-viewer		

Name _____

Service No. _____ Rank/Rate _____ Billet Title _____

Ship Name _____ Ship No. _____ Type _____ Division ___

Age _____ Time in Navy _____ Time in Mine Forces _____

Time in Ship _____ Home Town & State _____

Navy Schools Attended:

School	Course	Dates

Immediate Supervisor's Name _____

Rank/Rate and Billet Title _____

SUPERVISORS - INTERVIEWED

Name _____ Rank/Rate _____ CODE S-1

Billet Title _____

Name _____ Rank/Rate _____ CODE S-2

Billet Title _____

Name _____ Rank/Rate _____ CODE S-3

Billet Title _____

PSYCHOLOGICAL RESEARCH ASSOCIATES

CLAM - MAAXFA

DATE		
PLACE	INTERVIEW NUMBER	PAGE NUMBER
INTER-VIEWER		

ACTIVITY ANALYSIS - DESCRIPTION OF DUTIES

ITEM NO.	UNIQUE	RELEVANT BUT NOT UNIQUE	NOT RELEVANT
	TO MINE WARFARE		

PSYCHOLOGICAL RESEARCH ASSOCIATES

CLAM - MAAXPA

TASK IDENTIFICATION SHEET

DATE		
PLACE	INTERVIEW NUMBER	PAGE NUMBER
INTER-VIEWER		

ACTIVITY	UNIQUE OR RELEVANT	TASKS

PSYCHOLOGICAL RESEARCH ASSOCIATES

CLAM - MAAXFA

DATE		
PLACE	INTERVIEW NUMBER	PAGE NUMBER
INTER-VIEWER		

TASK _____

BRIEF TASK DESCRIPTION _____

PSYCHOLOGICAL RESEARCH ASSOCIATES

CLAM - MAAXFA

SAMPLE INFORMATION FOR TRAINING RESEARCH BRANCH

TASK _____

DATE		
PLACE	INTERVIEW NUMBER	PAGE NUMBER
INTER-VIEWER		

Where did you learn to perform this task?	Was the training you got relevant to the task as it is done in the fleet? If not, how different?	How long did it take you to learn this task?	How and where do you think this task should be taught?

PSYCHOLOGICAL RESEARCH ASSOCIATES

CLAM - MAAXFA

TASK _____

SAMPLE INFORMATION FOR CLASSIFICATION AND SURVEY RESEARCH BRANCH

DATE		
PLACE	INTERVIEW NUMBER	PAGE NUMBER
INTERVIEWER		

Physical Requirements Vision) Speed)	Intellectual Requirements	Literary Requirements	Special Aptitude Requirements

PSYCHOLOGICAL RESEARCH ASSOCIATES

CIAM - MAAXFA

TASK _____

SAMPLE INFORMATION FOR QUALIFICATIONS ANALYSIS SECTION

DATE		
PLACE	INTERVIEW NUMBER	PAGE NUMBER
INTERVIEWER		

What rating most appropriately does this task?	What pay grade?	For promotion to what pay grade should this be required?	Should a 1st, 2nd, 3rd, etc. - be able to do this when he first comes aboard?

PSYCHOLOGICAL RESEARCH ASSOCIATES

CLAM - MAAXFA

TASK

SAMPLE INFORMATION FOR NAVY
JOB CLASSIFICATIONS SECTION

DATE		
PLACE	INTERVIEW NUMBER	PAGE NUMBER
INTER-VIEWER		

What do you do?	What gear do you work on?	What tools and equipment do you use?	What level job is this- apprentice, journeyman, supervisor?

Tasks Identification Sheet. On the pink sheets labeled "Task Identification Sheet", activities which were found to be unique or relevant to mine warfare were broken down into component tasks to obtain the what, how, and why of the activities.

Brief Task Description. Each man was further interviewed in regard to three selected tasks identified on the previous page. Each of these three tasks was described briefly on the blue sheets. This description was detailed enough to produce information concerning tools, procedures, manuals, and other usual job analysis data.

User Information. The last four pages (pink, yellow, green, and goldenrod) were developed to obtain data required by each of four users in the Bureau of Naval Personnel. The pink page obtained information for the Training Research Branch, the yellow page obtained information for the Classification and Survey Research Branch, the green page was used to obtain information for the Qualifications Analysis Section, and the information for the Navy Job Classifications Section was obtained on the goldenrod page. Since the emphasis in this first pre-test was on evaluating the efficiency and feasibility of the procedures, it was not expected that the actual questions asked would be those that the users would require in the final form.

Pre-test of Experimental Form A (MAAXFA)

The pre-test of Experimental Form A was conducted at the U. S. Naval Schools, Mine Warfare, Yorktown, Virginia. The officers and men of AMS 17 (HAWK) were made available for this pre-test. All personnel aboard were interviewed but no attempt was made to get complete information on any one man, since the major purpose here was to test the procedures rather than to obtain usable information.

Critique of Experimental Form A

Experimental Form A did not fulfill all of the objectives of this project. It seemed a rather unwieldy procedure to administer and record since it was to be given individually, and also it was time consuming in obtaining data on non-unique activities and tasks. Furthermore, since there would be a limited number of tasks covered in each interview, there appeared to be an inordinate number of interviews that would be required to obtain complete coverage. In addition, it was determined in this pre-test that interviewing of supervisors was not feasible. Finally, it became apparent that all of the activities of one billet, even though they were concerned with mine warfare only, could not be covered adequately in one interview. The activities and tasks are too technical and varied to get detailed data in one interview in a reasonable time period. With these considerations, Experimental Form B was developed.

Experimental Form B (MAAXFA)

Following the first pre-test, it was decided that a group interview should be developed and tested which would eliminate the difficulties encountered in the first pre-test.

Two alternative means of recording the responses were considered. One was use of a recording machine and small conference microphones to record verbatim the entire interview. The second proposed method was recording by one of the interviewers on a separate form.

This group interview form (CLAM-MAAXFA-1) will be described here; the complete form will be presented on pages 32 through 39.

Identifying Information. Part A of the billet analysis form provided for the collection of identifying information.

Billet Analysis. Part B is the billet analysis. The list of activities on this sample form apply to the rating BM which was interviewed in the pre-test. The interviewer was to select one of the activities listed and obtain a detailed task analysis from the five interviewees, identifying as well as possible the task accomplished by each interviewee.

User Information. Part C was designed to provide the specifications and additional information needed to meet the requests of various naval administrators.

In each interview concerning a particular billet several different pay grades were represented, and it was

CLAM - MAAXFA -I

EXPERIMENTAL FORM B

PSYCHOLOGICAL RESEARCH ASSOCIATES

PSYCHOLOGICAL RESEARCH ASSOCIATES

CLAM - MAAXFA - 1

BILLET ANALYSIS

A. IDENTIFYING INFORMATION

1. Date _____ 2. Place of Interview _____

3. Interview No. _____ 4. Interviewer _____

5. Ship's Name _____ 6. Ship No. _____

7. Type _____

8. Interviewees and Superiors _____

Interviewees' Rank/Rate	Interviewees' Name	Superiors' Rank/Rate	Superiors' Name
a.			
b.			
c.			
d.			
e.			
f.			
g.			
h.			

B. BILLET ANALYSIS

(The interviewer team should select one of the following activities which the interviewees perform:

1. Streaming the O type gear
2. Streaming the magnetic gear
3. Streaming the acoustic gear
4. Maintaining the O type gear
5. Maintaining the magnetic gear
6. Maintaining the acoustic gear

B. BILLET ANALYSIS (Cont)

7. Reclaiming the O type gear
8. Reclaiming the magnetic gear
9. Reclaiming the acoustic gear.

The interviewer should then obtain specific and detailed information (tasks) from the group as to the what, how, and why of the selected activity. Specific information should be obtained as to exactly what each interviewee does (task) in the execution of the selected activity. In as far as possible, the information should be obtained in sequential form, so that a table may be filled in such as the following:

SELECTED ACTIVITY

	TASK SEQUENCE		
INDIVIDUAL	1st 10 Minutes	2nd 10 minutes	3rd 10 Min.
A.			
B.			
C.			
D.			
E.			
F.			
G.			

The group should discuss each interviewee's task in the selected activity. Questions which may aid in eliciting this information are:

1. What, exactly do you do in (selected activity)?
2. How, exactly, do you do this?
3. Why do you do this?

C. ADDITIONAL INFORMATION FOR USERS

This information should be obtained by the interviewer from the group concerning each of the interviewees. Consider "job" as the one selected activity.

1. Where did you learn to do this job?

2. When did you learn how to do this job? (Obtain responses in terms of stage of Navy training.)

C. ADDITIONAL INFORMATION FOR USERS (Con't)

3. How did you learn how to do this job?
(Probe for methods used, e.g., formal or informal training. Break down method of training further, e g., into visual aids, lectures, etc. (formal) or observation, manual, etc. (informal).

4. Did you get enough training so you could do a good job right away? (If no) Is there any other kind of training you should have gotten? What kind?

5. Did you get any training that you don't need?
(If yes) What was it?

6. How hard was it for you to learn your job?

7. How do you think this job should be taught?
Where do you think this job should be taught?

8. Does the man doing this job have to be a different kind of person from other sailors? (If yes) What should be different about him? (If no) Why not?

9. Could any (man's rank/rate ___ do your job if he were shown once how to do it? (If no) Why not?

10. What does a guy have to be like in order to do this job? (Probe for personality, emotional, and physical factors.)

11. How often do you do this job?
How much time does it take?

12. What operating check-off lists do you use?
When?

13. Are there any manuals that you can and do use?
What ones?

14. What kind of shape is your equipment in?

15. Do you follow any safety precautions?

16. Think of the best (appropriate billet title ___ you ever knew
What did he do that made him so good?

17. Think of the worst (appropriate billet title _you ever knew. What did he do that made him so poor?

18. Does your gear ever break down? What do you do if this happens?

19. What else would you have to know to do before you could be promoted?

20. What things in your job can you do on your own? What things do you have to get orders for?

21. What gear do you use in your job? (Specify type, mark, modification, etc.)

22. What tools and equipment do you use?

23. Do you need special training to use these tools in your job?

24. What level of job is this?

25. What rating should do this job?

26. What other ratings might be able to perform this job?

27. How long does it take before you are good in this job? (Answer in terms of time. Do not include time spent in school.)

28. How well do you have to be able to hear for this job? Why? (Obtain behaviorgrams.)

29. How well do you have to be able to see for this job? Why? (Obtain behaviorgrams.)

30. Does a man have to be able to talk well to do this job? Why? (Obtain behaviorgrams.)

31. How much education does a man have to have in order to do this job?
Why?

32. What do you have to read in order to do this job?

33. What do you have to write down in order to do this job?

PSYCHOLOGICAL RESEARCH ASSOCIATES

CLAM - MAAXFA - 1

INFORMATION OBTAINED FROM PERSONNEL JACKETS

1. Name_____

2. Service No._____ 3. ENJC_____

4. Rank/Rate_____ 5. Billet Title_____

6. Age_____ 7. Time in Navy_____

8. Time in Present Job_____

9. Other Pertinent Information_____

_____

_____

10. Navy Schools Attended

SCHOOL	COURSE	DATE

11. Other Schools Attended

SCHOOLS	DATE	GRADUATE (Yes or No)

12. Previous Duty Assignments

DUTY ASSIGNMENT	TIME SPENT

	INDIVIDUALS					
QUESTION NUMBER	A	B	C	D	E	F

thought that each would have a different set of tasks. Therefore, it seemed necessary to secure responses to each of these 33 "user" questions from each interviewee.

The pre-test of Part C was intended to check the feasibility of securing information in this manner, and to ascertain if the questions were written in an understandable form.

Information From Personnel Jackets. The blue sheets were intended to be used in obtaining background information about the interviewees from personnel jackets by a member of the interview team. Information obtained from jackets reduces the time of the interview and is probably more accurate than information given by interviewees.

Written Recording Form. The buff page was used to test the possibility of having one interviewer write the answers to Part C of the billet analysis form rather than have it recorded by dictaphone. Responses obtained by each interviewee were recorded by question number on this form by one of the interviewers.

Pre-Test of Experimental Form B (MAAXFA-1)

The primary purpose of this pre-test was to determine the feasibility of using the group interview form which was developed. To investigate the two methods of recording group interview data by the use of dictaphones and hand recordings was of additional importance. Since the previous

pre-test had been individual interviews recorded by written notes this, pre-test provided the first evaluation of the group interview technique and dictaphone recording.

The first group of interviewees consisted of five BM's. These had duties and had experience with different gear since they were assigned to different types of ships. The activity chosen for interview was "streaming the 'O type' gear". Unfortunately, the facilities available for the first interview were not adequate and this obscured the interpretation of the results. The room in which the interview was held was too large; the acoustics were not good; there was no table and the microphones had to be held in the laps of the interviewees.

The information obtained in the first billet analysis acquired in this pre-test was also inadequate because of the necessity of balancing time considerations with the desire to obtain specific detail. In dealing with a heterogeneous group (a heterogeneous group is defined here as a group composed of men either of different ratings or of the same rating but assigned to different type ships, i.e., two BM's, one from a MSB and one from an AM), it was not possible using this technique for billet analysis to obtain specific and detailed information for each task for each member of the group, as the tasks differed from man to man and had to be asked individually of each man when using heterogeneous groups. Information was generally obtained as to what was

done but it was not possible to elicit information concerning:

(a) What each man did

(b) How these tasks and activities were accomplished

(c) Why they were done.

Concerning Part C of the form, it was observed that because of the heterogeneous group and because of the numerous tasks involved it was not possible because of time and control considerations for the interviewer to secure responses from each interviewee concerning each task. The problem was further complicated because of the technique used in obtaining the billet analysis in Part B, i.e., since information was not adequately obtained on each of the tasks performed by each of the interviewees, it was not possible to secure the responses to Part C.

As a result of the difficulties arising because of the heterogeneity of the first group, the second interview of this pre-test was set up to determine the effect of having a more homogeneous group. All of the second group of interviewees were Electrician's Mates from one type of ship. Many of the problems discussed above were alleviated though not eliminated. In the homogeneous group it was necessary to discuss only those tasks in which all of the interviewees were concerned. This reduced the number of tasks, making it possible to obtain considerably more detailed information. It was noted, however, that it still was not possible to probe deeply enough

because of time limitations. Even though the interviewees were a homogeneous group, discussing an entire billet in a group interview seemed impractical. In addition, it was still difficult to obtain adequate detailed information in Part C of the interview form. In Part C it was necessary to obtain different and specific responses concerning each of the tasks for each activity of the interviewee's billet.

Conclusions From the Pre-Test

As a result of our experience in the group interview pre-test and of the evaluation of the results, several modifications of the interview technique were developed.

It was decided that the interviewee groups should be homogeneous with respect to type of billet. This would insure that all men in the group would have the same theoretical assignment and similar experience. All men could contribute in the interview since all have experience with the activity and tasks discussed.

It was tentatively decided to deal with only one activity in any one interview. That is, each interview group would give specific task information on one activity and would not be further questioned concerning the remainder of the activities in any one billet. This procedure requires some control to insure that all activities in each billet were covered. Limiting the scope of the interviews would

also mean that each activity and task would be discussed by fewer groups. However, this would not be a serious limitation. The quality and specificty of the data would be vastly improved; by using this new technique each task in each activity would be thoroughly analyzed.

The possibility of constructing the questions of Part C in multiple choice form with pre-categorized responses provided was considered. It was believed that this change would shorten considerably the time necessary for the interview and also reduce the clerical load.

As a result of this pre-test it was decided that the use of the dictaphone recording equipment for transcribing the billet analysis was impractical. This is true primarily because of the clerical load imposed and the necessity of transcribing much extraneous information obtained in this type of recording. Secretaries could not be expected to have the training which would enable them to decide what data are relevant and which part could be omitted. Other objections stem from the fact that it is not always possible to understand the recording and it is not possible to identify the voices of the different interviewees on the tape.

Recommendations From Users

Following analysis of the results of our initial pre-test a series of meetings with cognizant personnel in the

Bureau of Naval Personnel was held to determine how well the information obtained in this pre-test would meet the requirements of these users. Psychological Research Associates desired to obtain a clear and precise statement of the needs of the people who would use information obtained by this study. It was felt that to be of maximum usefulness the information must be of the kind, and in the form that would fit most readily into the operational procedures of the ultimate users.

Consulted at this time were representatives of the Research Division, Training Research Branch, Classification and Survey Research Branch, Qualifications Analysis Section, Navy Job Classification Section, Manpower Analysis Section, and the Organizational Analysis Section. Suggestions were given both as to the nature of the information which should be obtained and the form in which the questions should be asked. The comments and suggestions of these personnel were used in modifying the operational group interview form which was developed next.

CHAPTER IV

OPERATIONAL PROCEDURES

The experience acquired from the two experimental forms discussed in Chapter III was used as a basis for developing the present operational Form called the "Mine Warfare Personnel Analysis Billet Description and Specification Forms" and the procedures necessary to conduct and record the interview. Both the operational Form and procedures are described in this chapter. The Form discussed here was used for collecting the billet analysis information, and therefore served as the basic tool for this phase of the project. These procedures are the result not only of the information obtained from the pre-test of earlier data collection techniques but also are designed to provide additional information requested by the agencies which use billet information in the Bureau of Naval Personnel.

Basic Decisions

As a result of the considerations described in Chapters II and III the following basic decisions were made with respect to the nature of the procedures to be used:

(a) A group interview would be the basic data collecting procedure. This procedure was adapted

in response to the situations described in paragraphs (a), (c), and (d) on pages 14, 15, and 16. That is, the group interview provides greater coverage for the same expenditure of time and money; the group interview tends to reduce the expression of personal eccentricities and bias, thus eliminating the need of checking with supervisors.

(b) The information would be obtained at the task and activity level rather than at a job or billet level. This was decided primarily on the basis of the considerations described in paragraphs (e) and (h) on pages 16 and 18. That is, not only did the users desire the information at this level, but also obtaining it at this level permitted interviewers who were not technically trained to gather the data.

(c) In response to the requirements discussed in paragraph (b), page 14 the procedure was designed to collect information only on activities which were directly relevant to mine warfare. The interviewers then could expend their efforts in the most profitable job areas.

(d) It was decided that pre-categorized responses would be provided when possible for the questions

designed to obtain specifications and user information. This technique is different from usual job analysis methods but has proved very satisfactory in the present study. It lessens the time of the interview and simplifies the recording and analyzing of responses. Personnel without extensive job analysis training can be used as interviewers and tabulators.

The way in which each of these basic decisions was incorporated in the design of the operational procedures will become apparent as those procedures are discussed in detail below.

Definition of Task, Activity, and Billet

It may be well to stop now and define exactly what is meant by billet, activity, and task as they were used in this project. These three levels as they were used in the Billet Descriptions and Specifications are defined on pages 17 and 18 of the Manual (Appendix B). These are working definitions evolved from the experiences described in Chapters II and III. Briefly, a task is defined as a small unit of work or effort done for a specific purpose. An activity is defined as a group of several related tasks which make up a major part of a man's total job. A group of activities which takes up all of one man's time is a billet. From this definition of billet,

however, one might draw the conclusion that there are as many enlisted men's billets as there are enlisted ratings. This would assume that all boatswain's mates (BM) perform the same activities, all electrician's mates (EM) perform the same activities, etc. Such a conclusion would not be in keeping with the facts. The facts of the case are that in many instances, the duties and responsibilities among ratings are a function of the type of unit or ship which the men are assigned.

Psychological Research Associates, therefore evolved a concept of a billet, given below, which is somewhat different from the usual definition but which is most useful in terms of the objectives of this project.

As far as surface vessels are concerned, there are two distinct types of duties which are unique to mine warfare and are performed by enlisted men. They are deck seamanship jobs (BM) and electrical jobs (EM). As a consequence, BM duties are differentiated from EM duties. In addition, the duties of a BM on board a motor minesweeper (AMS) are considerably different from those of a BM on board a minesweeping boat (MSB). Therefore, the term "billet" as used for this project consists not only of an individual's rating but also includes, where appropriate, the type of ship or the type of unit to which he is assigned, e.g., AMS/BM and AM/EM. The same procedure has been applied to the officer's billets.

In some cases, this breakdown was not appropriate, i.e., in the case of personnel in a Mine Disposal Unit (MDU) duties were not differentiated by us according to rating, since all personnel in this unit are capable of performing the same duties, regardless of their ratings. Therefore, only two billets for MDU personnel have been evolved: MDU/Enlisted Men and MDU/Officers.

In contradistinction to countermeasures, we have evolved but one enlisted billet in mining. This billet, i.e., what is called a billet in this report, is Minemen (MN). While it is recognized that there may very well be a differentiation of duties according to unit involved, it was felt that a MN's training is of such a nature that he is qualified to perform all mining activities. For example, although a MN on a Light Mine Layer (DM) does not perform duties comparable to those performed by shore based MN; nevertheless, he is capable, at least theoretically, of performing those shore based duties. Furthermore, he is expected to be capable of performing all duties assigned to MN regardless of his particular assignment. Such is not the case in mine countermeasures. Mining officers are treated differently. On the basis of interview information, we have concluded that the duties of an officer in mining are specialized according to the unit to which he is assigned. We have, therefore, qualified all mining officer billets by specifying the type of unit to which he is assigned.

Brief Description

The complete operational "Mine Warfare Personnel Analysis Billet Description and Specification Forms" and the "Mine Warfare Personnel Analysis Manual to Accompany Billet Description and Specification Forms" will be found in the appendices. The Form is found in Appendix A; Appendix B contains the Manual. A briefer description of the procedures will be given here.

Mine warfare personnel were interviewed in groups consisting of three to five officers or enlisted men. Each interview consisted of an interviewee group from the same billet, i.e., only men from one billet were interviewed in any one interview.

Two men from an interview team conducted the interview; one acted as interviewer and the other as recorder. The two enlisted men of the team interviewed enlisted interviewees; the officer interviewed officer interviewees with one enlisted man acting as recorder. The purpose of this procedure was to keep the interview on an informal basis. It was hoped that the information elicited would thus be more adequate since the interviewees and interviewer would not differ widely in level. The specific duties of the interviewer teams are given in the Manual in Appendix B.

After assembling the interviewees and explaining the

interviews, the operational procedures were as follows:

(a) Identifying information was collected. This information facilitated identification of the group and the individuals therein for later analysis of interview data (See goldenrod sheets, page 4, in the Form (Appendix A) and page 15 and 16 in the Manual (Appendix B)).

(b) Billet description data were gathered. This section of the interview dealt with what men in mine warfare billets do, how they do it, and why they do it (See the blue pages, pages 5-9 of the Form in Appendix A and pages 17-25 of the Manual in Appendix B). First of all, interviewees listed all of the team functions or activities performed by them in their billets. This list gave the interviewing team a concrete picture of the scope of the billet and permitted the selection of an activity for further interviewing. Also, these lists of activities taken together provided the research staff with a comprehensive picture of the work to be done and permitted the staff to direct the efforts of the teams so as to secure complete coverage. This was accomplished by means of the Compilation Report which will be described in Chapter V.

After the list of team functions was obtained, one activity was selected from the list given by the interviewees. The selected activity was described in great detail by developing a chronological account of all the tasks in terms of what, how, and why that go to make up the activity.

(c) Billet specifications were developed. At the completion of the billet description phase, the list of the tasks (given by the interviewees in that interview) necessary for the completion of the selected activity was set up and posted in front of the group on a newsprint pad measuring 17½ inches by 24 inches so that the interviewees would have the list in front of them at all times. The billet specification procedure then consisted of obtaining specific information concerning each task on this list. For Section III of the Form, there were 35 questions; however, only 28 questions were asked of each interviewee group, since there were several questions which applied to enlisted men only, and several questions which applied to officers only. The questions which were asked of each group are listed below according to their application.

Questions asked of enlisted men only

A 2a Present Rating.

What rating does this task now?

A 3a Present Pay Grade.

What pay grade does this task now?

A 4a Best Rating.

What rating is best suited to do this task?

A 5a Best Pay Grade.

What pay grade is best suited to do this task?

A 6a Other Ratings.

What other ratings are able to do this task?

E 18a Type Navy Training.

What type of Navy training must a man have before he is good at this task?

F 19a When Training Given.

When should training be given for this task?

Questions asked of officers only

A 2b Present Designator.

What designator does this task now?

A 3b Present Rank.

What rank does this task now?

A 4b Best Designator.

What designator is best suited to do this task?

A 5b Best Rank.

What rank is best suited to do this task?

A 6b Other Designators.

What other designators are able to do this task?

E 18b Type Navy Training.

What type of Navy training must a man have before he is good at this task?

F 19b When Training Given.

When should training be given for this task? Include plus years.

Questions asked of both officers and enlisted men

A 1 Time Estimate.

How long does this task take?

A 7a Supervisors.

Who supervises this task?

A 7b Type Supervision.

How is this task supervised?

A 8 Task Level.

Who should do this task?

A 9 Manuals.

What manuals are needed for this task?

B 10 Check-Off Lists.

What operating check-off lists are needed for this task?

B 12 Foul Ups.

What are the ways this task can be fouled up?

C 13 Effect of Error.

What is the effect of error on time and equipment in this task?

C 14 Dangers.

List any dangerous things in this task.

D 15 Accidents.

What are the kinds and chances for accidents in this task?

D 16 Safety.

What are the special safety precautions for this task?

D 17 Civilian Schooling.

How much education should a man have to do this task?

F 20 Best Training Method.

Which training method should be stressed most to teach this task?

F 21 Next Best Training Method.

What is the second best training method to teach this task?

F 22 Task Hardness.

How hard is it to learn to do this task well?

G 23 Seeing.

Which tasks is it important to be able to see well?

What does a man doing this task have to see that is important? (night vision, color mission, near vision, far vision)

I 25 Reading.

Which task is it important to be able to read well?

What does a man doing this task have to read that is important? (complicated technical manuals, diagrams, blue prints, logs)

B 11 Tools.

What tools are used in this task?

J 26 Writing.

Which task is it important to be able to write well?

What does a man doing this task have to write down that is important? (log, complicated report, notes)

K 27 Talking.

Which task is important to be able to speak well?

What does a man doing this task have to say that is important? (orders, telephone, directions)

L 28 Physical Effort.

How much physical effort is required for this task?

Each question was asked about all the tasks obtained in the billet description from the previous section of the interview (See pages 10-21 of the Form in Appendix A and page 26 of the Manual in Appendix B). These questions were presented on large flip cards which could be shown to the entire group. Figure 1 on page 58 is an illustration of the interview situation showing the use of flip cards and newsprint pad. The procedure consisted of asking the group to consider one question concerning all tasks simultaneously. For example, we might ask (and have posted as a flip card), "What pay-grade is best suited to do this task?" The groups would then consider this question for each of the tasks listed in the selected activity (given on the newsprint pad) until all tasks

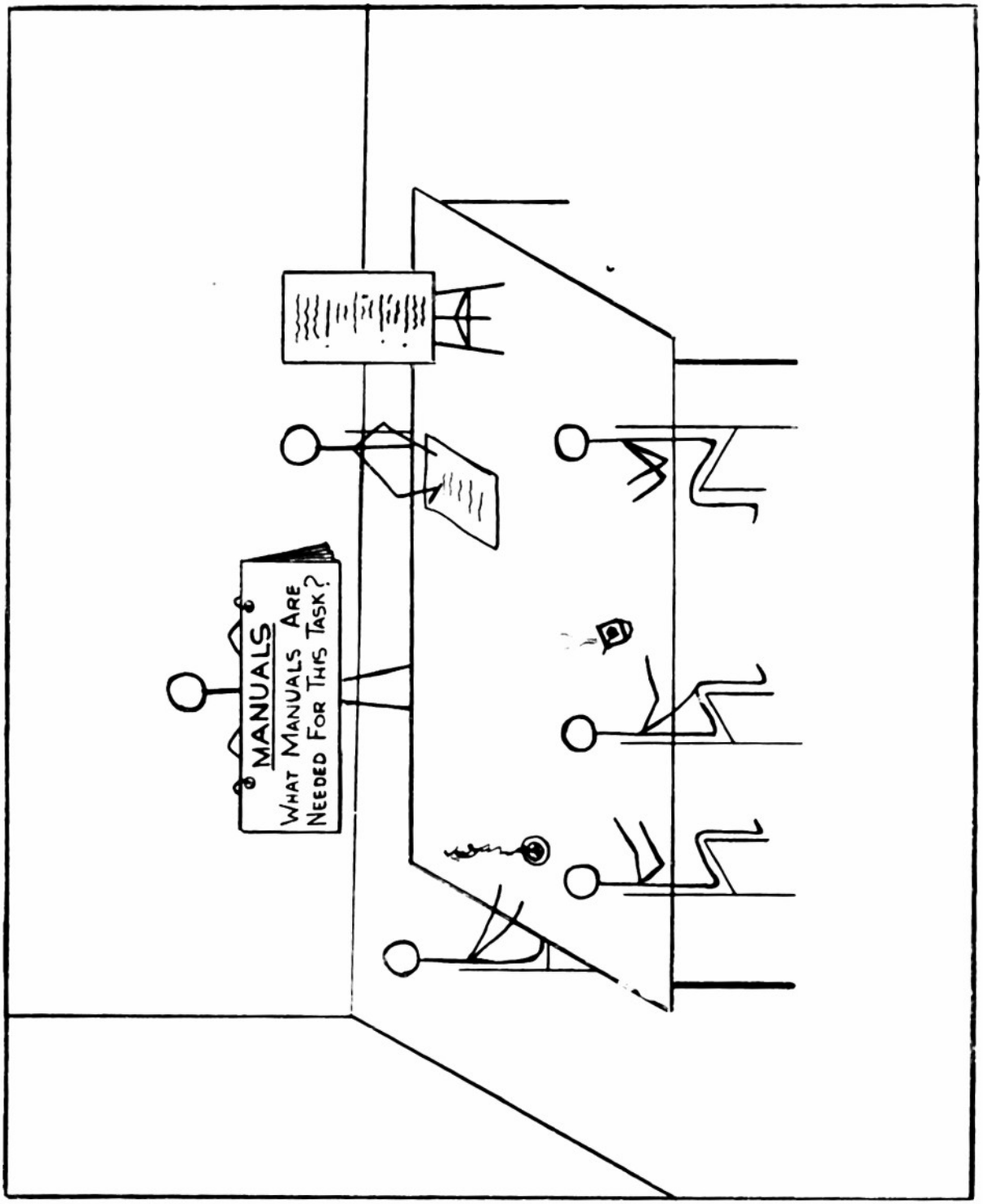


Figure 1. Illustration of the Interview Situation Showing Use of Flip Cards and Newsprint Pad.

had been taken into consideration and assigned a pay-grade. This procedure was followed throughout all the questions in the Form. As subsequent groups were interviewed different activities were selected for task analysis for the complete billet description. Thus, when all groups had been interviewed this detailed information was available on essentially all activities in the field of mine warfare. Such a procedure demanded close control by the interview team leader to make certain that all activities were being covered. Psychological Research Associates developed control procedures over the incoming data which served as a guide for the interviewers. These control procedures are given in Chapter V.

(d) Information was obtained by the third member of the interview team from personnel jackets. This information concerns descriptive data on each man in the interview with respect to the classification, age, time in service, schools attended, previous assignments, and so forth. (See the pink sheets in the Form and Manual)

A detailed description of the interview procedure is given in the Manual; the Form,

of course, contains not only questions asked but also the recording sheets. To get a complete and accurate understanding of the interview the reader should consult these sources which are presented as Appendices A and B.

Navy Interviewing Teams

With the cooperation of the Director, Personnel Analysis Division, Bureau of Naval Personnel, five interviewing teams, composed of naval personnel, were formed to collect data for this project at strategic locations in the United States and in the Pacific. Each team, consisting of one officer and two enlisted men,was directed to cover the mine warfare activities in its assigned locale. All personnel were trained by Psychological Research Associates. Table I on page 61 presents pertinent descriptive information about each team.

Training of Interview Teams

Since the personnel comprising the interview teams were not familiar with job analysis or interview techniques, concentrated training sessions were necessary. This training was given by members of the Psychological Research Associates' staff. The training session for the East coast team was held at Charleston, South Carolina and the session for the four West coast and Pacific teams was held at Long Beach, California.

TABLE I

INTERVIEWS, INTERVIEWEES, AND AVERAGE INTERVIEWEES PER INTERVIEW BY BASE AND TEAM

TEAM	Location of Interviews (Base)	No. of Interviews	No. of Interviewees	Average Interviewees per Interview
A	Minecraft Base, Charleston, S. C.	50	190	3.8
	Mine Depot, Yorktown, Virginia	25	119	4.8
	MW Schools, Yorktown, Virginia	7	30	4.3
	TOTAL TEAM A	82	339	4.1
B	Naval Base, Long Beach, California	40	134	3.4
	Ammo. Depot, Hawthorne, Nevada	24	79	3.3
	TOTAL TEAM B	64	213	3.3
C	NAD, West Lock, Pearl Harbor	18	41	2.3
	Sub Base, Pearl Harbor	18	48	2.3
	NOB, Pearl Harbor	6	18	3
	Reserve Trng. Ctr., Pearl Harbor	3	8	2.7
	NAD, Oahu, T. H.	24	74	3.1
	TOTAL TEAM C	69	189	2.7
D	NAD, West Lock, Pearl Harbor	39	96	2.5
	NOB, Pearl Harbor	25	56	2.2
	Sub Base, Pearl Harbor	7	20	2.9
	NAD, Oahu, T. H.	1	2	2
	NAS, Barbers Point	3	5	1.7
	TOTAL TEAM D	75	179	2.4
E	Naval Base, Yokosuka, Japan	47	137	2.9
	Naval Base, Sasebo, Japan	33	- 88 -	2.8
	TOTAL TEAM E	80	225	2.8
	TOTAL ALL TEAMS	370	1145	3.1

The training was broken up into two phases - an instructional phase and a practice interview and critique phase. The instruction was concerned with four areas:

(a) The over-all objectives of the project were explained; what kind of information was needed, possible uses, and the reasons for conducting interviews were discussed.

(b) An introduction to job analysis principles was given, including the general method and rationale of job analysis as related to the objectives of this project.

(c) Instruction on the type of interviewer behavior which is most successful in an interview situation was given. Hints as to how rapport with interviewees can be gained, how to ask questions, and respond to answers, how to probe for the desired information, and how to control the interview were presented.

(d) The interview procedure and the interview Form were discussed in detail. The methods of recording were outlined; the division of responsibility in the interview situation was specified. Each section and each question was discussed in detail and the objective of each question was made clear.

Three days were assigned for instructions; then, practice interviews and critiques were held for five days. First, team members practiced interviewing one another; later mine warfare personnel were called in for interviews. Each practice interview was followed by a day of critique. Critiques were given both by team members and by the instructor.

The Manual was used as the "text-book" for this instruction and should be consulted for a more detailed presentation of the content of the instruction (See Appendix B).

Concluding Statement

This chapter has discussed the procedures used in the data collecting phase of this project. As a result of the use of these procedures under field conditions, conclusions as to their effectiveness may be drawn and some revisions recommended. Appendix E contains the recommended revisions to the Form and Manual. Chapter VIII will present the conclusions of the investigators resulting from the use of these procedures.

The following chapter, Chapter V, will describe the methods used by the research staff in the control and analysis of the data resulting from the interview procedures described in this chapter. Chapter V also will show how Psychological Research Associates directed the interview teams so as to achieve the most effective coverage of mine warfare activities.

CHAPTER V

METHODS OF CONTROL AND ANALYSIS

This chapter is concerned with (a) the methods by which Psychological Research Associates recorded, controlled, and analyzed the interview data, and (b) the methods used to record and direct the activities of the interviewing teams during the data collecting period.

Compilation Report

The Compilation Report was a control device which permitted Psychological Research Associates to record the progress of each interview team and to direct the teams so as to insure complete coverage of all activities of the billets of concern to this project. This report was essential, since when the interviewing teams began to collect data there was no list of activities for each billet available, and therefore it was not possible to assign each team a definite list of activities to cover. The Compilation Report also served the purpose of informing each team of its progress and of the progress of the other teams. As the interviewing progressed, and as the list of activities under each billet crystallized, an analysis of the Compilation Report revealed

the gaps which were present in the activities to be covered under each billet.

As the early interview Forms were received a list of all activities mentioned in Section II, Part A of the Form, was prepared and as additional Forms came in the selected activities covered by these interviews were noted on this list. Two subject matter experts, one in mining and one in mine countermeasures, helped in the integration of the activities under each billet. Subject matter assistance was necessary at this point, since there was some lack of standardization in nomenclature and terminology from team to team. In addition, it was noted that in some instances there was lack of agreement among teams as to what part of the job constituted an activity. These inconsistencies were not serious and were quickly resolved with the assistance of the subject matter experts.

Each week the Compilation Report was sent to each team. This report informed each team which activities had been covered by all teams and which activities they should cover during the following week. Since each interview had a code number and since each activity was listed by name in the Compilation Report, it was easy for the teams to keep abreast of their progress and the work still remaining. Symbols were entered in a comment column opposite each ac-

tivity to indicate the status of that activity. These symbols opposite each activity indicated to the interviewing teams the status of that activity and the desired action. The symbols indicated:

1. "The activity has been directly covered - do not cover."
2. "The activity has been indirectly covered - do not cover."
3. "The activity is not unique or important - do not cover."
4. "The activity has not been adequately covered - should be covered by Team ____."

In addition to providing directions to the interview teams the Compilation Report kept the Psychological Research Associates' staff informed of the progress of the interviewing. It also provided a ready reference as to which interviews pertained to which activities. Opposite each activity on the report the numbers of the interview Forms covering that activity were entered. In the research office the Forms were numerically filed. This made it very easy to obtain all interviews related to a particular activity.

Flow Charts

Three charts were used by the research staff to indicate the tabulation status of the interview Forms received from the teams. Reduced size representations of these charts are presented here. Figure 2 shows the chart used to record

RECEIPT OF CLAM FORMS AT PRA						
Week	Team A	Team B	Team C	Team D	Team E	Sum
Feb 16-20	0	0	0	0	0	0
Feb 23-27	5	0	0	0	0	5
Mar 2-6	5	0	0	0	0	5
Mar 9-13	5	0	0	0	0	5
Mar 16-20	5	4	0	0	0	9
Mar 23-27	0	5	0	0	5	10
Mar 30-Apr 3	5	0	0	0	5	10
Apr 6-10	5	0	10	10	15	40
Apr 13-17	5	10	5	5	11	36
Apr 20-24	5	0	5	0	10	20
Apr 27-May 1	5	5	10	10	15	45
May 4-8	0	0	0	0	19	19
May 11-15	5	0	0	10	0	15
May 18-22	5	5	10	5	0	25
May 25-29	5	15	9	5	0	34
Jun 1-5	5	5	10	0	0	20
Jun 8-12	5	15	10	30	0	60
Jun 15-19	5	0	0	0	0	5
Jun 22-26	0	0	0	0	0	0
Jun 29-Jul 3	7	0	0	0	0	7
TOTAL	82	64	69	75	80	370

Figure 2. Illustration of Form Receipt Chart

STATUS OF BILLET COMPILATION

Interview No.	A	B	C	D	E	Interview No.	A	B	C	D	E
1						41					
2						42					
3						43					
4						44					
5						45					
6						46					
7						47					
8						48					
9						49					
10						50					
11						51					
12						52					
13						53					
14						54					
15						55					
16						56					
17						57					
18						58					
19						59					
20						60					
21						61					
22						62					
23						63					
24						64					
25						65					
26						66					
27						67					
28						68					
29						69					
30						70					
31						71					
32						72					
33						73					
34						74					
35						75					
36						76					
37						77					
38						78					
39						79					
40						80					

Figure 3. Illustration of Compilation Status Chart

CLAM TABULATION STATUS

	TEAM A 1001-1080 Sec. Tab.				TEAM B 2001-2080 Sec. Tab.				TEAM C 3001-3080 Sec. Tab.				TEAM D 4001-4080 Sec. Tab.				TEAM E 5001-5080 Sec. Tab.			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1																				
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
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77																				
78																				
79																				
80																				

Figure 4. Illustration of Tabulation Status Chart

the receipt of the interview Forms from the field. Figure 3 is the chart used to indicate which Forms had been entered on the Compilation Report. The chart used to indicate (by sections) which Forms had been tabulated is shown in Figure 4.

Tabulation of Sections I and IV of the Form

The information found in Sections I and IV of the interview Form can be tabulated by clerical personnel without extensive background or training. To implement this procedure five identical Tabulation Booklets (one for each team) were prepared. Each booklet contains six sections. Six illustrations, each representing the pages in one section of the Booklet (shown here for Team E) are presented as Figures 5 through 10 on pages 88 through 93 below.

A tabulation Manual which gives in "cook-book" style the steps necessary to tabulate Sections I and IV of the Form was prepared and is presented preceding the illustrations of the booklet. Read in conjunction with Figures 5-10, this manual is self-explanatory.

Analysis and Synthesis of Billet Description - Section II of the Form

Section II of the interview Form provides a list of the activities which constitute each billet and a detailed task description of each of the activities. The list of activities per billet were integrated to comprise the Billet

TABULATION MANUAL FOR CLAM FORMS

PSYCHOLOGICAL RESEARCH ASSOCIATES

MANUAL FOR TABULATING CLAM FORMS

Introduction

Psychological Research Associates is in the process of making a complete study of the activities involved in Mine Warfare Jobs of the Navy. A set of interview Forms developed by PRA is being administered in the field by Navy Teams. It will be one of the functions of this office to tabulate and combine these interview data as they are received. This manual describes the procedure to be used in combining and tabulating these interviews.

This project has been assigned the code CLAM. The CLAM interview Forms that this office will receive from the field are broken down into five groups or teams. These groups will be referred to as A, B, C, D, and E. Each group has seventy-five sets of interview Forms that will be completed and mailed to the office. The CLAM interview Forms have been assigned a series of code numbers for each of the five interview groups.

Team	Location	Code Numbers
A	East Coast	1001-1080
B	West Coast	2001-2080
C	Pearl Harbor, Hawaii	3001-3080

Team	Location	Code Numbers
D	Pearl Harbor, Hawaii	4001-4080
E	Japan and Okinawa	5001-5080

You will notice that while there are 75 Forms to be returned by each team, the code numbers go from 1 to 80. Each team has been given five extra CLAM interview Forms, in the event that any get ruined. Actually, only 75 interview Forms from each team will be returned to this office.

The CLAM interview Forms will not be held in the field until all 75 are completed, but rather, they will be mailed to this office as they are completed. This means that interview Forms from the field will be trickling into this office probably until July. In view of the amount of work that will be necessary to tabulate and combine these data (375 forms), it is imperative that the interview Forms be tabulated as they come in, rather than holding them until they are all received. It is very important that these Forms be tabulated accurately. If the procedures outlined in this manual are followed closely, the results will be accurate.

In order to make tabulation easier, a series of tabulation forms have been drawn up. A complete set of tabulation forms has been put into each of five tabulation booklets. There will be one tabulation booklet for each team, hence there will be five booklets. Each tabulation booklet is of

a different color. The colors and the teams to which they apply are listed as follows:

Team	Code Number	Color
A	1001-1080	Pink
B	2001-2080	Buff
C	3001-3080	Blue
D	4001-4080	White
E	5001-5080	Salmon

It is absolutely necessary that the correct booklet be chosen when making tabulations. For example, when tabulating interview Forms from Team A (Code Number from 1001-1080) use the Pink booklet. For Team B (Code Numbers from 2001-2080) use the Buff booklet, etc. Tabulate the interview Forms for each team in order, i.e., for Team A start with 1001 and then go to 1002, etc. This process will help reduce mistakes, and will allow you to correct easily any error which might be made.

On the following pages you will find the instructions for tabulating the interview Forms. Follow the directions carefully.

CHECK LIST FOR TABULATING SECTION I OF CIAM INTERVIEW FORM

TAB Booklet Page	Tabulation Item	Interview Page	Interview Item	Instructions
A-1	Code No.	Title Page	Number in black ink at right hand of page.	Record this number in Booklet under "Code No." When page A-1 is filled, go on to page A-2.
A-1	No. of enlisted men interviewed	4	IG2 Interviewee's Rank/Rate	Count the number of enlisted men interviewees here, and record this number in booklet. If interviewees are officers see next item.
A-1	No. of officers interviewed	4	IG2 Interviewee's Rank/Rate	Count the number of officer interviewees here and record this number in Booklet. This tabulation item is for officers only. Note: Each interview will have enlisted men or officers; never both.
A-1	Total time of interview	4	IE time	Record length of interview (in time) in the space provided. Record time in fractions of an hour to nearest $\frac{1}{4}$ hour.

TAB Booklet Page	Tabulation Item	Interview Page	Interview Item	Instructions
B-1	Type	4	IG3-Ship Information Type	Record this information in Tabulation Booklet under "Type". Note: If "Ship Information" is not filled in on interview Form, write "none" under "type", and see Tabulation Booklet Page C-1 below. When Page B-1 is filled, go to Page B-2, etc.
B-1	Number	4	IG3-Ship Information Number	Record this number in Tabulation Booklet under "Number".
B-1	Name	4	IG3-Ship Information Name	Record this name in Tabulation Booklet under "Name".
B-1	f	4	_____	If more than one interviewee for any one interview has the same "Ship Information on interview Form, record the number of interviewees who are on the same ship under "f", in the Tabulation Booklet, rather than writing the information down for every interviewee. Remember, the "f" column applies only if the "Ship Information" for more than one interviewee is identical.

TAB Booklet Page	Tabulation Item	Interview Page	Interview Item	Instructions
C-1	Code No.	Any	Number in black ink at right hand top of page.	Record this number in Booklet under "Code No."
C-1	Unit assigned	4	IG4 Unit assigned	Record this unit in Tabulation Booklet under "Unit assigned". Note: If interview Form is blank for this item, write "none" in Tabulation Booklet. When Page C-1 is filled, go on to page C-2, etc.
C-1	f	4	———	If more than one interviewee has the same "Unit Information" on interview Form, record the number of interviewees who are in the same unit under "f" in the TAB Booklet, rather than writing the information down for every interviewee. Remember, the "f" column applies only if the "Unit Information" for more than one of the interviewees is identical.
C-1	Code No.	Any	Number in black ink at right hand top of page.	Record this number in TAB Booklet under "Code No."

CHECK LIST FOR TABULATING SECTION IV

TAB Booklet Page	Tabulation Item	Interview Page	Interview Item	Instructions
D-1 through D-65	Time in Navy	22	IV I Time (mos.) in Navy	Record the time (mos.) in Navy in Tab Booklet in space provided. Note: There will be two pages of information (pages 22 and 23) for each interviewee in the interview. So, if there are 5 men in the interview, each man will have a page 22 and page 23 with information about him. This means that there will be 10 Pink pages at the end of the interview Form. In addition, each page of the "D" series of the Tab Booklet, is devoted to a different Job Level. To determine on what page of the Tab Booklet, a specific interviewee's information should be recorded, open the interview form to page 4, and determine the interviewee's Rank/Rate. Then consult the following index to determine on which page in the Tab Booklet the information is to be recorded. Each page of the Tab Booklet in the "D" series is labelled at the top center, but the index will save time if it is consulted.

INDEX TO "D" SERIES OF PAGES IN TAB BOOKLET

Job Level	Page
Division Commander - CDR.	D - 1
Mine Planning Officer - Air - LCDR.	D - 2
Mine Planning Officer - Air - LT.	D - 3
Mine Planning Officer - Air - LTJG.	D - 4
Mine Planning Officer - Air - ENS.	D - 5
Mine Planning Officer - Sub - LCDR.	D - 6
Mine Planning Officer - Sub - LT.	D - 7
Mine Planning Officer - Sub - ENS.	D - 8
Mine Planning Officer - Sub - LT.	D - 9
Mine Warfare Officer - LT.	D - 10
Mine Warfare Officer - LTJG.	D - 11
Mine Warfare Officer - ENS.	D - 12
Mine Sweeping Officer - CWO.	D - 13
Mine Sweeping Officer - WO.	D - 14
O in C MSB Groups - LCDR.	D - 15
O in C MSB Groups - LT.	D - 16
O in C MSB Groups - LTJG.	D - 17
O in C Mine Disposal Units-LCDR.	D - 18
O in C Mine Disposal Units - LT.	D - 19
O in C Mine Disposal Units - LTJG.	D - 20
Others - These pages are devoted to officer job levels not mentioned above. If any new job levels are mentioned in the interview, use one of these pages. Be sure to label the Tab Booklet page at the top.	D - 21 through D - 25

Job Level	Page
AOC	D - 26
AO1	D - 27
AO2	D - 28
AO3	D - 29
AO Striker	D - 30
BMC	D - 31
BM1	D - 32
BM2	D - 33
BM3	D - 34
BM Striker	D - 35
EMC	D - 36
EM1	D - 37
EM2	D - 38
EM3	D - 39
EM Striker	D - 40
ETC	D - 41
ET1	D - 42
ET2	D - 43
ET3	D - 44
ET Striker	D - 45
MNC	D - 46
MN1	D - 47
MN2	D - 48

Job Level	Page
MN3	D - 49
MN Striker	D - 50
TM0	D - 51
TM1	D - 52
TM2	D - 53
TM3	D - 54
TM Striker	D - 55

OTHERS - These pages are devoted to enlisted men job levels not mentioned above. If any new job levels are mentioned in the interview, use one of these pages. Be sure to label the Tab Booklet page at the top.

Tab Booklet Page	Tabulation Item	Interview Page	Interview Item	Instructions
D - 1 through D - 65 (Determined page)	Time on Job	22	IV J Time (Mos.) in Present Job.	Record this figure in the Tab Booklet in space provided.
D - 1 through D - 65 (Determined page)	Navy Schools Attended	22	IV L Navy Schools Attended	Record these Schools on single line in columns provided. If none, write "none".
D - 1 through D - 65 (Determined page)	Courses Taken	22	IV L Navy Schools Attended. Courses	Record these courses on a single line in columns provided.

Tab Booklet Page	Tabulation Item	Interview Page	Interview Item	Instructions
D - 1 through D - 65 (Determined page)	Educational Level	23	IV M. Other Schools attended.	Determine highest grade interviewee has completed and record in space provided. Use number code, i.e., 12 means High School graduate, 14 means 2 years of college, etc.
D - 1 through D - 65 (Determined page)	Code No.	Any	Number in black ink at right hand top of page.	Record this number in Tab Booklet under "Code No."
E - 1 through E - 25 Officer only	Code No.	Any	Number in black ink at right hand top of page.	Record this number of Tab Booklet under "Code Number" if interviewee is an officer. Determine "Job Level" as per instructions for "Time in Navy", and use following index to determine page of Tab Booklet to be used.

Index to "E" Series of Pages in Tab Booklet

Job Level	Page
Division Commander - CDR.	E - 1
Mine Planning Officer - Air - LCDR.	E - 2
Mine Planning Officer - Air - LT.	E - 3
Mine Planning Officer - Air - LTJG.	E - 4
Mine Planning Officer - Air - ENS.	E - 5

Job Level	Page
Mine Planning Officer - Sub - LCDR.	E - 6
Mine Planning Officer - Sub - LT.	E - 7
Mine Planning Officer - Sub - LTJG.	E - 8
Mine Planning Officer - Sub - ENS.	E - 9
Mine Warfare Officer - LT.	E - 10
Mine Warfare Officer - LTJG.	E - 11
Mine Warfare Officer - ENS.	E - 12
Mine Sweeping Officer - CWO.	E - 13
Mine Sweeping Officer - WO.	E - 14
O in C MSB Groups - LCDR.	E - 15
O in C MSB Groups - LT.	E - 16
O in C MSB Groups - LTJG.	E - 17
O in C Mine Disposal Units - LCDR.	E - 18
O in C Mine Disposal Units - LT.	E - 19
O in C Mine Disposal Units - LTJG.	E - 20
OTHERS - These pages are devoted to officer job levels not mentioned above. If any new job levels are mentioned in the interview, use one of these pages. Be sure to label the Tab Booklet page at the top.	E - 21 through E - 25

Tab Booklet Page	Tabulation Item	Interview Page	Interview Item	Instructions
F - 1 through F - 25 (Determined Page)	Designator	22	IV F Designator	This is for officers only. Record designator in Tab Booklet in space provided.
F - 1 through F - 40 EM only	Code No.	Any	Number in black ink at right hand top of page.	Record this number in Tab Booklet under "Code Number", if interviewee is an enlisted man. Determine "Job Level" as per instructions for "Time in Navy" and use following index to determine page of Tab Booklet to be used.

Index to "F" Series of Pages in Tab Booklet

Job Level	Page
AOC	F - 1
AO1	F - 2
AO2	F - 3
AO3	F - 4
AO Striker	F - 5
BMC	F - 6
BM1	F - 7
BM2	F - 8
BM3	F - 9
BM Striker	F - 10
EMC	F - 11

Job Level	Page
EM1	F - 12
EM2	F - 13
EM3	F - 14
EM Striker	F - 15
ETC	F - 16
ET1	F - 17
ET2	F - 18
ET3	F - 19
ET Striker	F - 20
MNC	F - 21
MN1	F - 22
MN2	F - 23
MN3	F - 24
MN Striker	F - 25
TMC	F - 26
TM1	F - 27
TM2	F - 28
TM3	F - 29
TM Striker	F - 30
OTHERS - These pages are devoted to enlisted men job levels not mentioned above. If any new job levels are mentioned in the interview, use one of these pages. Be sure to label the Tab Booklet page at the top.	F - 31 through F - 40

Tab Booklet Page	Tabulation Item	Interview Page	Interview Item	Instructions
F - 1 through F - 40 (Determined page)	Primary ENJC	22	IV D. Primary ENJC	Record this number in space provided. Note: Use both halves of page.
F - 1 through F - 40 (Determined page)	Secondary ENJC	22	IV E. Secondary ENJC	Record this number in space provided.

BOOKLET

FOR TABULATING

CLAM FORMS

5001-5080

TEAM E

JAPAN

PSYCHOLOGICAL RESEARCH ASSOCIATES

Code No.	No. of EM Interviewed	No. of Off. Interviewed	Total Time of Interview

Figure 5. Illustration of Pages in Section A of Tabulation Booklet

SHIP INFORMATION

Type	Number	Name	f	Type	Number	Name	f

Figure 6. Illustration of Pages in Section B of Tabulation Booklet

UNIT INFORMATION

Unit Assigned	f	Unit Assigned	f

Figure 7. Illustration of Pages in Section C of Tabulation Booklet

Time in Navy	Time on Job	Navy Schools Attended	Courses Taken	Educational Level

Figure 8. Illustration of Pages in Section D of Tabulation Booklet

Code Number	Designator	Code Number	Designator

Figure 9. Illustration of Pages in Section E of Tabulation Booklet

Code Number	Primary ENJC	Secondary ENJC	Code Number	Primary ENJC	Secondary ENJC

Figure 10. Illustration of Pages in Section F of Tabulation Booklet

Analysis and Synthesis of Billet Description - Section II of the Form (Con't)

Compilation. The activity descriptions were edited for clarity and comprehensiveness by members of the Psychological Research Associates' staff who were familiar with job analysis techniques and oriented as to mine warfare procedure, operations, language, and equipment.

Since the descriptions were obtained from group interviews, each description was written from information given by several men, all of the same billet. Thus, an internal check with regard to accuracy was present. In addition, as activities were described in more than one interview, a further check was available. While the presence of more than one description of a given activity is advantageous from the standpoint of maintaining accuracy and comprehensiveness, a problem in terms of mechanics was anticipated, in that one might not know, if descrepancies occurred, which activity description to accept. In view of the fact that there were no conflicting data from the interviews, however, the problem became merely one of synthesizing and integrating the task descriptions into a comprehensive picture of first the activity and finally the billet.

The procedure was first to read all of the descriptions pertaining to a single activity in order to obtain a mental picture of the scope and content of the activity under con-

sideration. Then, of all the descriptions available, the one considered best in terms of accuracy and comprehensiveness was selected as a tentative model. This activity was then recorded by tasks, making sure that all available information was utilized. For example, the tentative model might be lacking certain points which the other descriptions of this activity contained. This information was then added to the description so that the final product was a synthesis of all available descriptions.

The complete description was then edited and whatever modifications deemed necessary were made to obtain correct format, clarity, and consistency of terms. Wherever necessary, definitions of certain terms were included within the description, so as to promote understanding.

Analysis and Synthesis of the Specifications - Section III of the Form

Specifications can be written at the task level, the activity level, and the billet level. During the early stages of this project it was decided that it would be desirable to obtain raw data from which specifications at any of the three levels could be written. If questions are asked at a billet level, it is not possible to break down the responses obtained and write a specification for activities of tasks within that billet. However, if the questions are asked at a lower level,

it is then possible to combine the responses to questions about the tasks to obtain specifications at the higher level. It will be noted that the questions in Section III of the interview Form are asked at the task level. Therefore, it is possible using the responses to these questions to write specifications at the task level, at the billet level, or at the activity level.

Asking questions at the task level has a second advantage. Interviewees are more likely to respond accurately and consistently about small units of work than they are to more complex and less readily recalled units of work.

Specifications are written at the activity level in this report (See Chapter VII), since specifications at this level seem most useful. Once the specifications are obtained, only further integration and synthesis are required in order to obtain a billet specification. Task specification data are filed at this office and will be submitted at a future date. As has been mentioned, the specifications which were analyzed at the activity level were obtained from responses to the questions of Section III of the Form. Table II on page 97 shows the specific questions which provided the information needed for each section of a specification.

The specifications for each activity were written in accordance with the information supplied from the same in-

TABLE II

INTERVIEW QUESTIONS USED TO PREPARE SPECIFICATIONS

SPECIFICATION SECTION	Interview Questions Used	Form Page Number
I. RATE AND PAY GRADE: (EM) RANK AND DESIGNATOR: (O)		
Current:	2, 3,	10
Recommended:	4, 5,	10
Possible:	6,	10
II. EDUCATION		
Civilian:	17	13
Navy:	18	14
III. ESSENTIAL KNOWLEDGE AND SKILLS:		
Level:	8	10
Manuals:	9	10
Check-off-Lists:	10	11
Tools:	11	11
Reading:	25	18
Writing	26	19
IV. PHYSICAL REQUIREMENTS:		
Seeing:	23	16
Hearing:	24	17
Talking:	27	20
Effort:	28	21
V. SUPERVISION:		
Type:	7a	10
By:	7b	10
VI. DANGERS-EFFECTS OF ERRORS:		
Material Loss:	12, 13	11, 12
Personal Injury:	14, 15	12
Safety Precautions:	16	13

terviews which were used to write the activity description. There were two general problems in synthesizing the raw data:

(1) Since the responses were given to questions at the task level responses to all tasks within an activity had to be combined to obtain responses for the total activity. Where there was lack of agreement from task to task it was necessary to report the response reflecting the most demanding requirements intrinsic to the job, e.g., if an individual required a certain type of color vision in order to perform one task of an activity composed of eight tasks, this specification was worded to read that the individual required that type of color vision in order to perform the activity, even though color vision was not required throughout the activity. Where it was not possible to determine from the interview which response was intrinsic to the job or where it did not appear that all the responses merited reporting, a careful evaluation of all the responses was made by members of the Psychological Research Associates' staff together with the subject matter expert. This evaluation included reviewing and checking the specifications against the activity description.

(2) The second general problem of synthesis, in connection with writing specifications, occured when there were several interviews describing the same activity. It was then necessary to combine the responses on the different interviews to obtain the most accurate specifications for the particular activity. Usually the response given by the majority of interviews was considered as being the most accurate response and therefore was reported. However, on some occasions logical considerations suggested that some of the responses were the result of misunderstanding or mis-information on the part of the interviewees in a particular interview. All doubtful responses were subjected to evaluation and review by the specification writer and subject matter expert. In this evaluation, reference was made to the activity description. The specifications thus obtained for each activity were edited to insure clarity and reported in the standard format.

Tabulation for Description of the Sample

The basic tabulation procedure described on the preceding pages was designed to provide information in a form that would permit its use for many possible purposes. It was desired to be able to answer many types of specific

questions that might be asked with respect to each task described. This tabulation system facilitated the formulation of information for many possible future needs.

To obtain the gross information which was used in the description of the sample, which is presented in the following chapter, it was necessary to tabulate and integrate these data further. The two forms, Figures 11 and 12, presented on the following pages were used to tally the desired information by billet. The use of these latter tabulation forms permitted us to examine the interview sample with respect to the information which was obtained in Sections I and IV of the Form. The description of the interview sample is presented in Chapter VI.

Billet:			
Navy Schools	Primary ENJC or Designator		No. of Interviewees
		Time in Navy	12 or less
			13-36
			37-72
			over 72
		Time on Job	6 or less
			7-12
			13-18
			over 18
		Civilian School Level	1-8
			9-11
			12
			13-15
			16 +

Figure 11. Billet Tabulation Form for Sample Analysis

		Billet:
	W.O.	
	C.W.O.	
	ENSIGN	
	LT. J.G.	
	LT.	
	COMDR.	
	B M	
	E M	
	M N	
	A C	
	T M	
	G M	
	OTHER	
	CHIEF	
	1ST CLASS	
	2ND CLASS	
	3RD CLASS	
	STRIKER	

Figure 12. Billet Tabulation Form for Sample Analysis

CHAPTER VI

SAMPLE ANALYSIS

This chapter presents an analysis and description of the sample of naval personnel interviewed during the primary data collecting period of this project. The information that will be reported here was obtained from Sections I and IV of the Interview Form using tabulation methods described in Chapter V. A total of 1145 interviewees provided the basic data for this research.

Only the group interview technique permits the use of a sample this large with a reasonable expenditure of time and money. The men were interviewed in 370 groups which had an average (Mean) size of 3.1 men. The average (Mean) time taken for the interviews was three hours, 40 minutes; with 68 percent of the interviews requiring between three hours, 16 minutes and four hours, four minutes; 95 percent were completed between two hours, 52 minutes and four hours, 28 minutes.

The interviews were held at three bases on the East coast, two bases on the West coast, six bases in Hawaii, and two bases in Japan. For the specific bases at which interviews

were held and the number held at each base see Table I on page 61 and Figures 17, 18, and 19 on page 116, 117, and 118.

Of the 1145 interviewees, 1045 were enlisted men responding in 330 interviews in nine billets. There were 100 officers in 40 interviews in 11 billets.

Sample Analysis, Officers' Billets

Table III on the following page is the analysis of the sample of officers interviewed, broken down by billet. The first column shows the billets of interviewed officers. For a definition of billet as used in this report see pages 48-50 in Chapter IV. The next column lists the number of officers interviewed concerning each billet. It will be noted that the number per billet varies considerably; the number of officers interviewed concerning any one billet depended upon the relative frequency of occurence and complexity of the activities of that billet and on the availability of officers who were assigned to that billet. That is, if any one billet was not made up of activities which were essentially different from other billets, it was not necessary to hold many interviews to cover that billet adequately. And, of course, if there were not many officers available that were assigned to the billet, this placed a limit on the number of interviews which could be held.

The next two columns in Table III give time in the

1

TABLE III SAMPLE ANALYSIS, OFF

OFFICERS BILLETS	NO. OF INTERVIEWEES	NO OF INTERVIEWS	TIME IN NAVY				TIME ON JOB				CIVILIAN SCHOOL LEVEL					NAVY
			12 MONTHS OR LESS	13-36 MONTHS	37-72 MONTHS	OVER 72 MONTHS	6 MONTHS OR LESS	7-12 MONTHS	13-18 MONTHS	OVER 18 MONTHS	NO H.S. 1-8 YRS.	SOME H.S. 9-11 YRS.	H. S. GRAD. 12 YRS.	SOME COLLEGE 13-15 YRS.	COLLEGE GRAD. 16 YRS.	
AM M/S OFF.	14	4	1	3	0	10	7	2	2	3	2	1	8	0	3	NONE 4
AM EXEC. OFF.	4	1	0	1	2	1	4	0	0	0	0	0	0	0	4	N S M W MINES AND COUNTERMEASURES 1
AMS M/S OFF.	56	23	11	31	8	6	38	17	1	0	0	0	3	3	50	A S W OFF. 12
AMS EXEC. OFF.	3	1	0	0	2	1	3	0	0	0	0	0	0	1	2	N S M W COUNTERMEASURES 1
MDU OFFICERS	2	1	0	0	1	1	0	0	2	0	0	0	0	1	1	E. O. D. SCHOOL BOMB DISPOSAL 2
AV. SQDN. MINING OFF.	3	2	1	0	1	1	1	1	0	1	0	0	1	1	1	AVIATION RADIO SCHOOL 1
TYCOM STAFF OFFICERS	3	1	0	0	0	3	1	0	0	2	1	0	2	0	0	N S M W MINES & CTRMSRS 1 / OFF. FAMILIARIZE 1
MINE DIV. COMMANDER	2	2	0	0	0	2	0	0	0	2	0	0	0	2	0	GENERAL LINE SCHOOL 2
O. IN C. JII-C	6	3	0	0	0	6	0	0	6	0	0	0	3	3	0	N S M W AERIAL MINES 6
MINING OFF. DM	4	1	1	2	0	1	2	1	1	0	0	0	0	0	4	N S M W OFF. 2
MINING OFF. NAV. ORD. FAC.	3	1	0	0	0	3	1	2	0	0	0	0	0	1	2	E. O. D. SCHOOL 1

2

NALYSIS, OFFICER BILLETS

OOL / COLLEGE GRAD. 16 YRS.	NAVY SCHOOLS ATTENDED				DESIGNATORS			NAVY OFFICERS	RESERVE OFFICERS	RANK			
3	NONE	NSMW COUNTERMEASURES	NET AND BOOM SALVAGE SCHOOL	DAMAGE CONTROL SCHOOL	714	713	110	12	2	CWO CH BOSN	WO BOSN	ENS.	LT. J.G.
	4	5	1	1	6	5	3			5	4	3	2
4	NSMW MINES AND COUNTERMEASURES	OCS	FLEET SONAR SCHOOL	V-12 OFF. TRAINING	110	–	–	1	3	LT. J.G.	LT.	–	–
	1	2	1	1	4	–	–			1	3	–	–
50	ASW OFF.	FTC SAN DIEGO	NSMW OFF.	CIC (TTC)	110	170	–	15	41	LT. J.G.	ENS.	–	–
	12	11	40	9	55	1	–			41	15	–	–
2	NSMW COUNTERMEASURES	NAVAL AVIATION	V-12 DECK	—	110	–	–	2	1	LT. J.G.	–	–	–
	1	1	1	–	3	–	–			3	–	–	–
1	E.O.D. SCHOOL BOMB DISPOSAL	NATTC AVIATION MACHINIST	E.O.D. SCHOOL SPECIAL WEAPONS DISPOSAL	—	145	–	–	0	2	LT.	–	–	–
	2	1	1	–	2	–	–			2	–	–	–
1	AVIATION RADIO SCHOOL	NSMW OFFICERS FAMILIARIZATION	FAETU PAC SCHOOL	—	131	–	–	1	2	LT. J.G.	LT.	–	–
	1	1	2	–	3	–	–			2	1	–	–
0	NSMW MINES & CTRMSRS / OFF. FAMILIARIZE	NAVAL ACADEMY	SUBMARINE SCHOOL	FLIGHT TRAINING	131	110	–	3	0	LT.	–	–	–
	1 / 1	2	2	1	1	2	–			3	–	–	–
0	GENERAL LINE SCHOOL	AMPHIBIOUS TRAINING SCHOOL - P.C.O.	RADIOLOGICAL SAFETY SCHOOL	–	110	–	–	2	0	COMDR.	–	–	–
	2	2	2	–	2	–	–			2	–	–	–
0	NSMW AERIAL MINES	FREE GUNNERY GUIDED MISSILE	ELECTRICAL ORD. AVIATION ORD.	—	177	171	–	6	0	CWO CH GUN	LT. J.G.	–	–
	6	3	3	–	3	3	–			2	4	–	–
4	NSMW OFF.	—	—	–	110	–	–	3	1	LT. J.G.	ENS.	LT.	–
	2	–	–	–	4	–	–			2	1	1	–
2	E.O.D. SCHOOL	NSMW	—	—	110	–	–	2	1	LT.	–	–	–
	1	1	–	–	3	–	–			3	–	–	–

Navy and time on the job. This information is reported as a distribution rather than as an average since it was felt that the distribution would give a clearer picture of the make-up of the sample of officers interviewed. An outstanding point to be noticed in the Time On Job column is the large proportion of officers in both the AM/Minesweeping Officer billet and the AMS/Minesweeping Officer billet who have had less than six months time on the job.

The next two columns give civilian school level, also reported as a distribution, and Navy school attended. These columns show the educational background of the officers interviewed. The designators column reflects considerable homogeneity of the officers interviewed within any one billet so far as the designators are concerned.

The next two columns show the number of U.S.N. officers and the number of U.S.N.R. officers for each billet. No conclusion can be drawn concerning one billet as against another, but it may be noted that approximately half of the officers interviewed were Regular Navy officers and half were Reserve officers. The last column shows the rank of officers interviewed, and is reported as a distribution.

Sample Analysis, Enlisted Billets

Table IV on the following page presents the analysis for the enlisted personnel interviewed on this project.

1

TABLE IV SAMPLE ANALYSIS, EN

BILLET	NO. OF INTERVIEWEES	NO. OF INTERVIEWS	NUMBER AND PERCENT	TIME IN NAVY				TIME ON JOB				CIVILIAN SCHOOL LEVEL				NUMBER AND PERCENT	NAVY SCHOOL	
				12 MONTHS OR LESS	13-36 MONTHS	37-72 MONTHS	OVER 72 MONTHS	6 MONTHS OR LESS	7-12 MONTHS	13-18 MONTHS	OVER 18 MONTHS	NO H. S. 1-8 YRS.	SOME H. S. 9-11 YRS.	H. S. GRAD. 12 YRS.	SOME COLLEGE 13-15 YRS.			
DMS/BM	9	3	NO.	0	5	1	3	0	0	3	6	1	2	6	0		NONE	NSMW MINESWEEPING B M
			%	0	55.6	11.1	33.3	0	0	33.3	66.7	11.1	22.2	66.7	0	NO.	4	3
																%	44.4	33.3
MSB/BM	74	24	NO.	0	29	7	38	32	27	6	9	10	35	26	3		NONE	NSMW B M SCHOOL CLASS A
			%	0	39.2	9.5	51.3	43.2	36.5	8.1	12.2	13.5	47.3	35.1	4.1	NO.	42	13
																%	56.8	17.6
AM/BM	119	32	NO.	5	50	20	44	24	31	40	24	28	59	32	0		NONE	NSMW B M SCHOOL
			%	4.2	42	16.8	37	20.1	26.1	33.6	20.2	23.5	49.6	26.9	0	NO.	47	46
																%	39.5	38.7
AMS/BM	181	52	NO.	14	87	21	59	46	63	26	46	35	60	78	8		NONE	NSMW B M SCHOOL
			%	7.7	48.1	11.6	32.6	25.4	34.8	14.4	25.4	19.3	33.2	43.1	4.4	NO.	97	40
																%	53.6	22.1
AM/EM	25	9	NO.	1	9	9	6	6	5	5	9	0	13	12	0		NSMW E M SCHOOL CLASS A	NSMW E M SCHOOL CLASS C
			%	4	36	36	24	24	20	20	36	0	52	48	0	NO.	17	11
																%	68	44
AMS/EM	69	20	NO.	5	33	11	20	14	17	14	24	3	28	38	0		NONE	NSMW B M SCHOOL
			%	7.2	47.8	16	29	20.3	24.6	20.3	34.8	4.3	40.6	55.1	0	NO.	8	6
																%.	11.6	8.7
MSB/EM	14	5	NO.	0	13	0	1	2	0	12	0	0	9	5	0		NONE	E M SCHOOL CLASS A GREAT LAKES
			%	0	92.9	0	7.1	14.2	0	85.8	0	0	64.3	35.7	0	NO.	9	5
																%	64.3	35.7
MINEMEN	513	168	NO.	25	330	74	84	166	154	89	104	27	122	320	44		NONE	NSMW CLASS A ELE. MINES
			%	4.9	64.3	14.4	16.4	32.4	30	17.3	20.3	5.3	23.8	62.4	8.5	NO.	38	399
																%	7.4	77.8
M. D. U. ENLISTED	41	17	NO.	0	0	0	41	4	16	12	9	0	11	30	0		E O D SCHOOL	SPEC. WEAP. DIS. SCHOOL
			%	0	0	0	100	9.8	39	29.3	21.9	0	26.8	73.2	0	NO.	39	12
																%	95	29.3

ANALYSIS, ENLISTED BILLETS 2

NAVY SCHOOLS ATTENDED				PRIMARY ENJC							PAY GRADE & RATING							
NE	NSMW MINESWEEPING B M	FLT. TRA. CEN. FIREFIGHTING SAN DIEGO		0102	0109	0032	-	—	-	—	CPO	PO1	PO2	PO3	SN		BM	
4	3	4	-	4	3	2	-	-	-	-	-	3	-	4	2	-	9	-
4.4	33.3	44.4	-	45	33	22	-	-	-	-	-	33.3	-	44.5	22.2	-	100	-
NE	NSMW B M SCHOOL CLASS A	N S M W B M SCHOOL CLASS C	FLT. TRA. CEN. SAN DIEGO	0032	0102	0109	0172	0119	OTHER	-	CPO	PO1	PO 2	PO3	SN		BM	EM
2	13	4	7	17	18	14	14	4	7	-	3	13	8	25	25	-	73	1
6.8	17.6	5.4	9.6	23	24	19	19	5	10	-	4	17.6	10.8	33.8	33.8	-	98.7	1.3
NE	NSMW B M SCHOOL	—	—	0109	0032	0102	0101	0172	0009	OTHER	CPO	PO1	PO 2	PO3	SN	BM	EM	MN
7	46	—	-	28	21	21	7	6	5	31	12	9	17	19	62	114	3	2
9.5	38.7	—	-	23	18	18	6	5	4	26	10.1	7.6	14.3	16	52	95.8	2.6	1.6
NE	NSMW B M SCHOOL	N S M W B M SCHOOL	—	0032	0109	0102	0172	1009	0015	OTHER	CPO	PO1	PO 2	PO 3	SN	BM	MN	OTHER
7	40	19	—	37	37	28	19	5	4	51	4	32	33	26	86	150	23	8
6	22.1	10.5	-	20	20	16	11	3	2	28	2.2	17.7	18.2	14.4	47.5	82.9	12.7	4.4
M W SCHOOL SS A	NSMW E M SCHOOL CLASS C	——	——	4610-4619	4662	4630-4639	0100-0109	4689	OTHER	-	CPO	PO1	PO2	PO3	SN		BM	EM
7	11	—	-	6	4	4	2	4	5	-	4	1	4	13	3	-	2	23
8	44	--	-	24	16	16	8	16	20	-	16	4	16	52	12	-	8	92
NE	NSMW B M SCHOOL	N S M W E M SCHOOL	N S M W E M SCHOOL	4689	4662	4618	4637	0109	4664	OTHER	CPO	PO1	PO 2	PO 3	SN		BM	EM
9	6	46	32	13	16	11	5	4	3	17	-	11	13	29	16	-	8	61
.6	8.7	66.7	46.4	19	23	16	7	6	4	25	-	16	18.8	42	232	-	11.6	88.4
NE	E M SCHOOL CLASS A GREAT LAKES	N S M W E M SCHOOL CLASS C	FLT TRA. CEN. PRE COMM. MSB TRAINING	4662	4689	4653	1229	-	-	-	CPO	PO1	PO 2	PO 3	SN		EM	
9	5	1	1	2	8	3	1	-	-	-	-	1	-	4	9	-	14	-
4.3	35.7	7.1	7.1	14	58	21	7	-	-	-	-	7.1	-	28.6	64.3	-	100	-
NE	NSMW CLASS A ELE. MINES	NSMW CLASS B AVIATION MINES	NSMW CLASS C ADVANCED MINES	1225	1222-1225	6800-6809	0032	1202	1201	OTHER	CPO	PO1	PO 2	PO 3	SN	MN	AO	OTHER
8	399	57	46	367	56	27	15	13	11	24	31	53	44	191	194	467	28	18
7.4	77.8	11.1	9	72	11	5	3	2	2	5	6	10.3	8.6	37.3	37.8	91	5.5	3.5
D OOL	SPEC. WEAP. DIS. SCHOOL	—	—	0102	OTHER	0871	0102	6801	4600-4699	0700-0799	CPO	PO1	GM	AO	BM	EM	MN	TM
9	12	-	-	2	6	8	13	3	3	6	20	21	11	3	17	3	1	6
5	29.3	-	-	5	15	19	32	7	7	15	48.8	51.2	26.8	7.3	41.6	7.3	2.4	14.6

The first seven columns of Table IV present the same information for enlisted men that was presented in the first seven columns of Table III for officers. The only difference is that for enlisted men in addition to giving the number of personnel in each category, percentages are also given in certain columns. Percentages were given for enlisted men and not for officers because it was felt that for the relatively small number of officers interviewed, percentages would be misleading. The number of interviewees for any one billet varies for the same reasons as those stated in the discussion of Table III, i.e., the frequency of occurence and complexity of the billet and the availability of personnel in each billet determined the number of interviewees that it was necessary and possible to interview. An excellent example of this is the fact that 513 men, or nearly half of the entire sample, were interviewed for one billet - Minemen. The Mineman billet was so very complex and included such a large number of activities that it was necessary to interview a large number of men to cover completely all aspects of the billet.

Sample Analysis, Totals

Table V presents pertinent information concerning the total of all officers and enlisted men, and also presents a grand total, where appropriate, for all personnel

TABLE V SAMPLE

TOTALS	NO. OF INTERVIEWEES	NO. OF INTERVIEWS	TIME IN NAVY				TIME ON JOB				CIVILIAN SCH			
			12 MONTHS OR LESS	13-36 MONTHS	37-72 MONTHS	OVER 72 MONTHS	6 MONTHS OR LESS	7-12 MONTHS	13-18 MONTHS	OVER 18 MONTHS	NO H.S. 1-8 YRS	SOME H.S. 9-11 YRS.	H.S. GRAD. 12 YRS.	SOME COLLEGE
TOTAL OFFICERS	100	40	14	37	14	35	57	23	12	8	3	2	14	12
			14%	37%	14%	35%	57%	23%	12%	8%	3%	2%	14%	12%
TOTAL ENLISTED	1045	330	50	556	143	296	294	313	207	231	104	339	547	55
			5%	53%	14%	28%	28%	30%	20%	22%	10%	32%	53%	5%
GRAND TOTAL	1145	370	64	593	157	331	351	336	219	239	107	341	561	67
			5%	52%	14%	29%	31%	29%	19%	21%	9%	30%	49%	6%

1

LE ANALYSIS TOTALS

SCHOOL			NAVY OFFICERS	RESERVE OFFICERS	RANK (OFFICERS) / RATING AND PAY GRADE (ENLISTED)											
12 YRS.	SOME COLLEGE 13-15 YRS	COLLEGE GRAD. 16 YRS.														
4	12	69	47	53	WO		CWO		ENS.		LT. J. G.		LT.		COMDR.	
%	12%	69%	47%	53%	4		7		19		55		13		2	
					4%		7%		19%		55%		13 %		2 %	
47	55	0	-	-	CPO	PO1	PO	PO	SN	BM	EM	MN	AO	TM	GM	OTHER
%	5 %	0	-	-	74	144	119	311	397	373	105	493	31	6	11	26
					7%	14%	11%	30%	38%	36%	10%	47%	3%	1%	1%	2%
61	67	69	-	-												
3%	6%	6 %	-	-												

interviewed in all billets.

Graphs

Figures 13 through 19 on pages 112 through 118 present graphically the pertinent information reported in Tables I, III, IV, and V. Figure 13 shows time in Navy by billets for enlisted men. Figure 14 shows time on job for enlisted men. Figure 15 shows pay-grade by billet for enlisted men. Figure 16 shows the civilian school level by billets for enlisted men. Figure 17 shows the number of men interviewed at each base. Figure 18 shows the number of interviews held at each base. Figure 19 shows number of men interviewed and the number of interviews held by each team.

It is felt that this information in graphic form will more clearly show the trends in comparisons between billets which may not be easily noted on the tables. It will be seen that graphs on civilian school level, time in Navy, and time on job are presented only for enlisted men. Graphs for officers on these variables were omitted for the same reason that percentages were omitted on Table III, i.e., the number of officers interviewed was so small that it would be misleading to draw general conclusions from these figures. This should not be construed to mean that the sample of officers is inadequate. The primary purpose of this sample was to provide accurate billet descriptions. Therefore,

the officers were chosen primarily on the basis of their knowledge of a particular billet. Complete coverage of all billets was insured by the use of the Compilation Report (See page 64).

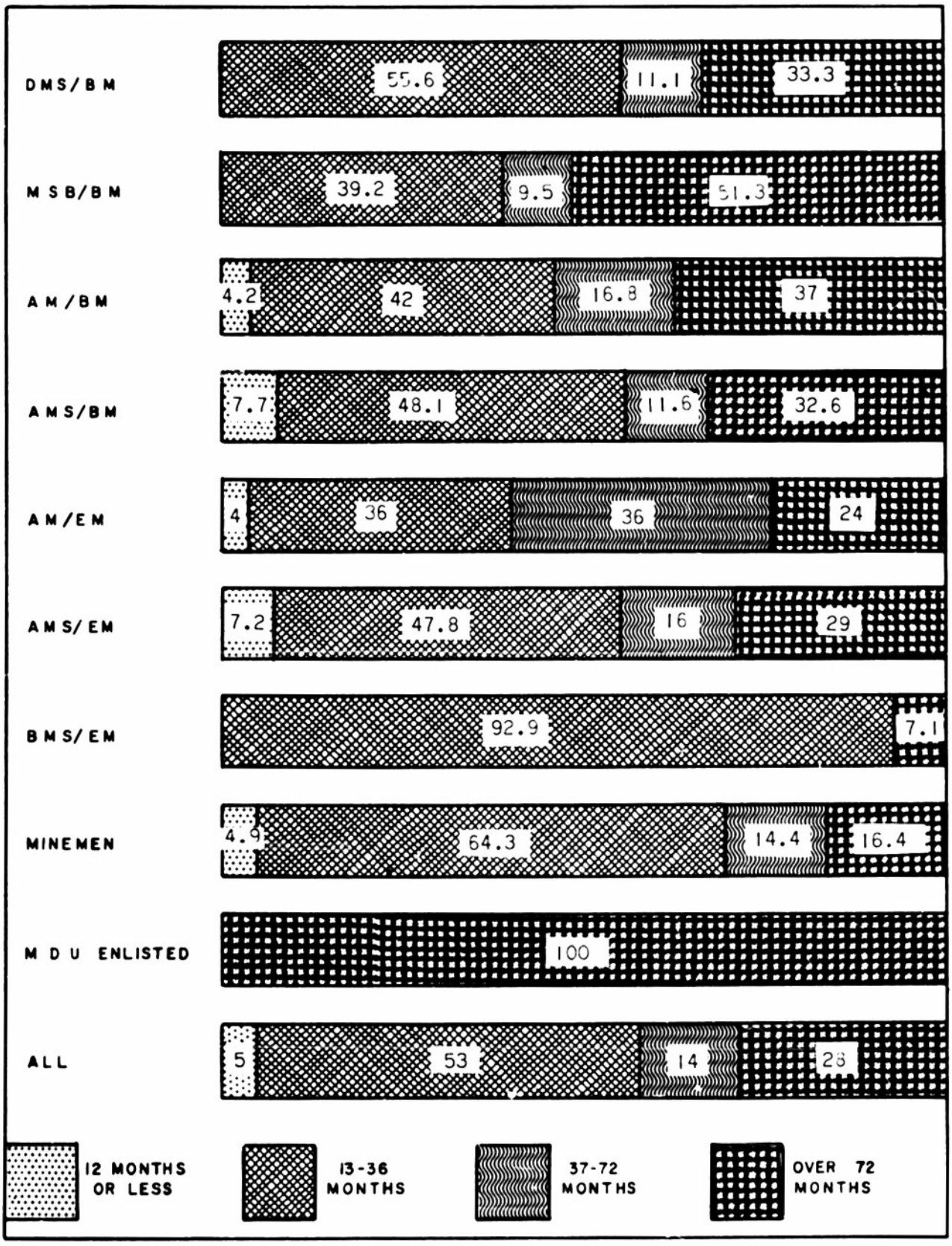


FIGURE 13 TIME IN NAVY BY BILLETS — ENLISTED
(BY PERCENT)

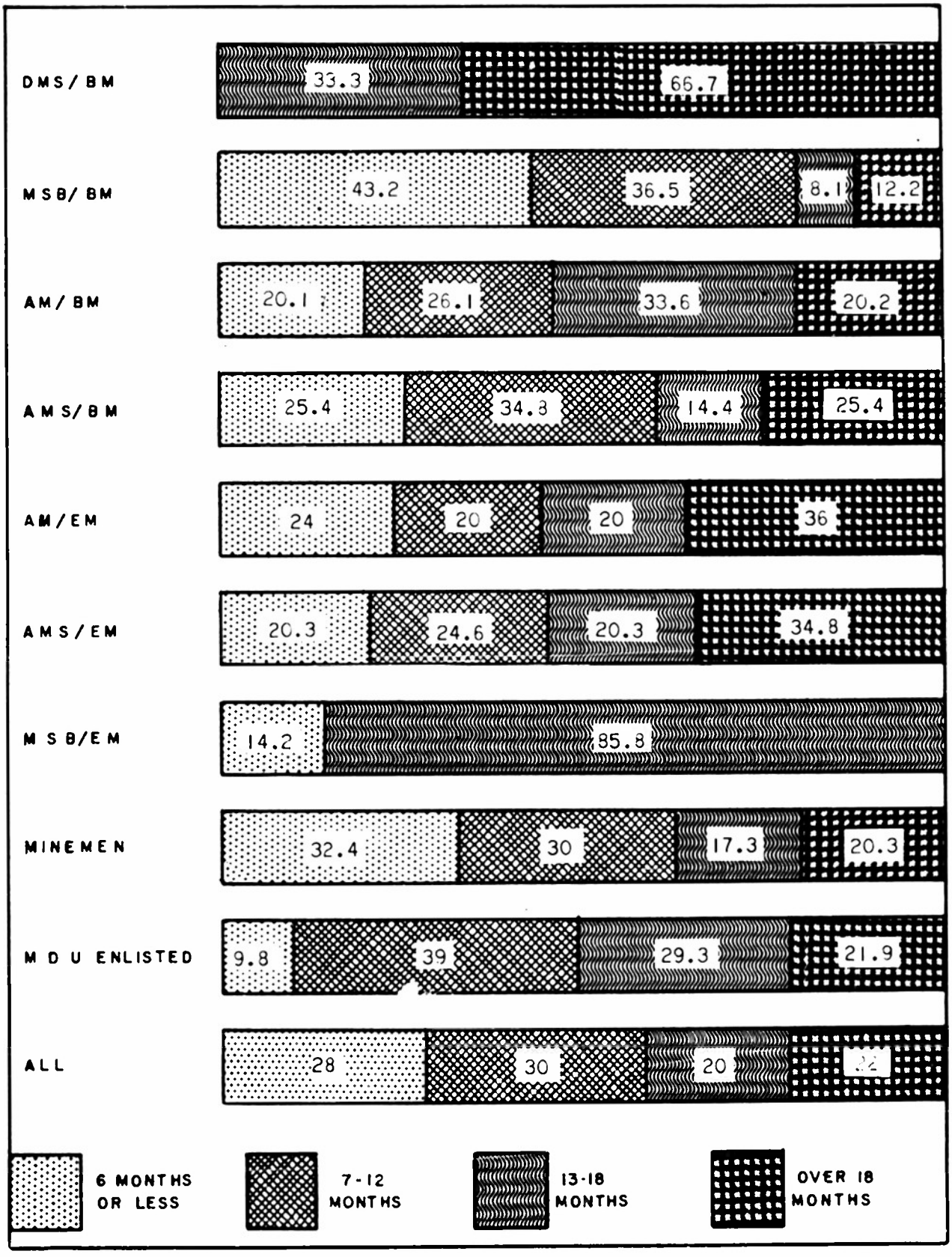


FIGURE 14 TIME ON JOB BY BILLETS, ENLISTED
(BY PERCENT)

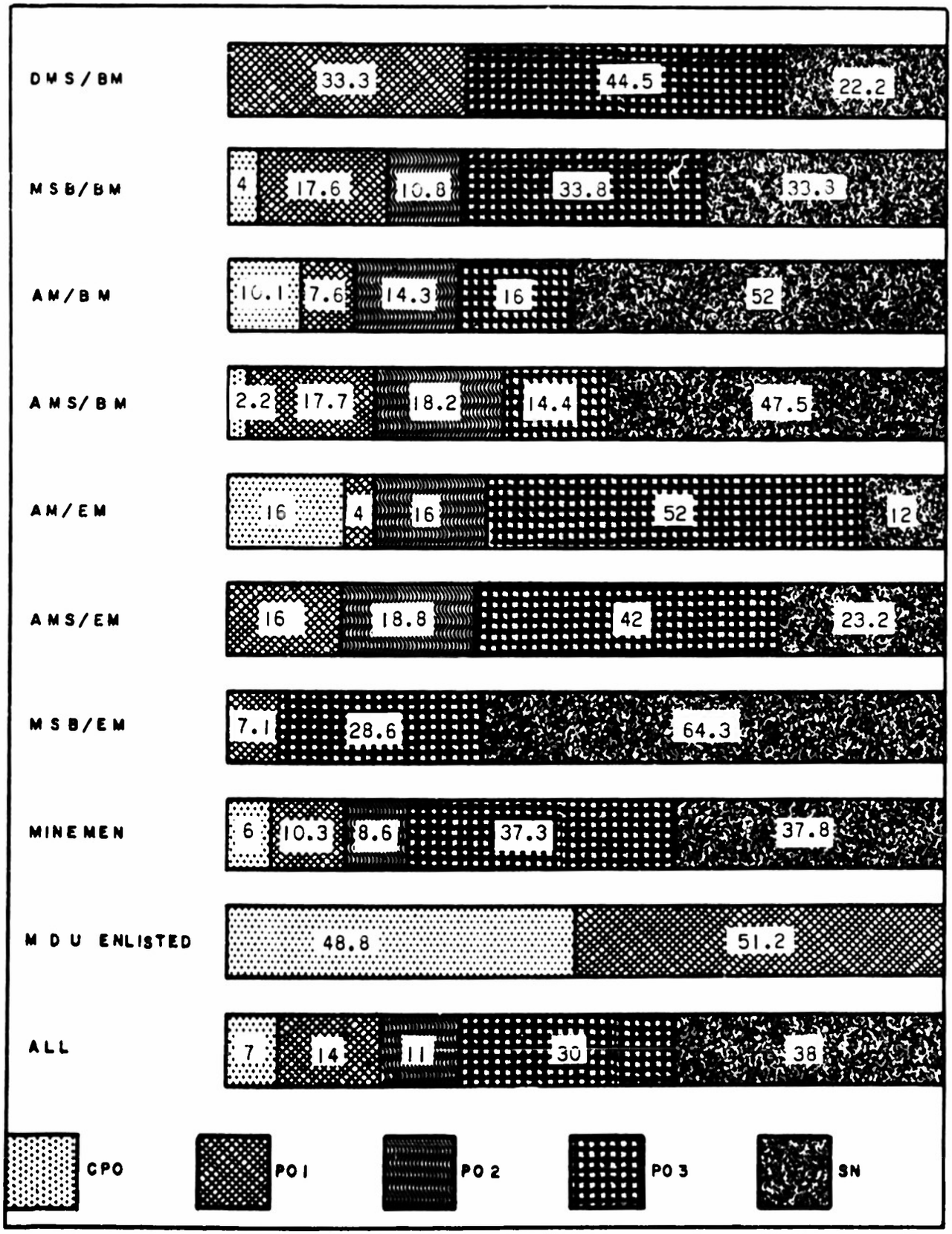


FIGURE 15 PAY GRADE BY BILLETS, ENLISTED
(BY PERCENT)

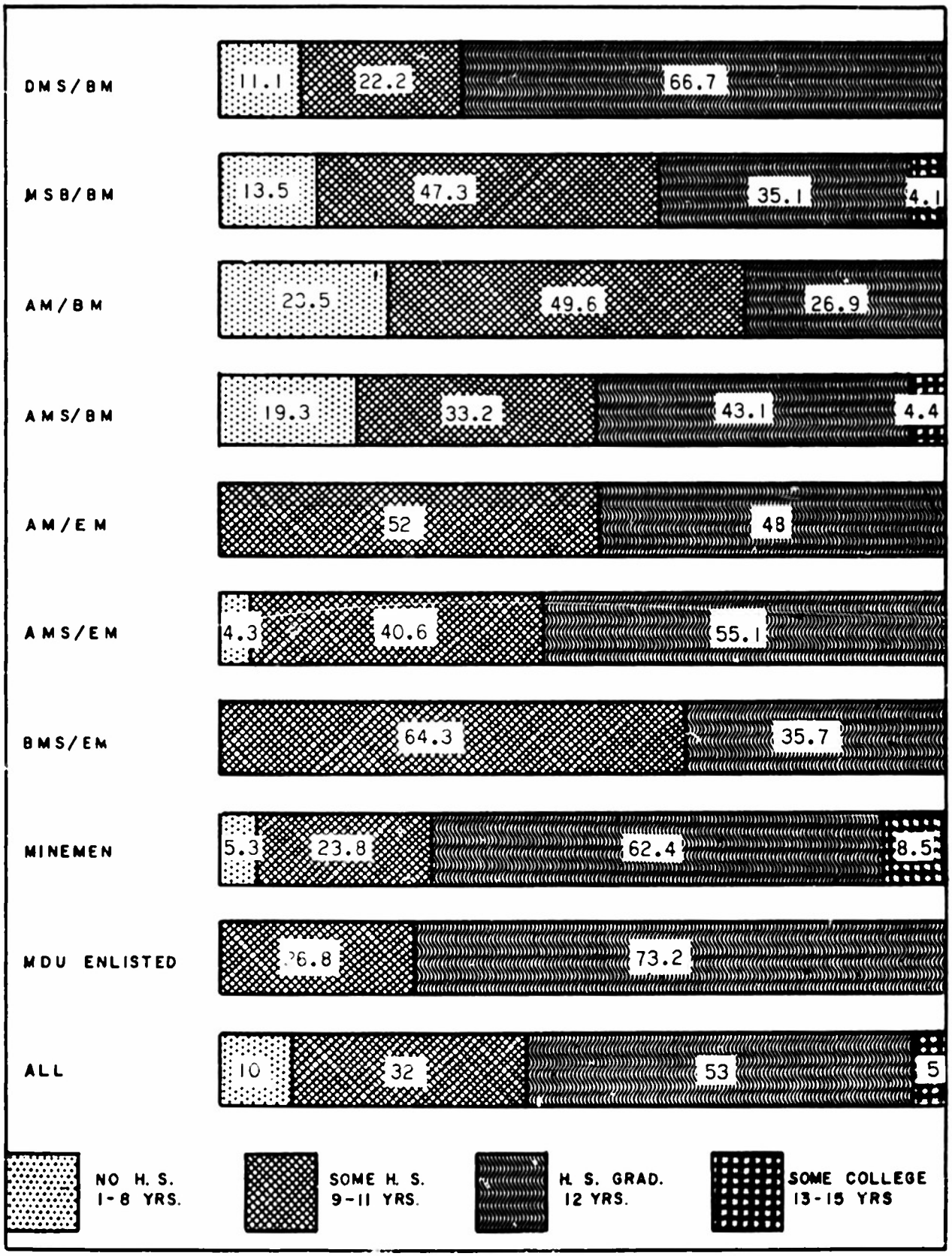


FIGURE 16 CIVILIAN SCHOOL LEVEL BY BILLETS - ENLISTED
(BY PERCENT)

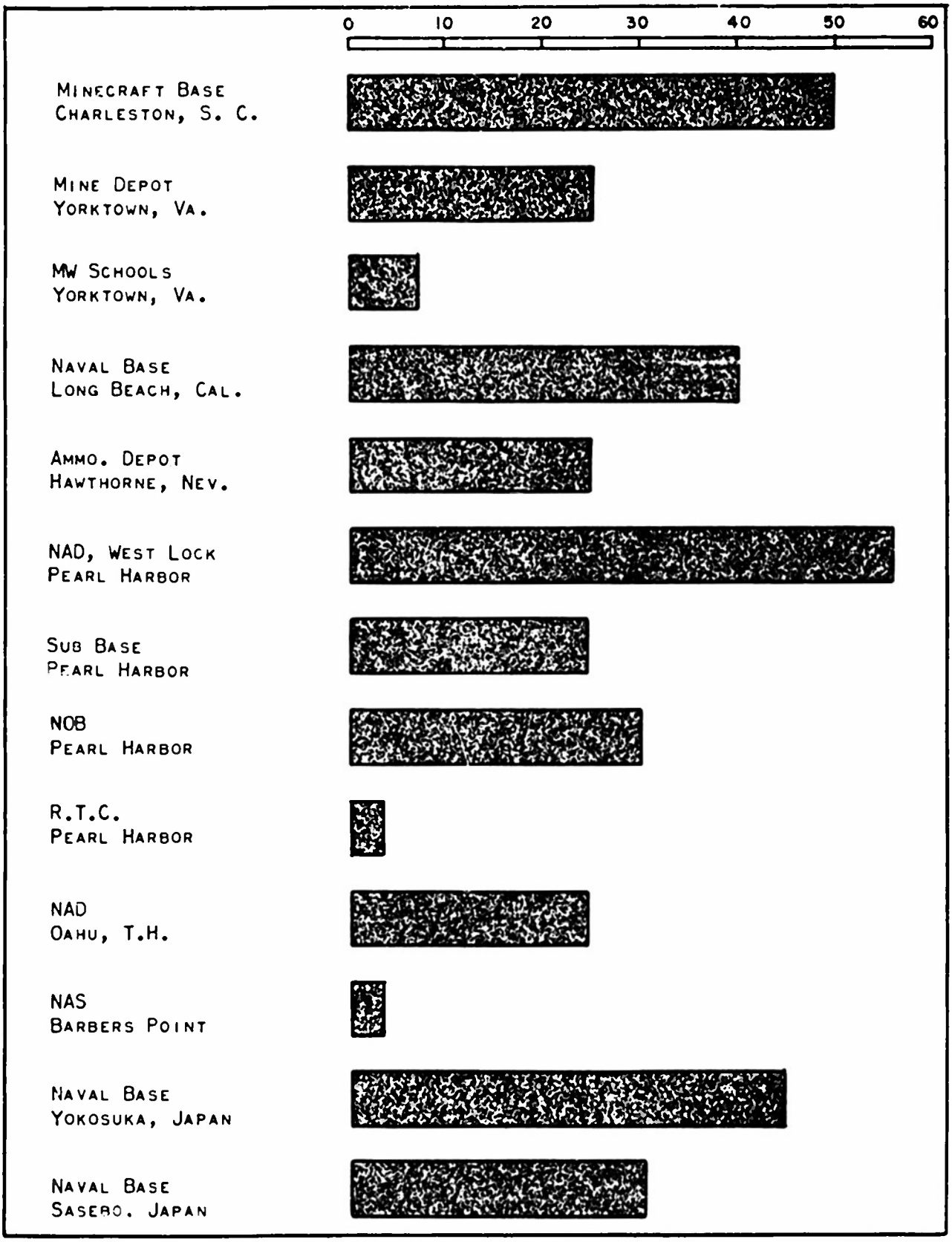


FIGURE 17. NUMBER OF INTERVIEWS - BY BASE

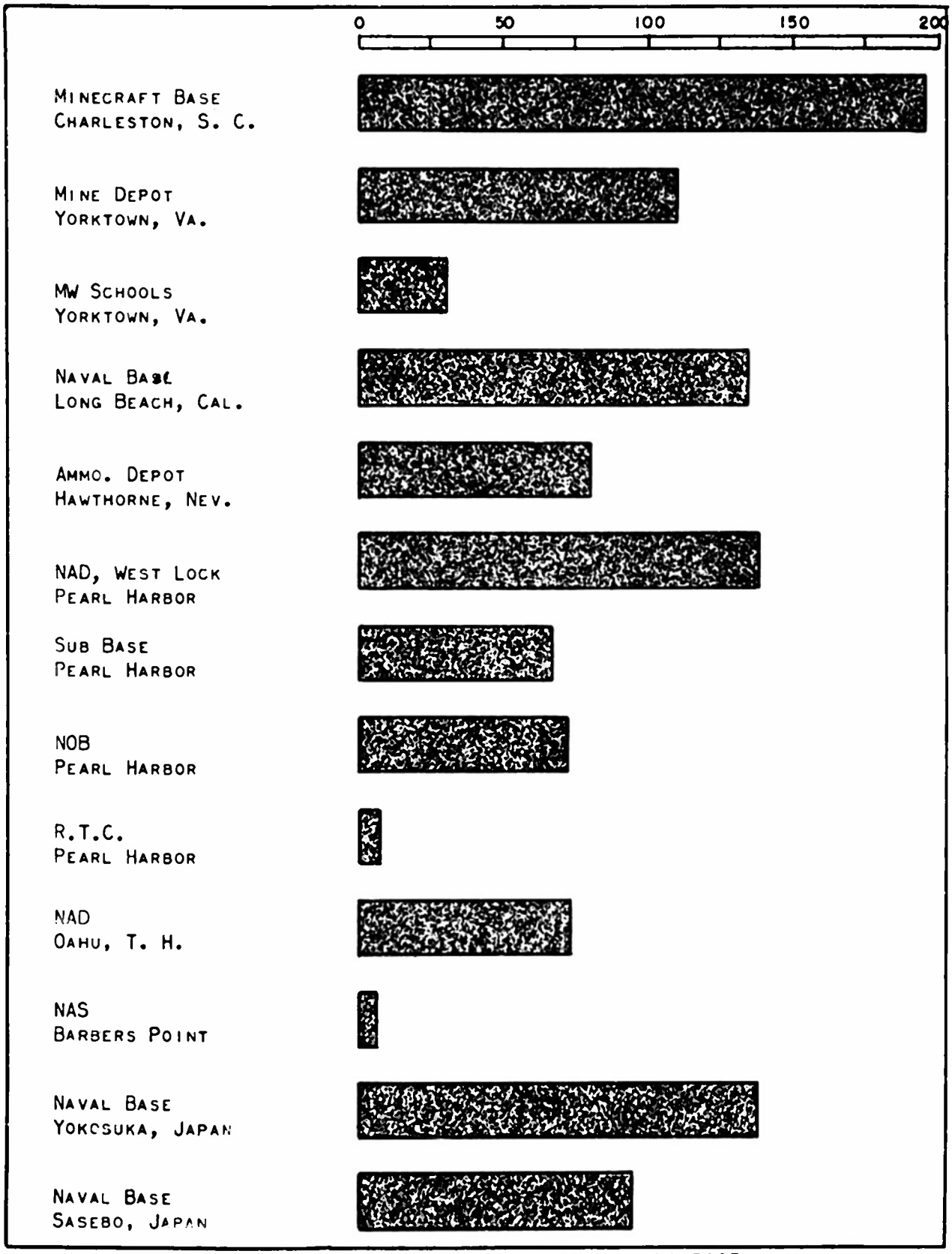


FIGURE 18 NUMBER OF INTERVIEWEES - BY BASE

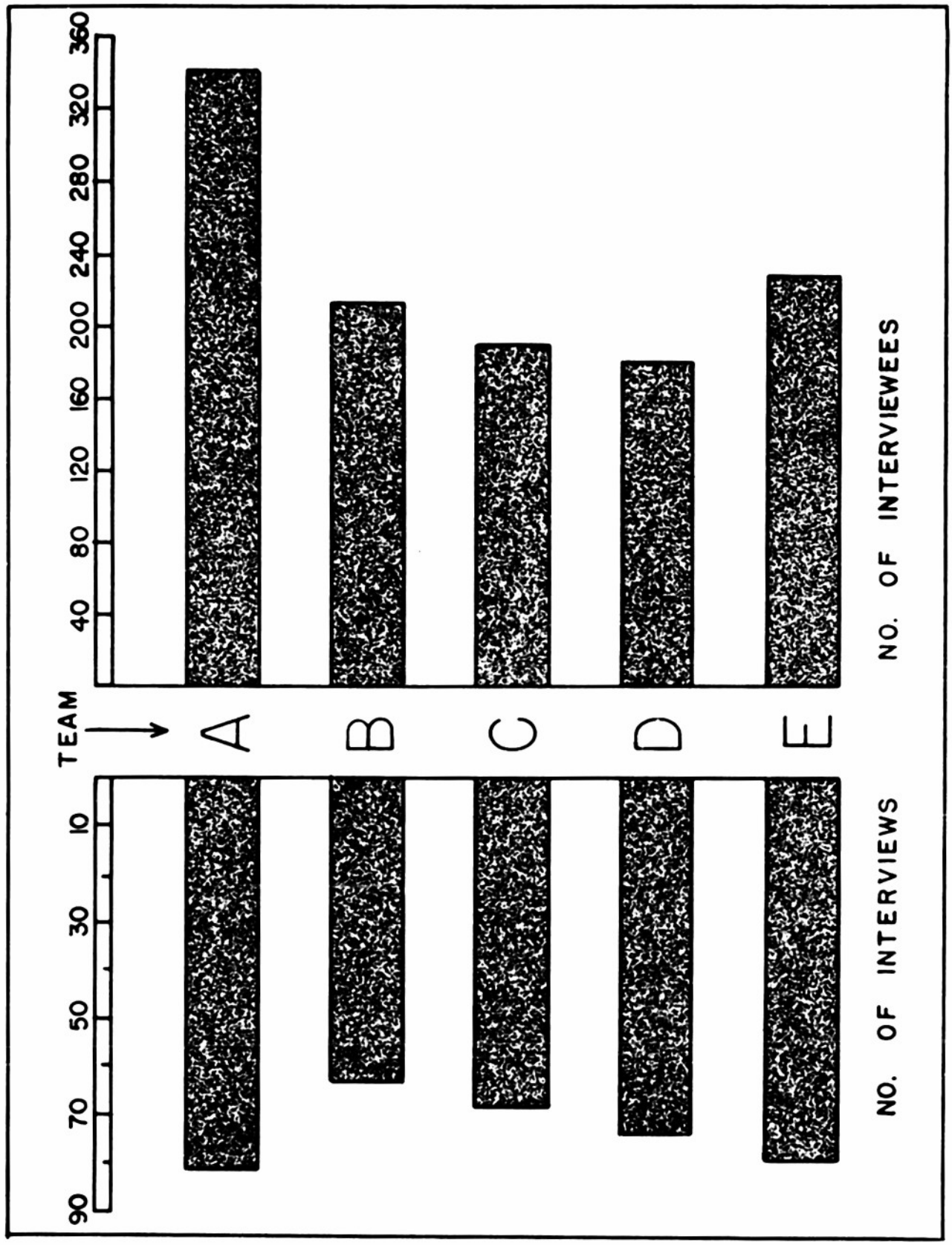


FIGURE 19. NUMBER OF INTERVIEWS AND INTERVIEWEES – BY TEAM

CHAPTER VII

ILLUSTRATIVE BILLET DESCRIPTIONS AND SPECIFICATIONS

Complete descriptions and specifications for two billets are presented in this chapter as an example of the first final product resulting from this project. This product attains the first object of this report (See page 1). The two billets selected as examples (AM/BM and AMS/EM) were chosen because they were considered representative of all billets and because they could be included in an unclassified report.

These illustrative descriptions and specifications will indicate by example the nature and scope of the information that will be presented in "Technical Report - Part II - Mine Warfare Billet Description and Specifications (Confidential)".

In addition, this chapter will include a list and explanation of billet titles, a complete list of activities for each billet, and a glossary of terms used in the specifications.

List and Explanation of Billet Titles

An explanation of the term billet, as used in this report, and a description of how billets were evolved is given in Chapter IV, pages 48 through 50. On the basis of interview analysis, Psychological Research Associates has evolved a

total of twenty billets within the area of mine warfare. In order to give an indication of the scope of the description and specification writing phase of this program, the list is presented in this chapter. Since many of the billets have inconveniently long titles, abbreviated billet titles have been used to identify the billets. Following is a list of all of the billets, together with an explanation of the billet for which each abbreviated title stands.

Billet Titles

I.	AM/BM	Boatswain's mate (BM) on a Mine Sweeper (AM)
II.	AM/EM	Electrician's mate (EM) on a Mine Sweeper (AM)
III.	AM/Executive Officer	Executive Officer on a Mine Sweeper (AM)
IV.	AM/Minesweeping Officer	Minesweeping Officer on a Mine Sweeper (AM)
V.	AMS/BM	Boatswain's mate on a Motor Mine Sweeper (AMS)
VI.	AMS/EM	Electrician's mate on a Motor Mine Sweeper (AMS)
VII.	AMS/Executive Officer	Executive Officer on a Motor Mine Sweeper
VIII.	AMS/Minesweeping Officer	Minesweeping Officer on a Motor Mine Sweeper
IX.	Aviation Squadron/ Mining Officer	Mining Officer of an Aviation Squadron
X.	DM/Mining Officer	Mining Officer on board a Light Mine Layer (DM)

XI.	DMS/BM	Boatswain's mate (BM) on a High Speed Mine Sweeper (DMS)
XII.	J 11-C/O in C	Officer in Charge of a J 11-c Unit
XIII.	MDU/Enlisted Man	Enlisted Man at a Mine Disposal Unit
XIV.	MDU/Officer	Officer at a Mine Disposal Unit
XV.	Mine Division Commander	Commander of a Mine Division
XVI.	Mine Force Type Commander Staff Officer	Mine Force Type Commander Staff Officer
XVII.	MSB/BM	Boatswain's mate on a Minesweeping Boat (MSB)
XVIII.	MSB/EM	Electrician's mate on a Minesweeping Boat (MSB)
XIX.	Nav. Ord. Fac./ Mining Officer	Mining Officer at a Naval Ordnance Factory
XX.	MN	All minemen (MN) performing Mining duties

List of Activities for Each Billet

The list of activities which is contained in the Compilation Report is presented on the following page. The list includes the activities for each billet as they were reported by the interviewing teams and integrated and compiled by the research staff. The list served as the basic tool from which the final list of activities was derived by the evaluations of subject matter experts and the Psychological Research Associates' staff. For each billet the list of activities was reorganized to make certain of proper sequence and meaning.

LIST OF ACTIVITIES FOR EACH BILLET

I. AM/BM

A. Prepares for acoustic sweep

B. Streams acoustic hammer

C. Recovers acoustic hammer

D. Inspects and maintains acoustic hammer

E. Prepares for jig sweep

F. Streams open jig sweep

G. Recovers open jig sweep

H. Prepares to stream "O" type gear

I. Streams "O" type gear

J. Recovers "O" type gear

K. Maintains "O" type gear

L. Prepares for magnetic sweep

M. Streams magnetic tail

N. Retrieves magnetic tail

O. Rigs and plants dan buoys

P. Recovers dan buoys

Q. Stands "O" type gear MS watch

II. AM/EM

A. Sets up MK IV or Warsaw controller

B. Sets up MK VI controller

C. Sets up main magnetic distribution board

D. Operates MK IV or Warsaw controller

E. Operates MK VI controller

F. Operates main magnetic distribution board

G. Operates winches

H. Hooks up magnetic gear

I. Hooks up acoustic hammer

J. Inspects and maintains acoustic hammer

K. Inspects and maintains magnetic gear

L. Inspects and maintains MK IV or Warsaw controller

M. Inspects and maintains MK VI controller

N. Inspects and maintains main magnetic distribution board

O. Sets up degaussing system

P. Inspects and maintains degaussing system

Q. Places generator and amplidyne on special power

R. Takes generator and amplidyne off main propulsion

S. Starts DC generator for excitation

III. AM/EXECUTIVE OFFICER

A. Navigates ship while minesweeping close to shore

IV. AM/MINESWEEPING OFFICER

A. Supervises preparation of acoustic gear

B. Supervises streaming of acoustic gear

C. Supervises recovery of acoustic gear

D. Supervises maintenance of acoustic gear

E. Supervises preparation of jig gear

F. Supervises streaming of jig gear

G. Supervises recovery of jig gear

H. Supervises preparation of "O" type gear

I. Supervises streaming of "O" type gear

J. Supervises recovery of "O" type gear

K. Supervises maintenance of "O" type gear

L. Supervises preparation of magnetic gear

M. Supervises streaming of magnetic gear

N. Supervises recovery of magnetic gear

O. Supervises maintenance of magnetic gear

P. Supervises rigging and planting dan buoys

Q. Supervises recovery of dan buoys

R. Supervises setting up and operation of controllers

V. AMS/BM

A. Prepares for acoustic sweep

B. Streams acoustic gear

C. Recovers acoustic gear

D. Maintains acoustic gear

E. Prepares for jig sweep

F. Streams jig sweep

G. Recovers jig sweep

H. Prepares for "O type" sweep

I. Streams "O type" gear

J. Recovers "O type" gear

K. Maintains "O type" gear

L. Prepares for magnetic sweep

M. Streams magnetic gear

N. Recovers magnetic gear

O. Maintains magnetic gear

P. Prepares to lay dan buoys

Q. Lays dan buoys

R. Recovers dan buoys

S. Maintains dan buoys

T. Lays and retrieves drill mines

U. Maintains MS gear and locker

V. Inventories MS gear and locker

VI. AMS/FM

A. Prepares for acoustic sweep

B. Hooks up acoustic hammer

C. Inspects and maintains acoustic controller

D. Inspects and maintains acoustic hammer

E. Prepares for magnetic sweep

F. Hooks up magnetic tail

G. Operates minesweeping winch

H. Inspects and maintains MK VI controller

I. Inspects and maintains sweep generator and exciters

J. Inspects and maintains magnetic tail

K. Inspects and maintains main magnetic distribution board

L. Operates degaussing system

M. Inspects and maintains degaussing system

VII. AMS/EXECUTIVE OFFICER

A. Stands OOD watches

B. Pilots using known land marks

C. Navigates using dead reckoning tracer; loran

VIII. AMS/MINESWEEPING OFFICER

A. Supervises preparation of acoustic gear

B. Supervises streaming of acoustic gear

C. Supervises retrieving of acoustic gear

D. Supervises maintenance of acoustic gear

E. Supervises preparation of jig gear

F. Supervises streaming of jig gear

G. Supervises retrieving of jig gear

H. Supervises preparation of "O" type gear

I. Supervises streaming of "O" type gear

J. Supervises recovery of "O" type gear

K. Supervises maintenance of "O" type gear

L. Supervises preparation of magnetic gear

M. Supervises streaming of magnetic gear

N. Supervises recovery of magnetic gear

O. Supervises maintenance of magnetic gear

P. Supervises setting up and operating MK IV controller and acoustic switch board

Q. Supervises setting up and operating MK VI timer and switch

R. Supervises preparation of dan buoys

S. Supervises laying of dan buoys

T. Supervises retrieving of dan buoys

U. Supervises maintenance of dan buoys

V. Supervises streaming of MS gear

IX. AVIATION SQUADRON/MINING OFFICER

A. Prepares annex to operation orders for aerial minings

B. Prepares and delivers lectures on mine warfare to squadron personnel

X. DM/MINING OFFICER

A. Supervises mine laying operation

XI. DMS/BM

A. Prepares S type C gear

B. Streams S type C gear

C. Recovers S type C gear

XII. J 11-C/O IN C

A. Supervises refresher training of aircraft carrier mine personnel

B. Supervises preparation of aerial drill mines for aerial mine laying exercise

C. Supervises inspection of drill mines recovered from mine plants

D. Observes operational readiness drills of carriers

XIII. MDU/ENLISTED MAN

A. Renders contact mine safe

B. Renders magnetic mine safe (MK 25)

C. Renders foreign mine safe (Russian contact mine)

D. Disposes of foreign mine

E. Renders torpedo safe

F. Renders bomb safe

G. Removes explosive from case and disposes of explosives

H. Recovers drill mines

I. Removes live mine from sweep gear of mine sweeper

J. Recovers MS gear lost due to enemy action

K. Participates in training programs

L. Experiments with effect of aqua lung on influence mines underwater

M. Assists in research of explosive damage effect against enemy wooden craft

N. Prepares explosive charge used in experimental research of underwater explosion on wooden craft

O. Maintains and upkeeps mine detector equipment

P. Assists in instruction of diving equipment

XIV. MDU/OFFICER

A. Plans and prepares operation and writes mine disposal annex to mine warfare operation exercise

XV. MINE DIVISION COMMANDER

A. Supervises sweeping missions

B. Conducts MS readiness inspections

XVI. MINE FORCE TYPE COMMANDER STAFF OFFICERS

A. Prepares defensive and offensive mine warfare plans (surface)

XVII. MSB/BM

A. Prepares 5G type gear

B. Streams 5G type gear

C. Recovers 5G type gear

D. Maintains 5G type gear

E. Streams magnetic gear

F. Recovers magnetic gear

G. Prepares to plant dan buoys

H. Lays dan buoys

I. Recovers dan buoys

J. Replaces lost "O" type gear

XVIII. MSB/EM

A. Sets up panel for magnetic sweep

B. Sets up degaussing system

C. Secures panel after magnetic sweep

D. Secures degaussing system

E. Operates and maintains degaussing system

XIX. NAV. ORD. FAC./MINING OFFICER

A. Supervises running of aircraft mine shop

XX. MN

A. Tests A3 firing mechanism

B. Tests A5 firing mechanism

C. Tests A6 firing mechanism

D. Tests A8 firing mechanism

E. Tests K4-1 firing mechanism

F. Tests M3 firing mechanism

G. Tests M5-0 firing mechanism

H. Tests M5-1 firing mechanism

I. Tests M6 firing mechanism

J. Tests M9-0 firing mechanism

K. Tests M9-1 firing mechanism

L. Tests M11 firing mechanism

M. Tests CD4 clock delay

N. Tests CD7 clock delay

O. Tests CD8 clock delay

P. Tests CD10 clock delay

Q. Tests CD12 clock delay

R. Tests CD14 clock delay

S. Makes CD timing test

T. Tests paper container battery

U. Tests metal container battery

V. Makes continuity test of cables

W. Makes pull test of cables

X. Tests circuit breaks

Y. Tests MK 13-0 control box

Z. Tests MK 13-1 control box

AA. Tests MK 15-0 control box

BB. Tests MK 3 sensitivity switch

CC. Tests MK 4 sensitivity switch

DD. Tests MK 5 sensitivity switch

EE. Tests HS2 hydrostatic switch

FF. Tests MI2 microphone

GG. Tests MI4 microphone

HH. Tests search coils

II. Tests sensitrol relays

JJ. Makes electical test of sterilizers

KK. Makes spring tension test of sterilizers

LL. Makes vacuum test of sterilizers

MM. Makes continuity test of thermal switch

NN. Makes gauge test of thermal switches

OO. Tests terminal boards

PP. Tests SE1 ship's eliminator

QQ. Tests SE2 ship's eliminator

RR. Tests SE3 ship's elininator

SS. Tests time delays

TT. Tests anti-countermining devises

UU. Tests MK 6-2 extender mechanism

VV. Tests MK 6-4 extender mechanism

WW. Tests MK 6 anchor

XX. Tests MK 6-14 anchor

YY. Tests MK 10-5 anchor

ZZ. Tests MK 12-1 float

BA. Makes vibration tests of components

BC. Tests hydrostats

BD. Makes balance test of mine case

BE. Makes gauge test of mine case

BF. Makes vacuum test of mine case

BG. Tests afterbodies

BH. Tests heads

BI. Tests battery section

BJ. Tests gyro unit

BK. Tests test sets

BL. Tests MK 3 pistol

BM. Tests MK 12 pistol

BN. Tests MK 1-1 detonator

BO. Tests clock starters

BP. Tests components of MK 36-2

BQ. Tests components of MK 25-2

BR. Tests components of MK 25-0

BS. Tests MK 6 mine

BT. Tests MK 6-1^{4} mine

BU. Tests MK 10-3 mine

BV. Tests MK 5 mine

BW. Tests MK 10-7 mine

BX. Tests MK 10-9 mine

BY. Tests MK 12-0 mine

BZ. Tests MK 12-3 mine

CA. Tests MK 13-6 mine

CB. Tests MK 25-3 mine

CD. Tests MK 25-0 mine

CE. Tests MK 39-0 mine

CF. Tests MK 25-1 mine

CG. Tests MK 36-2 mine

CH. Tests MK 25-2 mine

CI. Tests MK 36-3 mine

CJ. Tests MK 26-0 mine

CK. Tests MK 26-1 mine

CL. Tests MK 27 mine

CM. Tests MK 36-1 mine

CN. Overhauls MK 15 case

CO. Overhauls MK 6 anchor

CP. Overhauls MK 16 anchor

CQ. Overhauls MK 10-5 anchor

CR. Overhauls MK 12-0 depth charge pistol

CS. Overhauls MK 12-1 depth charge pistol

CT. Overhauls MK 6-2 extender mechanism

CU. Overhauls TB 19-0 terminal board

CV. Overhauls MK 15-0 control box

CW. Overhauls MK 13-0 control box

CX. Overhauls MK 13-1 control box

CY. Overhauls MK 3-0 sensitivity switch

CZ. Overhauls hydrostats

DA. Overhauls heads

DB. Overhauls battery section

DC. Overhauls propulsion battery

DE. Overhauls K4-1 firing mechanism

DF. Overhauls MC-0 firing mechanism

DG. Overhauls cables

DH. Conducts operational training for shop personnel

DI. Requalifies class B MN in aerial mines

DJ. Conducts loading drills on aerial mines

DK. Conducts shipboard instruction on assembly and test of MK 25 mine

DL. Constructs training aids (A-8 mechanism)

DM. Maintains MK 12-0 mine

DN. Maintains MK 6 mine case

DO. Maintains MK 16 mine case

DP. Maintains MK 10-1 mine case

DQ. Maintains MK 10-3 mine case

DR. Maintains MK 25-1 mine case

DS. Maintains MK 26-1 mine case

DT. Maintains MK 36-1 mine case

DU. Maintains MK 6 anchor

DV. Maintains mine tracks

DW. Maintains propulsion batteries

DX. Maintains mine batteries

DY. Maintains heads

DZ. Assembles or disassembles MK 6 mine

EA. Assembles or disassembles MK 6 experimental mine

EB. Assembles or disassembles MK 10-0 mine

EC. Assembles or disassembles MK 10-1 mine

ED. Assembles or disassembles MK 10-3 mine

EF. Assembles or disassembles MK 10-5 mine

EG. Assembles or disassembles MK 10-7 mine

EH. Assembles or disassembles MK 10-9 mine

EI. Assembles or disassembles MK 12-0 mine

EJ. Assembles or disassembles MK 12-3 mine

EK. Assembles or disassembles MK 13-5 mine

EL. Assembles or disassembles MK 13-6 mine

EM. Assembles or disassembles MK 25-3 mine

EN. Assembles or disassembles MK 16-1 mine

EO. Assembles or disassembles MK 25-2 mine

EP. Assembles or disassembles MK 25-0 mine

EQ. Assembles or disassembles MK 39-0 mine

ER. Assembles or disassembles MK 25-1 mine

ES. Assembles or disassembles MK 36-2 mine

ET. Assembles or disassembles MK 36-3 mine

EU. Assembles or disassembles MK 26-0 mine

EV. Assembles or disassembles MK 27-0 mine

EW. Assembles or disassembles MK 36-1 mine

EX. Assembles or disassembles inert mines after recovery

EY. Assembles or disassembles MK 6 anchor

EZ. Assembles or disassembles MK 10-5 anchor

FA. Assembles or disassembles battery section

FB. Assembles or disassembles afterbodies

FC. Marries MK 10 cases to anchors

FD. Assembles or disassembles heads

FE. Assembles or disassembles gyro units

FG. Assembles or disassembles floats (D-4)

FH. Winds antenna on float

FI. Winds plummet spool

FJ. Prepares to plant MK 6 mine

FK. Plants MK 6 mine

FL. Recovers MK 6 mine

FM. Sets up turntables

FN. Procures parts for mines

FO. Makes inventory of mine material and blueprints

FP. Modifies ordnance pamphlets

FQ. Operates mine handling gear

FR. Prepares and delivers drill mines for loading drills

FS. Supervises transporting mines to submarines

Descriptions and Specifications (AM/BM and AMS/EM)

Descriptions and specifications for two billets have been written and are included on the following pages in order to serve as models. The two billets, chosen as models because they are typical billets, are (a) Boatswain's mate on a Mine Sweeper (AM/BM), and (b) Electrician's mate on a Motor Mine Sweeper (AMS/EM).

The descriptions and specifications of these two billets are written at the activity level. In every case, a description of the activity is followed by a specification for the same activity.

Descriptions. The name of the billet is written at the top left hand corner of the description. The Roman numeral following the word "Billet" is the number assigned to this particular billet for identification purposes. The abbreviated billet title follows. An explanation of these titles has been included on pages 120-121.

The name of the activity is written at the top center of the page. The capital letter appearing after the word "Activity" is the identification letter of the activity and corresponds to the letter assigned to this activity as reported in the "List of Activities For Each Billet" above. The number of men required to perform this activity is given underneath the name of the activity and in parentheses.

The description is divided into tasks which are identified by Arabic numbers. The tasks are arranged sequentially as they are performed. The number in parentheses next to the task number indicates the number of men required in the performance of this task, if more than one man is involved. The first sentence of the task written in capital letters consists of the task flag statement. Following the task flag statement is the task description. A number in parentheses following a term in the text of the description indicates that this term has been defined at the end of the description under the heading, "Definition of Terms".

Specifications. The questions included in Section III of the "Manual to Accompany Billet Description and Specification Forms" (See Appendix B) were designed to elicit responses to be used as a basis for writing specifications. Most of the terms used in the specifications are responses given to questions asked in Section III cited above. Wherever the question contained categorized responses, these responses were defined in the Manual. In some cases, however, there were no categorized responses, and the interviewees responded in their own terms. A legend of the more unusual terms used throughout the specifications is included on the following pages. For an interpretation of the abbreviation of enlisted men's rates, please refer to the Enlisted Rate and Rating

Structure in Appendix E. The Roman numeral refers to the section of the specification where the term is used.

In order to obtain a complete picture of the meaning of the specification information, the reader is advised to read the two illustrations in conjunction with the "Mine Warfare Personnel Analysis Manual to Accompany Billet Description and Specification Forms" in Appendix B. There will be found a complete definition of all terms as given to the interviewees and as used in the specifications.

LEGEND OF SPECIFICATION TERMS

I. Rate and Pay-grade:

Striker - A non-rated enlisted man who is working for a petty officer's rating.

II. Education:

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.

III. Essential Knowledge and Skills:

Apprentice - The apprentice is still learning how to perform the activity. Generally, he is not thoroughly experienced but he doesn't need a great deal of experience. Furthermore, an apprentice doesn't require much education and needs only a little general Navy training. The apprentice is supervised closely, having all phases of his work checked carefully. The supervisor continually teaches the apprentice how to perform new tasks, and how to correct tasks that are being performed incorrectly. The apprentice may occasionally teach another apprentice how to do something, but he is not a supervisor.

Journeyman - The journeyman has learned to perform the activity well, because he has had considerable experience doing it. He requires a good deal of knowledge, but most

of his knowledge has been attained through experience and specialized Navy training, rather than through formal education. All of the work performed by the journeyman is closely supervised. The journeyman may supervise the work of an apprentice, but he is not to be considered a supervisor.

Close Supervisor - The close supervisor has a great deal of experience and is familiar with all the operations performed by the apprentices and journeymen. As a general rule, he doesn't participate in the work performed by his subordinates, but he modifies any operations being performed incorrectly. The close supervisor is in charge of many activities, all within a definite area. He is supervised by a director, who gives orders of a general nature. The director, however, leaves the details of the operation to the close supervisor.

Director - The director supervises many different phases of work. The director is interested only in insuring that the work is done properly and on schedule, and delegates the responsibility of details to his close supervisors. The director has had a great deal of Navy training and decides what each of his units should do, and when they should do it. The director

may lack the experience of his close supervisors, but he is able to plan work. Occasionally, the director checks with his superiors on some matters.

Simple Hand Tools - Screw driver, hammer, etc.

Portable Power Tools - Electric drill, sander, etc.

Hand Tools Requiring Accurate Readings - Micrometer calipers, slide rule, etc.

Stationary Machine Tools - Lathe, shaper, miller, etc.

Office Machines - Calculator, accounting machine, etc.

Electrical Gauges - Megger, voltmeter, etc.

Electronic Gauges - Oscilloscope, frequency generator,etc.

IV. Physical Requirements:

Light Work Only - Light work requiring little physical exertion..

May Do Moderate Work; Never Heavy Work - Physical effort required for frequent handling of light gear; occasionally works with average weight gear.

Only Occasional Heavy Work - Repetitive or sustained physical effort required for usual handling of light or average weight gear; occasionally works with heavy gear.

Considerable Heavy Work, But Not Steady - Considerable physical effort required for usual handling of average weight gear; frequently works with heavy gear.

Steady Heavy Work - Steady or repeated physical effort required to handle heavy gear; hard work with constant physical strain or some severe strain.

V. Supervision:

Close Supervision - The supervisor must be present at all times when this activity is being done, either because the men doing the tasks themselves lack experience or because close supervision is needed to make on the spot decisions. The activity may be a very delicate operation requiring a very careful check. The supervisor tells the men how to do the activity when they are doing something wrong and how to do it right.

General Supervision - The supervisor may not always have to be present when the activity is being done. He makes frequent checks however. The men doing the activity have considerable training and experience and the activity does not require that the supervisor be present at all times to check the work and make decisions.

Safety Supervision or Observation - The supervisor is present while the activity is being done to insure that the prescribed safety precautions are being followed. He may or may not have to know how to do the activity. He acts as an over-all observer from the

safety viewpoint. He can stop the entire operation or any part of the operation when there is any danger to equipment and/or personnel.

Direction - The supervisor is rarely present when the activity is being done. He tells the men what should be done and then may check to see that it is done. The activity does not require that the supervisor be present. The men are fully trained and experienced to do the activity themselves. No major decisions as how to do the activity are required.

None - There is no supervisor present. No supervisor is needed for this activity. No decisions requiring a supervisor are made. The men doing the activity are fully trained and experienced so that the activity is routine.

VI. Dangers - Effect of Error:

No Loss; Immediately Corrected - Little or no chance of causing poor work or loss of gear due to doing a poor job or making a mistake; little or no chance to make an error in this activity.

Some Loss; Easily Corrected - Small losses in gear might occur; poor work usually caught quickly by other men before damage is great; mistakes discovered when the task is done; up to one man-hour might be

required to correct the mistake.

Considerable Loss; Very Difficult to Correct - Considerable care on the part of the man is necessary to avoid losses of gear; gear requires careful setting and attention from the man doing activity; mistakes are hard to correct; error in judgment would cause considerable confusion in doing the activity.

Very Serious Loss; Endangers Lives - Precision work on expensive gear that needs exact setting and adjustment; mistake might cause considerable loss; error in judgment might result in serious loss in personnel and equipment.

Very Little Chance for Accidents; Accident Minor - Activity has almost no accident or health danger; man works regularly under desirable conditions.

Some Chance for Accidents; Minor Cuts, Bruises, etc. Activity has minor health danger; accidents besides minor injuries such as abrasions, cuts, and burns are not likely; man works regularly under poor conditions.

Frequent Chance for Accidents; Serious Cuts, Bruises, Strains - Man doing activity is exposed to accident and health dangers from which he loses time due to more serious cuts, bruises, and muscle strains, but

he is able to get back on the job; rare exposure to more serious dangers.

Some Chance for Permanent Disability - Man doing activity is frequently exposed to accident or health dangers that might cause him to be unable to work; chances for eye injury, loss of fingers, or serious burns; frequent minor accidents likely but more serious accidents are very rare.

Constant Chance for Permanent Disability - Man doing activity has considerable or continual exposure to accidents or conditions that might result in his not being able to work. Accidents happen frequently in spite of precautions.

Illustrations

Following are the two illustrations of Part II of the Technical Report.

DESCRIPTIONS AND SPECIFICATIONS FOR BOATSWAIN'S MATE ON A MINE SWEEPER



BM
BOATSWAIN'S MATE



AM Mine Sweeper

PSYCHOLOGICAL RESEARCH ASSOCIATES

Billet: I AM/BM

Activity: A. PREPARES FOR ACOUSTIC SWEEP
(7 men)

Description

1. (2 men) RECEIVES WORD TO SET ACOUSTIC MINESWEEP DETAIL. Receives word from bridge, via public address system to set minesweep detail; informs detail to report to stations and to don life jackets; connects and tests sound powered phone by calling other stations; reports to bridge that all stations are manned and ready.

2. (4 men) BREAKS OUT EQUIPMENT. Proceeds to minesweep locker and procures following equipment: snatch blocks, mousing wire, tow wire, marlin line, shackles, Klein grips with chains, marlin spike, and small hand tools; proceeds to forward stock and lifts two-fold purchase off hook; carries all equipment to area adjacent to acoustic hammer.

3. INSPECTS MARKINGS ON IN-HAUL AND TOW WIRE. Lays in-haul and tow wire on deck for inspection; checks to insure that markings are present at the 10 foot level and every 5 feet after that up to 30 feet (markings consist of one red stripe at 10 feet, two red stripes at 15 feet, three red stripes at 20 feet, etc.); repaints markings as needed; checks wires for breaks or loose strands and procures new wire from minesweep locker as needed.

4. (2 men) PREPARES TOW WIRE FOR STREAMING. Unlashes tow wire from fin of acoustic hammer when it is secured when not in use; shackles tow wire to pad eye on top of acoustic hammer; marries power cable to tow wire with marlin line at intervals of one to three feet; leaves slack between intervals so that power cable will not take strain when tow wire is engaged; leads end of tow wire through No. 1 chock on forecastle and outboard of all obstacles along the outside of ship; shackles both ends of Klein grip chain to link on Klein grip; places loop in chain over bitt nearest No. 2 chock; opens jaws of Klein grip and inserts tow wire; runs approximately 25 feet of tow wire through Klein grip jaw; closes jaws on Klein grip thereby securing tow wire; wraps tow wire around bitt on top of Klein grip chain as a secondary precaution against slippage.

Billet: I AM/BM

Activity: A.

5. (5 men) RIGS BOAT BOOM. Pulls toggle pin on brace holding boom; allows brace to drop down; pushes boom over boat deck by hand; secures hook of two-fold purchase to shackle on boom; mouses hook to shackle with marlin; attaches snatch block on end of boom with shackle; shackles preventer wire on boom in proper position; hooks bitter end of two-fold purchase to pad eye on bulkhead of deck house; secures hook of second two-fold purchase to second shackle on boom; hooks second two-fold purchase to pad eye on main deck; mouses-off both hooks with marlin.

6. (2 men) PREPARES ACOUSTIC HAMMER FOR STREAMING. Leads in-haul wire from deck through block on base of boom; leads in-haul wire up boom shaft through block on head of boom down to padeye on acoustic hammer; shackles eye splice of in-haul wire to pad eye on acoustic hammer; leads other end of in-haul wire through fairlead on main deck up to boat deck and through fairlead on boat deck to boat winch; checks boat winch to see that it is disengaged; takes four turns with in-haul wire around cathead on boat winch; loosens turnbuckle next to sister hooks on both life lines outboard of acoustic hammer; disconnects sister hooks from pad eye on life line stanchion and lays life lines aft along main deck; removes securing straps from acoustic hammer by unscrewing bolts holding securing straps to cradle.

7. (1 man) INSPECTS GEAR. Inspects and checks all running rigging, snatch blocks, fairleads, and Klein grips to insure that gear is hooked up properly.

Specifications

I. RATE AND PAY GRADE:

Current: BM Striker

Recommended: BM Striker

Possible GM, FN

Billet: I AM/BM

Activity: A.

II. EDUCATION:

Civilian:	At least eighth grade education.
Navy:	With proper experience boot camp training is sufficient.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level:	Journeyman
Manuals:	None
Check-off Lists:	None
Tools:	Must be able to use simple hand tools, portable power tools, hand tools requiring accurate readings and stationary machine tools.

IV. PHYSICAL REQUIREMENTS:

Talking:	Supervisor must be able to speak distinctly in order to give orders and phone talker must be able to speak clearly over sound powered telephone in order to give instructions to bridge.
Seeing:	Must be able to see well at night because gear is often prepared then.
Hearing:	Must be able to hear well over sound powered telephones in order to receive instructions from bridge.
Effort:	Mostly light and moderate work.

V. SUPERVISION:

Type:	Receives General Supervision.
By:	BMC

Billet: I AM/BM

Activity: A.

VI. DANGERS - EFFECT OF ERRORS:

Material Loss:	Possibility of some material loss due to errors. Loss of time or material may result from breaking out improper equipment, breaking out damaged equipment, losing control of boom when brace bar is removed, hooking the two-fold purchase on backwards, hooking putting blocks in wrong location, using too large shackles, having kinks in twist wire, taking turns on gypsy head incorrectly, failing to clear wire outboard of all obstructions, using incorrect chocks, shackling in incorrect position, failing to give sufficient slack near hammer, stripping threads on turn buckle, misinterpreting orders, shackling block to wrong pad eye, allowing blocks to freeze due to poor maintenance and fairleading incorrectly causing wire to foul with gear.
Personnel Injury:	Some chance for minor cuts and bruises. Falling off boom, dropping blocks, slack life lines not protecting man from falling overboard, dropping equipment on man passing gear up from locker, dropping shackle, shorts in winch causing men to be shocked, getting cut by burrs in wire, backlashing of parted wires, and dropping hammer, constitute hazards.
Safety Precautions:	Wearing gloves and life jackets, periodic checking of wires to keep them in best possible condition and staying clear of wires.

Billet I AM/BM

Activity B. STREAMS ACOUSTIC HAMMER
(10 men)

Description

1. (2 men) RECEIVES WORD FROM BRIDGE TO LAUNCH GEAR. Receives orders from bridge over sound powered phone to commence streaming acoustic hammer; relays message to BM in charge.

2 (2 men) HOISTS ACOUSTIC HAMMER FROM CRADLE. Tells winch operator on boat winch to heave around slowly on in-haul wire until acoustic hammer is clear of cradle by approximately six inches; steadies hammer as it is hoisted in order to prevent it from swinging; winch operator engages brake and disengages clutch in order to hold hammer above cradle.

3. (6 men) SWINGS ACOUSTIC HAMMER OVER SIDE. Unlashes both in-haul and out-haul guys from cleats on bulwark stanchion; slacks-off on in-haul guy line and heaves-in on out-haul guy line manually until preventer guy wire from head of boom is taut and hammer is at desired position over side of ship; leads after guy line through chock on deck and secures it to bitts on deck; takes slack from forward guy line and lashes it to cleat on deck.

4. (3 men) SECURES TOW WIRE. Pulls tow wire taut about capstan and turns capstan over to take in about ten feet of wire; secures tow wire to bitts with eight or ten turns and makes a clove hitch in order to hold hammer in proper position for lowering into water.

5. (6 men) LOWERS ACOUSTIC HAMMER INTO WATER. Winch operator puts clutch of winch in **OUT** position; holds whip wire taut as it is payed out slowly, allowing hammer to be lowered over the side; tells winch operator to stop winch as soon as hammer is under water.

6. (2 men) VEERS IN-HAUL WIRE UNTIL ACOUSTIC HAMMER IS AT DESIRED SWEEPING DEPTH. Surges in-haul wire around cathead on boat winch until hammer is at required

Billet: I AM/BM

Activity: B.

sweeping depth; stops surging in-haul wire and takes two extra turns around cathead.

7. (2 men) STOPS-OFF ALL GEAR ON DECK. Opens jaws of Klein grip, which is shackled to pad eye; inserts in-haul wire in Klein grip and closes jaws thereby securing wire; tells winch operator to slack-off on in-haul wire until Klein grip takes full strain of wire; leaves in-haul wire around cathead of winch as a precautionary measure against slippage.

8. (1 man) SECURES LIFE LINES. Closes sister hooks over pad eye on life line stanchion; tightens turn buckle between sister hooks and life line until life line is tight.

Specifications

I. RATE AND PAY GRADE:

Current: BM Striker, BM3, BM2, BM1, BMC

Recommended: BM Striker

Possible: GM, FC, EM

II. EDUCATION:

Civilian: At least eighth grade education.

Navy: Factory school training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manual: None

Check-off Lists: None

Billet: I AM/BM

Activity: B.

Tools: Must be able to use simple hand tools and portable tools.

IV. PHYSICAL REQUIREMENTS:

Seeing: No special requirements.

Hearing: Must be able to hear well over sound powered phones.

Talking: Must be able to speak clearly over sound powered phone.

Effort: Mostly light and moderate work; occasional heavy work.

V. SUPERVISION:

Type: Receives General Supervision

By: BMC

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Possibility of serious loss due to errors. Loss of time or material may result from wire being incorrectly placed on gypsy head preventing a proper grip on gypsy head and resulting in dropping hammer, rigging tackle incorrectly, man on either tackle letting go and allowing hammer to swing free, man holding hammer cable letting it go and dropping hammer, towing wire hooking on scupper, Klein grip in poor condition (teeth must not be worn or wire might slip through and drop hammer to bottom), and taking wire out of cathead before Klein grip is properly secured.

Billet: I AM/BM

Activity: B.

Personal Injury:	Some chance for serious injury and considerable chance for minor cuts and bruises. Wire parting causing hammer to fall, back lash of wires, forward guy parting allowing hammer to swing free, Klein grip slipping and bitter end hitting someone as it passes through blocks and parting snatch blocks, constitute hazards.
Safety Precautions:	Staying clear of hammer, haul wire, and equipment, wearing life jackets and gloves, and checking wires to see that they are in good condition.

Billet: I AM/BM

Activity: C. RECOVERS ACOUSTIC HAMMER
(6 men)

1. (1 man) RECEIVES WORD FROM BRIDGE TO RECOVER GEAR. Calls bridge over sound powered phones; reports all stations manned and ready; receives word, over sound powered phone, to commence recovery of gear.

2. (2 men) REELS-IN ON IN-HAUL WIRE TO RAISE ACOUSTIC HAMMER. Tells winch operator by hand signals to heave in on in-haul wire until strain of hammer is taken by winch; pushes jaws of Klein grip open and removes from in-haul wire; tells winch operator to heave around on in-haul wire until acoustic hammer is clear of water by three feet; keeps acoustic hammer at this position until all water is drained out; tells winch operator to heave around on in-haul wire until acoustic hammer is above main deck of ship; reports to bridge "hammer clear of water".

3. (2 men) SWINGS ACOUSTIC HAMMER BOOM INBOARD. Slacks-off on after guy line; heaves-in forward guy line until hammer is directly over cradle; tells man tending tow wire on anchor winch nigger-head to slack-off on tow wire allowing hammer to be swung inboard; lashes forward and after guy lines to cleats on boat deck and main deck respectively.

4. (2 men) SECURES ACOUSTIC HAMMER IN CRADLE. Tells winch operator by hand signals to pay out slowly on in-haul wire; guides hammer to cradle and positions it in cradle; throws two wire straps secured at one end over hammer; shackles other end of wire to pad eye on cradle; reports to bridge "hammer secured on deck".

5. (1 man) SECURES LIFE LINES. Picks up life lines from deck; leads life line outboard of acoustic hammer to life line stanchion; places sister hooks through pad eye on stanchion; tightens turn buckle with marlin spike to take slack from life line.

6. (2 men) SECURES IN-HAUL WIRE. Unshackles in-haul wire from lug on acoustic hammer; takes both guy lines from cleats; swings boom inboard manually until top of boom may be reached from boat deck; unshackles both guy lines and coils on deck; unshackles steadying wire from head of boom and pad eye on deck; coils steadying wire on deck; unshackles snatch block from head of boom; swings boom

Billet: I AM/BM

Activity: C.

to position directly over acoustic hammer by pushing on boom; bolts end of iron bar which is permanently secured to bulkhead to head of boom; coils in-haul wire on deck as winch operator pays-out on wire.

7. (2 men) SECURES "POWER" CABLE AND TOW WIRE. Removes tow wire from anchor windlass; leads tow wire aft to acoustic hammer; cuts marlin line holding "power" cable to tow wire; coils "power" cable and secures to acoustic hammer with marlin; unshackles tow wire from lug on acoustic hammer; coils tow wire on deck.

8. (2 men) SECURES ALL EQUIPMENT AND CARRIES TO MINESWEEP LOCKER. Unshackles "L" type snatch blocks from pad eyes; unshackles Klein grip from pad eye on main deck; carries Klein grips, snatch blocks, tow wire, in-haul wire, steadying line, guy lines, shackles, marlin spike, and hand tools to minesweep locker; places all gear in designated bins in minesweep locker.

9. (1 man) NOTIFIES BRIDGE ALL GEAR RECOVERED. Calls bridge over sound powered phones and reports all gear recovered and secured.

Specifications

I. RATE AND PAY GRADE:

Current:	BM Striker
Recommended:	BM Striker
Possible:	FC, GM, EM

II. EDUCATION:

Civilian:	Eighth grade education is helpful but it is possible to perform activity with only sixth grade education.
Navy:	Only boot camp training necessary.

Billet: I · AM/BM

Activity: C.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manuals: None

Check-off Lists: None

Tools: Must be able to use simple hand tools, stationary machine tools, and boat hooks.

IV. PHYSICAL REQUIREMENTS:

Seeing: No special requirements.

Hearing: Must hear well over sound powered phones in order to receive instructions from bridge.

Talking: Must be able to speak well over sound powered phones and clearly relay orders from bridge.

Effort: Mostly light and moderate work.

V. SUPERVISION:

Type: Receives Close Supervision

By: BM1, BMC

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Little chance of material loss due to errors during most of activity. During short phase of activity man on wire could drop hammer, if there is too much slack in wire, and cause considerable loss. Loss of time or material may also result from electrical lead being improperly connected, receiving incorrect instructions; laying one wire over another causing them to lock; tightening Klein grip instead of releasing

Billet: I AM/BM

Activity: C.

it causing lay-off-line to part; insufficient turns on drum; winch failing; hooking boat hook in eye of line thus pulling boat hook out of man's hands; allowing boom to swing by slacking off wire too much; over-lapping wire lays causing wire and winch to lock; failing to insert bolts; and failing to properly secure hammer.

Personal Injury: Some chance of serious injury and considerable chance of minor cuts and bruises. Catching hand between wires and niggerhead when taking slack out of wire; backlash of parted wire; catching hand in jaws of Klein grip, hammer swinging up on deck; falling overboard; losing grip on line and having free running line carry man into block on deck; and getting hand caught between boom and brace; constitute hazards.

Safety Precautions: Wearing life jackets, staying clear of inhaul wire and acoustic hammer; and someone holding man who is reaching for steadying lines to prevent him from going overboard.

Billet: I AM/BM

Activity: D. INSPECTS AND MAINTAINS ACOUSTIC HAMMER (4 men)

Description

1. (4 men, BM or EM) DISASSEMBLES ACOUSTIC HAMMER. Removes tail assembly screws with socket wrench; lifts tail assembly with jury rig of acoustic hammer boom; exposes hammer housing and diaphragm by pulling body assembly aft and diaphragm shell forward by hand; removes nuts from bolts holding diaphragm to water-tight compartment, using socket wrenches; pulls diaphragm from bolts on housing and lays on deck; pulls rubber gaskets from around diaphragm; opens water-tight housing by opening set screws with special wrench and swinging door outward; loosens, with special wrench, set screws holding motor and hammer assembly in place; slides motor and hammer assembly forward on tracks until it can be reached; disconnects ball and socket device holding motor shaft and hammer assembly together; unscrews wing-nut-bolt which loosens clamps in socket and allows ball on motor shaft to drop free; slides hammer assembly out through door of water-tight housing; places hammer assembly in vice; disassembles hammer assembly with a strap wrench; pulls socket and buffer spring out of hammer assembly.

2. (2 men, BM or EM) REPLACES NEW PARTS AS NEEDED. Checks buffer spring for wear or breakage; removes old grease and metal particles from buffer spring groove, and wipes area clean with cloth; greases groove of buffer spring and socket shaft with heavy duty mineral grease; replaces buffer spring and socket in hammer assembly; screws hammer assembly back together with strap wrench.

3. (2 men, BM or EM) SECURES MOTOR AND HAMMER ASSEMBLY IN WATER-TIGHT HOUSING. Wipes old grease from hammer assembly with rag; greases hammer assembly with heavy duty mineral oil; slides hammer assembly through door of water-tight housing after EM's have checked and replaced motor; connects ball and socket device; slides motor and hammer assembly back into housing; bolts metal test bar on front of water-tight housing; moves hammer to its most forward position until it is just touching the test bar; measures one-quarter of an inch back of test bar with a

Billet: I AM BM

Activity: D.

...oker and pushes motor and hammer assembly back to measured position so that hammer will not hit housing door when in operation; secures motor and hammer assembly in place by tightening set screws with special wrench; greases all fittings inside water-tight housing with small grease gun.

4. (2 men, BM or EM) SECURES DIAPHRAGM IN POSITION. Puts new gaskets around position where diaphragm is secured to water-tight housing; inspects diaphragm for wear or damage and renews if necessary; paints each bolt with white lead to insure no water leakage around studs; places diaphragm over bolts and tightens nuts over bolts so as to secure diaphragm in place; tightens second set of nuts over bolts to lock first set; closes water-tight housing door and tightens set screws in place with special wrench so as to make housing completely water-tight.

5. (2 men,) INSPECTS FOR DAMAGE AND PAINTS TAIL AND BODY ASSEMBLIES AS NEEDED. Checks tail and body assembly for rust pits and damage; removes old paint and rust with scrapers and electric wire brush; hammers all dents in tail and body assembly back in shape; paints tail and body with red lead as a rust preventive; re-paints tail and body with outside semi-gloss paints.

6. (4 men, BM or EM) REPLACES TAIL AND BODY ASSEMBLY. Picks-up tail assembly with jury rig of acoustic hammer boom; guides tail assembly in place over bolts protruding from end of water-tight housing; tightens nuts on bolts to secure tail in place; picks body and front assembly up by hand and places over bolts; tightens nuts over bolts.

Specifications

I. RATE AND PAY GRADE

Current: BM Striker, BM1

Recommended: BM1

Possible: BM, EM

Billet: I AM/BM

Activity: D.

II. EDUCATION:

Civilian: At least eighth grade education.

Navy: Factory school training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manuals: Must be able to use "Ships 9"

Check-Off Lists: None

Tools: Must be able to use simple hand tools and portable power tools.

IV. PHYSICAL REQUIREMENTS:

No special physical requirements. Occasional heavy work.

V. SUPERVISION:

Type: Receives General Supervision.

By: CWO

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Possibility of considerable loss due to errors. Loss of time or materials may result from not securing motor and hammer; and not securing diaphragm tightly, causing leakage.

Personal Injury: Some chance for minor cuts and bruises.

Safety Precautions: None

Billet: I AM/BM

Activity: E. PREPARES FOR JIG SWEEP
(4 men)

Description

1. (1 man) SETS MINESWEEPING DETAIL. Passes word over public address system "go to your stations all minesweeping detail".

2. (4 men) TAKES COVER OFF MINESWEEP WINCHES. Removes lacing from grommets on canvas in center of cover; climbs on top of winch: turns each half of canvas away from winch by hand: pulls each side of canvas to deck by hand; folds canvas by hand and places in minesweep gear locker.

3. (1 man) OPENS MINESWEEP GEAR HATCH. Pulls four dogs (1) open with dog wrench; lifts hatch by hand and lays hatch back flat on deck.

4. (4 men) BREAKS-OUT NECESSARY GEAR FOR JIG SWEEP. Goes in minesweep gear locker and passes following gear to men on deck; five interlocking shackles, sixty foot pendant (2) thirty foot float pendants, equalizing bridle, three foot manila pendant, bar stop, quarter roller block (3). Klein grip and chain; two twelve inch steel snatch blocks, two six inch wood snatch blocks; two five foot pendants (three-eighths inch wire). one position float (4), flag and flag staff, hammer, and pliers; places gear in proper position on deck.

5. (1 man) NOTIFIES ENGINEROOM THAT POWER IS NEEDED ON SWEEP-WINCH. Requests engineroom by sound powered phone to energize power to minesweep winch.

6. (2 men) ENGAGES ONE SWEEP DRUM. Pulls pin from engaging lever by lifting by hand; pushes engaging lever down by hand to engage winch drive shaft to drum; jockeys drive shaft using winch control lever in order to line up cogs of drum and drive shaft; pushes pin in engaging lever and winch frame in order to lock engaging lever in engaging position.

7. (2 men) ATTACHES SIXTY FOOT PENDANT TO SWEEPWIRE. Shackles fifth shackle of sixty foot pendant to eye in end of sweepwire; tightens shackle by turning with marlin spike.

Billet: I AM/BM

Activity: E.

8. (2 men) REELS PENDANT ON MINESWEEP WINCH. Cuts marlin holding sixty foot coiled pendant with knife; wraps pendant around winch drum; turns winch over slowly by pulling in on controller lever; holds pendant as it uncoils to insure that pendant reels properly on winch drum; reels in thirty feet of sixty foot pendant.

9. (2 men) SHACKLES SIXTY FOOT PENDANT TO BRIDLE OF OTTER. Leads bitter end of pendant through fairlead block on deck and through gallows block (5); unsnaps and removes lifeline by gallows block; wraps lifeline around lifeline stanchion; leads bitter end of pendant inboard to bridle of otter; shackles bridle to eye on sixty foot pendant.

10. (2 men) ATTACHES FLOAT PENDANT TO FLOAT AND OTTER. Shackles float pendant to float swivel on float tail; leads bitter end of float pendant outboard of all obstructions; shackles float pendant to swivel attached to otter bridle; tightens all shackles by turning with marlin spike.

11. (4 men) HANGS OTTER OVER STERN. Swings davit over otter by turning hand crank; slacks-out on lifting wire by turning lifting hand crank; pulls on lifting hook by hand as lifting wire is let out; hooks lifting hook to permanently attached shackle on otter; takes strain on lifting wire by turning hand crank; unscrews butterfly nuts on grips which hold otter in rack; removes grips by pulling down by hand; lifts otter by turning hand crank until otter is about eight inches off deck; swings davit over stern by turning hand crank; steadies otter by hand as it is swung over side; insures bridle of otter is facing inboard; lowers otter by turning hand crank until bridle is level with gallows block; insures that tripping line is always slack.

12. (2 men) TWO-BLOCKS OTTER TO GALLOWS BLOCK. Signals winch operator to heave in (slow speed); turns drum over by pulling on controller handle; watches pendant and bridle to insure there are no twists or kinks; takes-in on winch until bridle is two-blocked to gallows block.

13. (2 men) DISCONNECTS MINESWEEP WIRE DRUM. Sets brake taut by turning wheel type brake clockwise; pulls pin

Billet: I AM/BM

Activity: E.

out of engaging lever by hand; lifts engaging lever by hand to disengage winch drive shaft from drum; pushes pin in engaging lever to hold in disengaged position.

14. (2 men) PLACES FLAG STAFF ON FLOAT. Inserts flag staff in flag staff socket on float; lines-up hole in flag staff with hole in socket; inserts toggle pin on hole and secures to socket by taking turns around it with marlin.

15. (2 men) FAIRLEADS (6) LIFTING WIRE FOR FLOAT TO GYPSY HEAD. Shackles twelve inch steel snatch block to pad eye on deck; removes lifting line from cleat on davit; leads bitter end of lifting line through snatch block to gypsy head; pulls all slack out by hand; takes four turns with lifting line around gypsy head; insures that tripping hook (7) is attached to lifting tail and is facing outboard.

16. (2 men) RIGS PORTABLE ROLLER SADDLE (8). Lifts portable roller saddle from rack on side of sweep winch frame; carries rack to center of fantail; lifts brass plugs from countersunk sockets in decking by pulling up by hand; lays plug aside on deck; places two legs of saddle into sockets on deck.

17. (3 men) TAKES FLOATS OFF MAGNETIC REEL. Climbs on top of reel and throws floats on deck; drags seven floats back to stern roller chock; places remaining floats on deck out of the way.

18. (2 men) CONNECTS MAGNETIC WINCH. Pulls engaging lever which meshes cogs of drive shaft and reel; jockeys controller lever until cogs match.

19. (3 men) LEADS OUT LONG LEG ELECTRODE. Pays-out on winch slowly; leads electrode over minesweep wire winch and lays it in travelling saddle (9) on top of winch; grasps electrode and lays it in portable roller saddle; leads electrode through wooden roller chocks, clear of all gear, and back to side of deck.

20. (1 man) CONNECTS MANILA PENDANT (10) TO ELECTRODE. Shackles manila pendant to copper plate on bitter end of electrode; tightens shackle with marlin spike.

Billet: I AM/BM

Activity: E.

Definition of Terms

(1) Dog - "L" shaped metal fastener used to set hatch taut against knife edge to insure watertight integrity.

(2) Sixty foot pendant - A five-eighths inch wire, made of high grade plow steel with a thimble eye splice on each end.

(3) Quarter roller block - A hinged square block used to hold electrode to sweepwire.

(4) Position float - A wooden, sled-type float, which indicates where the end of the tail is, and is used for station keeping.

(5) Gallows block - A permanent block on a swivel, used to fairlead sweepwire clear of fantail.

(6) Fairlead - To run line around or over an obstruction so as to allow free running.

(7) Tripping hook - A hook with a pad eye on the back. A tripping line is shackled to pad eye which allows quick removal of hook from object being lifted.

(8) Portable roller saddle - Same as travelling saddle except that it is stationary and is located in the middle of the fantail, aft of the minesweep wire winch. Used to fair lead magnetic tail clear of deck between travelling saddle and stern roller chock.

(9) Travelling saddle - Consists of two horizontal rollers and two vertical rollers which sit on a track and are secured by a chain. It is used to fairlead magnetic tail over "O" type winch.

(10) Manila pendant - A three foot manila line with thimble eyes on each end. A quarter roller block is attached to one end, and the pendant serves as a connection and insulation between sweepwire and electrode.

Billet: I AM/BM

Activity: E.

Specifications

I. RATE AND PAY GRADE:

Current: RM Striker, BM3, BM2, BM1, BMC

Recommended: BM Striker, BM3

Possible: GM, DC, EN, EM or any rate with proper experience.

II. EDUCATION:

Civilian: Eighth grade education is helpful but it is possible to perform activity with only sixth grade education.

Navy: Class C school training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manuals: None

Check-off Lists: None

Tools: Must be able to use simple hand tools.

IV. PHYSICAL REQUIREMENTS:

Seeing: No special requirements.

Hearing: Must be able to hear well over sound powered telephones.

Talking: Must be able to speak clearly over sound powered telephones.

Effort: Mostly light and moderate work. Short phase of activity consisting of hanging otter over side is heavy work.

Billet: I AM/BM

Activity: E.

V. SUPERVISION:

Type: Receives Close and General Supervision mainly; short phase of activity performed with only Direction.

By: BMC

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Possibility of substantial loss due to errors. Loss of time or material may result from losing power on public address system; wording requests incorrectly; using excessive speeds in engaging winch; failing to insert locking pin; twisting shackles; failing to tighten shackles; using incorrect shackles; fairleading pendant to bridle incorrectly; shackling to wrong place; failing to lead pendant outboard of all obstructions, failing to keep slack in tripping line; fouling of bridle legs, using excessive speed on winch; wire parting, failing to properly insert pin in snatch block; failing to keep strain when leading out long leg.

Personal Injury: Some possibility of serious injury and considerable chance of minor cuts and bruises. Falling off winch; dropping gear on man passing gear; engaging lever snapping back and hitting operator if excessive speed is used; ripping handwire if winch is run too fast; swinging of otter, backlash of parted wire; failing to set brake causing wire to run out; and dropping saddle on feet, constitute hazards.

Safety Precautions: Making sure all shackles are tightened with marlin spike; using piece on manila to lift heavy gear out of locker; using correct winch speed, using locking pin, man on wires wearing gloves, holding on to life line when passing pendant outboard of stern, men swinging otter over

Billet: I AM/BM

Activity: E.

stern wearing life jackets, using locking device on hand winch; all hands standing clear of winch except operator and man who is signaling; using slow speed on winch and standing clear of magnetic reel and wires.

Billet: I AM/BM

Activity. F. STREAMS OPEN JIG SWEEP
(Min. of 6 men - usually 12 men)

Description

1. (2men) RECEIVES WORD TO STREAM GEAR. Phone talker receives word to begin streaming gear; relays word to man-in-charge on fan tail; man-in-charge tells men to lower-away gear.

2. (2 men) REQUESTS BRIDGE TO STOP SCREW. Man-in-charge tells phone talker to stop screw on side gear is to be streamed and to reduce other screw to 77 RPM; phone talker requests bridge to stop screw (in some operations, screws are not stopped, instead the speed of the ship is reduced to 5 knots).

3 (3 men) DROPS FLOAT OVER SIDE. Lashes tripping line to cleat on davit holding float over water; pulls line from lock on quick-releasing hook to open hook and drop float, which is suspended from davit, into water.

4. (3 men) CASTS-OFF FLOAT. Takes turn on cleat with tripping line; lowers float by turning gypsy head over, which takes strain off tripping line and in turn pulls hook out of float, in order to launch float; man holding gypsy head line taut slacks off lifting line as gypsy head is turned over; allows float to drift aft; casts-off retrieving line; man handling lifting wire on gypsy head moves over to winch brake for sweep drum as soon as float is tripped.

5. (1 man) LOWERS OTTER INTO WATER. Turns hand crank of davit to lower otter to water's surface; takes turn on cleat of davit with tripping line (the weight of lowered otter plus the secured tripping line pulls the cat hook out of the otter, which drops otter into water).

6. (1 man) PAYS-OUT ON JIG SWEEP PENDANT. Man on sweep-wire-drum-brake slacks-off hand wheel brake (strain of otter turns over sweep drum); runs-out jig sweep pendant 10 feet; stops drum when the end of jig sweep pendant is outboard of gallows block.

7. (1 man) PUTS BAR STOP ON. Shackles bar stop between end of 60 foot otter pendant and eye in sweep wire (a 3 foot chain

Billet: I AM/EM

Activity: F.

is used between otter pendant and sweep wire); shackles bar stop at end of 3 foot chain to keep magnetic tail from riding down to otter when streamed; disengages sweep winch drum and sets brakes to about one half previous strength so that strain on motor caused by float, otter, and sweep wire will not be too great.

8. (3 men) PAYS-OUT ON SWEEP WIRE. Tells winch operator to pay out sweep wire; opens jaws of Klein grip, which is secured to deck, by pulling one side and pushing on the other; places open jaws of Klein grip over sweep wire, tells winch operator to slack off sweep wire, which will cause jaws of Klein grip to close so that Klein grip will take full strain of sweep wire.

9. (2 men) CONNECTS MANILA PENDANT TO "K" SECTION OF LONG LEG. Connects "K" section of long leg to quarter roller block.

10. (2 men) CONNECTS "K" SECTION OF TAIL TO SWEEP WIRE. Puts quarter roller block on sweep wire by opening block; closes block; secures block by placing pin in block to lock it shut; secures pin by using seizing wire. (Speed of ship is increased automatically on bridge when floats and otter are in water).

11. (6 to 12 men) PAYS-OUT SWEEP WIRE AND TAIL UNTIL "K" SECTION OF SHORT LEG IS REACHED. Man on magnetic reel turns over magnetic reel; all men available pull slack from tail as it is unreeled (tail is now going into water); man on sweep wire reel slacks-off on hand brake and allows sweep wire to pay out simultaneously; one man operates trolley by hand crank to keep trolley even with tail as it unreels.

12. (2 men) STOPS TAIL. Man on magnetic reel controller stops magnetic reel when 50 feet of "K" section of short leg is in water.

13. (2 men) STOPS SWEEP WIRE ON DECK. Man on hand brake of sweep wire drum turns hand brake to stop drum; attaches Klein grip to sweep wire; slacks-off on sweep wire drum

Billet: I AM/BM

Activity: F.

to allow Klein grip to take strain off sweep wire.

14. (5 men) ATTACHES AFTER MAST FLOAT TO "K" SECTION OF SHORT LEG. Ties belly strap to center of float using square knot; ties lines at end of float to tail using rolling hitch.

15. (1 man) ATTACHES POSITION BUOY. Leads towing line of position buoy outboard of all gear and back through stern roller chocks; ties position buoy to tail using rolling hitch; drops position buoy in water.

16. (4 men) ATTACHES FIVE MORE FLOATS TO "K" SECTION OF SHORT LEG. Ties two more floats to tail; ties belly strap to center of float using square knot; ties lines at end of float to tail using rolling hitch; pays-out slowly on tail while attaching remaining three floats (may stop for each float or allow tail to reel out slowly while attaching floats); turns reel over by operating reel controller.

17. (1 man) PAYS-OUT REMAINDER OF TAIL. Turns magnetic reel over by operating controller; pays-out magnetic tail until towing stockings are just inboard of stern roller; stops magnetic reel by operating controller of reel motor.

18. (2 men) PUTS-ON EQUALIZING BRIDLE. Brings bitter ends of bridle outboard of all gear and back through stern roller; shackles bridle to hard eyes on towing stocking

19. (1 man) PAYS-OUT SLOWLY APPROXIMATELY 10 FEET OF TAIL. Operates controller which turns over magnetic reel. (One ship has two men holding on bridle as tail is slowly let out).

20. (2 men) PLUGS " POWER " CABLE INTO CONNECTOR BOX. Picks up " power " cable by hand; carries "power" cable to connector box; holds "power" cable in place while electrician plugs in male leads to female connectors.

21. (2 men) REPORTS TO BRIDGE ALL GEAR IS STOPPED ON DECK. Man-in-charge tells phone talker to tell bridge all gear stopped on deck; phone talker relays word to bridge.

Billet: A AM/BM

Activity: F.

Specifications

I. RATE AND PAY GRADE:

Current: BM Striker

Recommended: BM Striker

Possible: GM or any rate with proper experience.

II. EDUCATION:

Civilian: High school education is helpful but it is possible to perform activity with only fourth grade education.

Navy: With proper experience activity can be performed with only boot camp training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Tools: Must be able to use simple hand tools, and portable power tools.

Manuals: None

Check-Off Lists: None

IV. PHYSICAL REQUIREMENTS:

No special requirements
Mostly light and moderate work; occasional heavy work.

Billet: I AM/BM

Activity: F.

V. SUPERVISION:

Type:	Receives Close Supervision.
By:	BM3, BM2, BM1, BMC

VI. DANGERS - EFFECT OF ERRORS:

Material Loss:	Little chance of material loss due to errors. Loss of time or material may result from shackles fouling on towing stocking; getting word late; getting twist or turn in otter bridle; getting float pendant caught in bridle of otter, shackle not going through gallows block; putting bar stop on wrong shackle; insufficient headway on ship; poor brake on winch; having turn in shackle on chain; not leading bridle outboard of all deck gear; and getting wire between shive and side of block.
Personal Injury:	Some chance of serious injury and considerable chance of minor cuts and bruises. Falling over sides and backlash of broken wire constitute hazards.
Safety Precautions:	Avoid straddling wire; and use of life jackets and helmets.

Billet: I AM/BM

Activity: G. RECOVERS OPEN JIG GEAR
(15 men)

Description

1. (2 men) RECEIVES ORDERS FROM BRIDGE TO RECOVER GEAR. Receives word over sound powered telephone, approximately ten minutes prior to recovery time, to stand by; receives final orders over phones from bridge to commence recovery of gear.

2. (6 men) LASHES POWER CABLE TO MAGNETIC REEL. Leads power cable to magnetic reel after EM have disconnected it from the terminal box; lashes power cable to port side of magnetic reel with number nine thread line.

3. (7 men) HEAVES-IN ON MAGNETIC TAIL AND SWEEP WIRE. Directs winch operator to heave in on magnetic tail until the strain of the tail is removed from the equalizing bridle; unshackles equalizing bridle from both towing stockings; winch operator heaves around on magnetic tail until towing stockings are on deck; wraps towing stockings with canvas and secures canvas with marlin line; winch operator heaves-in on magnetic tail until position buoy on the short leg electrode is just outboard of the stern chock; unlashes line securing position buoy to magnetic tail and manually lifts buoy around the stern chock up to deck; winch operator heaves-in on magnetic tail until the short leg electrode end is on deck; lashes end of short leg electrode to long leg electrode; wraps canvas around end of short leg electrode and secures canvas with marlin line; directs winch operator to heave around on sweep wire until strain of wire is removed from Klein grip; opens jaws of Klein grip and removes sweep wire; winch operator heaves-around on both sweep wire and magnetic tail; winch operator stops heaving in on sweep wire when 100 fathom marker is on deck, but continues heaving in on magnetic tail.

4. (4 men) RECOVERS MAGNETIC TAIL. Directs winch operator to stop heaving in on magnetic tail when first float of long leg electrode is on deck; unlashes number twenty-one thread line holding float to magnetic tail; removes float; winch operator heaves-in on magnetic tail until next float is on deck; removes float and continues same process until all six floats are recovered; winch operator heaves around

Billet: I AM/BM

Activity: G.

on magnetic tail until quarter roller block is just outboard of the stern chock; opens hinge on quarter roller block and lifts block clear of sweep wire; closes hinge and removes block from magnetic tail; unlashes line that secures block to end of magnetic tail; winch operator heaves around on both the sweep wire and the magnetic tail until the end of the long leg electrode is on the magnetic reel; directs telephone talker to report to bridge that magnetic tail is aboard.

5. (3 men) HEAVES-IN ON SWEEP WIRE. Directs winch operator to heave around on sweep wire until it is at short stay (50 fathoms); telephone talker reports to bridge that sweep wire is at short stay and requests that port screw is to be stopped; winch operator heaves around on sweep wire until bar stop is just outboard of the stern gallows block; unshackles bar stop from end of three foot chain pendant; winch operator heaves-in on sweep wire until otter is outboard of gallows block; directs winch operator to engage drum brake and to disengage sweep wire drum.

5. (8 men) RECOVERS OTTER AND FLOAT. Attaches quick releasing hook of davit whip to eye of otter; cranks hand winch at base of davit in order to swing otter inboard; positions otter directly over otter cradle and lowers otter so that it fits firmly in the cradle; grasps float pendant attached to otter and hauls float forward along port side of ship until it is directly below float davit; attaches quick releasing hook of davit whip to bail of float; leads davit whip aft to the nigger head on the sweep winch; wraps five turns of wire around the nigger head and directs winch operator to lift float until it is clear of water; directs telephone talker to report to bridge that all gear is clear of water; winch operator heaves-in on davit whip until float is high enough to clear deck when it is swung inboard; turns hand crank on side of davit in order to swing float inboard; positions float over its cradle and pays-out on davit whip until float is riding firmly in its cradle; places wire grips over the float and secures each end to the cradle; positions otter in its cradle and secures it by bolting an eighteen inch iron bar to the inboard base of the cradle.

Billet: I AM/BM

Activity: G.

7. (5 men) DISASSEMBLES EQUIPMENT AND CARRIES BELOW. Unshackles Klein grip assembly from deck; removes equalizing bridle from "L" blocks on deck; opens hinges of "L" blocks and removes bridle; coils equalizing bridle on deck; unshackles "L" from pad eyes on deck; carries all disassembled equipment to the mine sweep locker; places float over magnetic reel for storage.

Specifications

I. RATE AND PAY GRADE:

Current:	BM Striker
Recommended:	BM Striker
Possible:	EM, GM, DC

II. EDUCATION:

Civilian:	At least high school education.
Navy:	Factory school training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level:	Journeyman
Manuals:	None
Check-off Lists:	None
Tools:	Must be able to use stationary machine tools.
Writing:	Must be able to keep a sweep log.

Billet: I AM/BM

Activity: G.

IV. PHYSICAL REQUIREMENTS:

No special physical requirements. Continuous heavy work during large part of activity.

V. SUPERVISION

Type: Receives General Supervision.

By: BM1

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Possibility of some material loss as a result of errors. Loss of time or material may result from incorrectly lashing "power" cable to reel, winding magnetic tail onto reel unevenly, and parting sweep wire.

Personal Injury: Possibility of minor cuts and bruises during half of activity and frequent chance for serious cuts, bruises and strains, during rest of activity. Falling over side, and stepping over sweep wire, constitute hazards.

Safety Precautions: Wearing life jackets, helmets, and gloves.

Billet: I AM/BM

Activity: H. PREPARES TO STREAM "O" TYPE GEAR
(8 men)

Description

1. (1 man) ASCERTAINS DETAILS OF MINESWEEP PLANS. Receives verbal orders from minesweep officer concerning length of float pendant, nature of sweep and number of intermediate cutters to be used; gives instructions as applicable to men.

2. (2 men) BREAKS-OUT GEAR AND NECESSARY TOOLS. Proceeds to minesweep locker located below main deck beneath minesweep winch; hands-up to men on deck following gear: shackles, Klein grips, pendants, tool box, dynamometers float pendants, span block, span pendants, flag staffs, cutters, spare parts kit for cutters, and wedge type stops; positions gear and tools in appropriate places on deck; places large piece of canvas on deck covering the whole fantail.

3. (2 men) ASSEMBLES KLEIN GRIPS AND DYNAMOMETER. Attaches dynamometer to chain on Klein grip using a shackle; tightens shackle; shackles dynamometer to a pad eye on deck using two shackles.

4. (3 men) CONNECTS DEPRESSOR WIRE TO DEPRESSOR. Grasps wire from depressor drum and leads wire through stern chocks outboard of all gear to depressor and depressor rack; winch operator pays-out on winch as men lead depressor wire to depressor; shackles depressor wire to four-way connector; leads wire to depressor and attaches four-way connector to swivel; attaches swivel to bridle of depressor.

5. (5 men) SWINGS DEPRESSOR OVER STERN. Drops hook of crane down to depressor and engages hook of crane on lifting pad eye of depressor; cranks crane by hand to lift depressor out of rack; trains crane so that depressor is positioned over side of vessel; winch operator turns-over depressor drum in order to take in slack of depressor as it swings over the side; winch operator pulls depressor tight against stern chocks by turning over depressor drums; releases depressor from crane by pulling tripping hook line.

Billet: I AM/BM

Activity: H.

6. (1 man) SETS BRAKE ON WINCH AND DISCONNECTS DEPRESSOR DRUM. Pulls brake lever forward to set brake; pushes clutch engaging lever aft to disengage interlocking cogs of drive shaft in order that drum may run freely.

7. (3 men) CONNECTS SPAN PENDANTS TO FOUR-WAY CONNECTOR. Leads span pendants around and through stern chock; shackles pendant to four-way connector.

8. (1 man) ENGAGES SWEEP WIRE DRUM. Pulls engaging lever forward to connect sweep wire drum to power shaft; releases hand brake.

9. (3 men) CONNECTS SWEEP WIRE TO OTTER. Leads sweep wire through gallows block, outboard of all gear to otter on deck; shackles MK 9 cutter to bridle of otter; winch operator turns-over winches as men lead sweep wire out.

10. (3 men) SWINGS OTTER OVER STERN. Engages hook of crane into lifting eye on center of otter; turns crank on crane until otter is high enough to clear floats; swings crane over side in order to position otter beneath davit over stern; winch operator turns sweep wire drum to take in sweep wire slack as otter is swung astern.

11. (3 men) CONNECTS DAVIT TO OTTER. Lowers two-fold purchase to shackle on otter; hooks two-fold purchase on shackle; two-blocks otter on davit by pulling on line of two-fold purchase; stops end of line of two-fold purchase on cleat of davit; slacks off on crane lifting wire; removes hook from pad eye on otter.

12. (2 men) CONNECTS FLOAT PENDANT TO FLOAT AND OTTER. Shackles float pendant to chain leading from bail; leads pendant outboard of all gear to yoke of otter; shackles float pendant to swivel and in turn shackles swivel to yoke of otter bridle.

13. (1 man) ASSEMBLES FLAG AND FLAG STAFF ON FLOAT. Inserts flag staff in float socket and inserts pin through hole in socket of staff so that staff will be secured; uses staff with light rigged on it if preparing for night streaming.

Billet: I AM/BM

Activity: H.

14. (3 men) LIFTS FLOAT OVER SIDE IN STAND BY POSITION. Lowers crane hook over lifting bail and engages hook in after bail; hoists float up by turning crank on crane; swings float over side and lowers float to stand by positions; steadies float by manipulating manila line which is attached to pay eye on nose of float; secures tripping line to cleat on crane; secures steadying line to cleat on board when float is in stand by position.

Specifications

I. RATE AND PAY GRADE:

Current: BM Striker, BM3

Recommended: BM Striker, BM3

Possible: GM

II. EDUCATION:

Civilian: Tenth grade education is helpful but it is possible to perform activity with only eighth grade education.

Navy: Class C school training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manuals: None

Check-off Lists: None

Tools: Must be able to use simple hand tools, portable power tools, hand tools requiring accurate readings, and stationary machine tools.

Billet: I AM/BM

Activity: H.

IV. PHYSICAL REQUIREMENTS:

Talking:	No special requirements.
Hearing:	Must be able to hear instructions well.
Seeing:	Must be able to distinguish between red, and green lights during night sweep in order to observe positions of floats.
Effort:	Occasional heavy work.

V. SUPERVISION:

Type:	Receives Close and General Supervision.
By:	BM1

VI. DANGERS - EFFECT OF ERRORS:

Material Loss:	Possibility of substantial material loss as a result of errors. Loss of time or material may result from receiving incorrect instructions or failing to understand instructions, using incorrect tools, having a kink in the Klein grip chains, rigging dynamometers so they cannot be seen clearly, lubricating Klein grip incorrectly, having crooked shackles, twisting bridle, fouling tripping line, failing to two-block depressor tight against stern, failing to set brake tight enough, failing to have winch fully engaged, having four-way connector up side down, failing to two-block two-fold purchase after hooking, failing to secure tripping line, putting tripping hook on backwards, not having pendants outboard of all gear, having loose shackles, hooking float pendant on incorrect place in otter, failing to have light switch on when sweeping at night, and failing to set brake on crane drum.

Billet: I AM/BM

Activity: H.

Personal Injury:	Considerable chance for minor cuts and bruises and some chance for permanent disability. Dropping equipment in minesweep store room, winch operator misinterpreting signals and jerking wire, swinging depressor, backlash of parted wire, and falling or swinging float, constitute hazards.
Safety Precautions:	Not getting under otter, staying clear of float when it is in the air, not stepping over sweep wire, and wearing life jackets.

Billet: I AM/BM

Activity: I. STREAMS "O" TYPE GEAR
(12 men)

1. (2 men) STATIONS MINESWEEPING DETAIL. Passes word over PA system "Go to your stations all minesweeping detail"; checks visually to insure that all minesweeping detail is at stations; insures that all men are in life jackets and that all life jackets are properly secured.

2. (3 men) PICKS UP FLOATS. Takes five turns on each gypsy head with float hoisting wires; winch operator pulls controller lever to slowest speed in order to pick up floats clear of cradle; holds float lifting wire taut on gypsy head and lifts floats enough to clear cradle.

3. (2 men) SWINGS DAVIT HEAD OVER SIDE. Turns wheel located on davit in order to push head of davit outboard.

4. (2 men) LOWERS FLOATS OVER SIDE. Surges float lifting wire on gypsy head in order to lower float about two feet over wire; holds float in this position by keeping strain on float lifting wire around gypsy head.

5. (2 men) REQUESTS BRIDGE TO STOP SCREW ON SIDE BEING STREAMED. Leading BM tells phone talker to request bridge to stop screw on side gear is to be streamed; phone talker relays word to bridge and receives word that screw has stopped; phone talker relays word to leading BM.

6. (2 men) TRIPS FLOAT. Takes several turns with tripping line on any protruding surface that is handy; surges on lifting wire of gypsy head which puts strain on tripping line which in turn pulls tripping hook out of float bail and drops float into water.

7. (1 man) ALLOWS FLOAT TO DRIFT AFT. Insures that float drifts aft without fouling float pendant; pays-out float pendant by hand if float pendant is sixty feet or longer.

8. (1 man) DISENGAGES BRAKE ON SWEEP WIRE DRUM. Turns wheel type brake counterclockwise to disengage brake on sweep drum.

9. (2 men) TRIPS OTTER. Takes several turns on cleat of davit with tripping line; slacks-off on lifting wire by

Billet: I AM/BM

Activity: I.

turning crank type hand winch counterclockwise which puts strain on tripping wire causing cat hook to be pulled free of otter dropping otter into water.

10. (1 man) PAYS-OUT SWEEP WIRE TO FIFTY FATHOMS. Allows sweep wire to pay-out to fifty fathoms; keeps slight strain on sweep wire by turning hand brake clockwise slightly in order to sheer gear away from ship.

11. (2 men) INFORMS BRIDGE TO START SCREW ON SIDE GEAR IS STREAMED AND TO STOP SCREW ON OPPOSITE SIDE. Leading BM tells phone talker to inform bridge to start screw on side streamed and to stop screw on opposite side; phone talker relays word to bridge and receives word from bridge when maneuver has been accomplished; phone talker relays word to leading BM.

12. (2 men) TRIPS OTHER FLOAT. Takes several turns with tripping line on any protruding surface that is handy; surges on lifting wire of gypsy head which puts strain on tripping line which in turn pulls tripping hook out of float bail and drops float into water.

13. (1 man) ALLOWS OTHER FLOAT TO DRIFT AFT. Insures that float drifts aft without fouling float pendant; pays-out float pendant by hand if float pendant is sixty feet or longer.

14. (1 man) DISENGAGES BRAKE ON SWEEP WIRE DRUM. Turns wheel type brake counterclockwise to disengage brake on sweep drum.

15. (2 men) TRIPS OTHER OTTER. Takes several turns on cleat of davit with tripping line; slacks-off on lifting wire by turning crank type hand winch counter clockwise which puts strain on tripping wire causing cat hook to be pulled free of otter dropping otter into water.

16. (1 man) PAYS-OUT SWEEP WIRE TO FIFTY FATHOMS. Allows sweep wire to pay out to fifty fathoms; keeps slight strain on sweep wire by turning hand brake clockwise slightly in order to sheer gear away from ship.

Billet: I AM/BM

Activity: I.

17. (2 men) INFORMS BRIDGE TO GO AHEAD ON BOTH SCREWS. Leading BM tells phone talker to inform bridge to go ahead on both screws; phone talker relays word to bridge.

18. (2 men) PAYS-OUT SWEEP WIRES WITH LIGHT STRAIN. Turns wheel friction hand brakes counterclockwise slightly in order that drums will turn over and pay-out sweep wires under own strain.

19. (4 men) PLACES CUTTERS ON SWEEP WIRE IN ACCORDANCE WITH OPERATION PLANNED. Stops paying out wire by turning hand brake; places wedge type stop on sweep wire; hammers housing tightly over hinged section of stop on wire in order to wedge stop tightly on wire; pays wedge type stop through stern fairlead; stops wire by tightening on brake; opens hinged type latch on cutter and places latch over wire; closes latch of cutter over sweep wire; repeats this procedure for every cutter which is to be attached. (The number of cutters which are to be attached depends upon the nature of the sweep.) The above description is the procedure to be used in the event that MK 11 intermediate cutters are used. If MK 12 explosive cutters are to be used the same wedge type stop is employed; however, the procedure is as follows: places MK 12 cutter over wire; inserts two toggle pins in cutter and places copper safety strip in toggle to hold toggle in position.

20. (4 men) CONNECTS DEPRESSOR SPAN PENDANTS TO SWEEP WIRE. Opens gate on "L" type block and places block over wire; closes gate on block (gate is self-locking when closed).

21. (2 men) PAYS-OUT SWEEP WIRE TO DESIRED LENGTH. Turns hand friction brake on sweep wire drum counterclockwise in order to pay-out wire, pays-out wire to desired length by observing markings on sweep wire; stops wire at desired length by turning hand brake clockwise.

22. (2 men) CONNECTS KLEIN GRIPS. Opens jaws of Klein grips by push-pull method; inserts jaws of Klein grip up and over wire from underneath; releases hold on Klein grip which allows Klein grip to spring back in holding position.

23. (2 men) ALLOWS KLEIN GRIPS TO TAKE ALL STRAIN OF GEAR. Releases hand brake on sweep wire drum slowly in order

Billet: I AM/BM

Activity: I.

to allow Klein grips to take full strain of streamed gear; takes brake completely off to allow slack between sweep wire and Klein grip, insures correct readings on dynamometers while there is slack between sweep winch and Klein grips.

24. (1 man) CLEARS ALL UNNECESSARY PERSONNEL FROM FANTAIL. Clears fantail of all personnel except the following; one winch operator, BM of watch, one seaman, and one phone talker.

25. (1 man) STREAMS DEPRESSOR. Releases friction brake and depressor drum in order to allow depressor wire to pay out; allows depressor wire to pay out until desired depth is attained; engages brake on depressor drum when desired depth has been reached.

26. (1 man) STOPS DEPRESSOR WIRE OFF ON DECK. Opens jaws of Klein grip by push-pull method; inserts jaws of Klein grip up and over wire from underneath; releases hold on Klein grip which allows Klein grip to spring back in holding position.

27. (2 men) ALLOWS KLEIN GRIP TO TAKE ALL STRAIN OF GEAR. Releases hand brake on sweep wire drums slowly to allow Klein grip to take full strain of streamed gear.

28. (1 man) SETS MINE LOOKOUT. Details two men to act as mine lookout; stations these two men in forty milimeter gun tubs; reports to bridge "All gear is streamed and stopped off on deck".

Specifications

I. RATE AND PAY GRADE:

Current: BM Striker, BM3, BM2

Recommended: BM Striker, BM3, BM2

Possible: GM or any deck rating

Billet: I AM/BM

Activity: I.

II. EDUCATION:

Civilian:	Eighth grade education is helpful but it is possible to perform activity with only fourth grade education.
Navy:	Only boot camp training is necessary to perform activity but Class C School training is helpful.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level:	Journeyman
Manuals:	Must be able to use "Ships 9".
Check-off Lists:	None
Tools:	Must be able to use simple hand tools, and stationary machine tools.
Reading:	Must be able to read diagrams in order to place cutters on sweep wire.

IV. PHYSICAL REQUIREMENTS:

Seeing:	Must be able to distinguish between green and yellow in order to interpret float lights during night sweep.
Talking:	No special requirements.
Hearing:	No special requirements.
Effort:	Only light and moderate work.

V. SUPERVISION:

Type:	Receives Close and General Supervision.
By:	BMC

Billet: I AM/BM

Activity: I.

VI. DANGERS - EFFECT OF ERRORS:

Material Loss:	Possibility of substantial material loss as a result of errors. Loss of time or material may result from receiving incorrect instructions, winch operator receiving incorrect signals, releasing surging wire, riding turns on gypsy head, having improper turns on tripping wire, failing to disengage brake before tripping otter, placing cutters on backwards, not putting stops on tight enough, not closing gate on snatch block, not having Klein grips rigged properly, allowing float pendant to become tangled in end cutter, allowing float to submerge by letting wire out too fast, having loose depressor, having loose cutters, and having float pendant foul in otter as a result of too much slack in sweep wire.
Personal Injury:	Possibility of minor cuts and bruises continuously and some chance for permanent disability. Swinging float, getting hands caught between lifting wire and gypsy head while surging, getting hit by flag staff when floats hit water, getting caught in bight of nose line, being pulled overboard, straddling sweep wire, backlashing of parted wire, falling over side, getting clothing caught in fairlead, getting fingers smashed by Klein grip, and depressor tow wire swinging when depressor is dropped, constitute hazards.
Safety Precautions:	Using gloves while handling wires, and wearing life jackets.

Billet: I AM/BM

Activity: J. RECOVERS "O" TYPE GEAR
(9 men)

1. (2 men) RECEIVES WORD "STAND BY TO RECOVER O TYPE GEAR". Phone talker receives word from bridge to stand by to recover gear; phone talker tells man in charge who relays word to team.

2. (2 men) CONNECTS PORT, STARBOARD, AND DEPRESSOR DRUMS. Lines up holes on drum to lugs on drive shaft; pushes engaging lever to engage lugs on drive shaft to drum; locks lever in position with pin; repeats this same procedure for other two drums; releases brakes by turning wheel which loosens band around brake drum.

3. (2 men) RAISES STACKERS ON PORT AND STARBOARD SWEEP WIRE. Lifts hinged stacker into position by hand; locks stacker in position by dog-type lugs; places sweep wire in fairlead on stacker and swings locking device over top of fair lead roller; tightens nut on locking device by hand in order to keep wire in and in order to reinforce rollers on fairlead.

4. (2 men) RECEIVES WORD TO COMMENCE RECOVERY OF "O" TYPE GEAR. Phone talker receives word from bridge to commence recovery of "O" type gear; phone talker passes word to man in charge who relays word to team; man in charge tells phone talker to request bridge to slow to five knots; phone talker requests bridge to slow to five knots.

5. (8 men) HEAVES-AROUND AND TAKES KLEIN GRIPS OFF. Man in charge gives orders to winch operator to heave-around on speed No. 1; removes Klein grips from sweep and depressor wires as soon as tension is off Klein grips.

6. (5 men) HEAVES AROUND AND TWO-BLOCKS DEPRESSOR. Man in charge gives orders to winch operator to heave around on speed No. 3; stackers begin to stack(which is done to prevent damage to wire by overlay, to allow all of wire on spool, to allow wire to run out properly for future streaming)as soon as winch operator heaves-in wire;winch operator heaves-around at speed No. 3 until depressor is visible in water; winch operator slows winch to speed No. 1; brings depressor up and two-blocks it to stern chock until four way connector is well inside of stern chock; winch operator sets brake on center drum; puts Klein grip on depressor wire.

Billet: I AM/BM

Activity: J.

7. (4 men) REMOVES "L" TYPE BLOCKS. Takes boat hook and hooks-on to "L" type blocks; pulls blocks up to within reach and unhooks blocks by hand from sweep wire; brings blocks in and lays blocks on deck.

8. (6 men) HEAVES-AROUND ON SWEEP WIRE TO SHORT STAY. Man in charge gives winch operator orders to heave around at fast speed; winch operator turns speed controller knob by hand to speed directed by man in charge; turns stacker controller by hand in order to keep wire laying uniformly on drum; passes word to bridge over sound powered phone that gear is at short stay.

9. (8 men) REMOVES CUTTERS. Man in charge watches for cutters; winch operator stops winch when cutter can be reached with boat hooks; pulls cutter up with boat hook within reach outside of outboard fairlead; removes cutter from sweep wire by opening sliding hinge by hand or with hammer; man in charge gives orders to winch operator to heave around on speed No. 1 until cutter stop is inside outboard fairlead; hits cutter stops with hammer on outboard end which removes stops from wire; continues this operation until all cutters except the end cutter have been removed.

10. (1 man) SETS UP FOR RECOVERY OF STARBOARD GEAR. Winch operator turns wheel brake on port drum by hand to set brake; attaches grip on port sweep wire by hand; disengages drive shaft lug from holes in drum by lifting pin and pulling engaging arm to"disengage" position.

11. (3 men) HEAVES-AROUND ON STARBOARD SWEEP WIRE TO BRING IT INTO 25 FATHOMS. Man in charge tells winch operator to heave in at speed No. 4; winch operator turns speed controller knob by hand to speed No 4; stacker turns stacker wheel manually to insure that wire is laying properly.

12. (2 men) REQUESTS BRIDGE TO STOP STARBOARD SCREW. Man in charge tells phone talker to request bridge to stop starboard screw when gear is at approximately 25 fathoms; phone talker requests bridge to stop starboard screw; phone talker receives word from bridge that starboard screw is stopped and relays this information to man in charge.

Billet: I AM/BM

Activity: J.

13. (3 men) HEAVES-AROUND AND BRINGS OTTER TO STERN CHOCKS. Man in charge signals winch operator to slow to speed No. 1; may use various other speeds on winch in bringing otter out of water depending upon existing conditions; heaves-around until otter is clear of water; sets brake on winch by hand; disconnects starboard drum.

14. (8 men) HOISTS OTTER AND FLOAT. Hooks float pendant with boat hook and pulls in on float until it is possible to hook float tow line with boat hook; pulls tow line on deck by hand passing it outboard and forward of recovery davit; holds float under recovery davit with tow line; hoists float clear of water by using float recover wire fairleaded through recovery davit to gypsy head on winch; hangs float by hook attached to chain on recovery davit head in order to allow port drum to be used sooner; removes float recovery wire from gypsy head; swings recovery davit directly over otter by using hand crank on davit housing; hooks tripping hook to recovery shackle on otter; man in charge gives orders to man on minesweep winch to heave-around until otter is two-blocked to davit head; man in charge gives orders to swing davit inboard; swings davit inboard and lowers otter into cradle by means of hand winch; detaches float pendant from otter by unshackling and takes float pendant on deck by pulling by hand until clear of water.

15. (2 men) INFORMS BRIDGE STARBOARD SIDE IS CLEAR. Man in charge tells phone talker to inform bridge that starboard screw is free for use; phone talker relays this message to bridge.

16. (3 men) CONNECTS PORT SWEEP WIRE DRUM. Man in charge tells winch operator to connect port drum; winch operator lines-up holes on drum to lugs on drive shaft; pushes engaging lever pin and releases brakes by turning wheel which loosens band around brake drum; winch operator notifies man in charge when port drum is connected and brake is off.

17. (4 men) HEAVES-IN AND REMOVES KLEIN GRIP. Man in charge tells winch operator to heave around on winch with speed No. 1 until tension is off Klein grip; removes Klein grip from port sweep wire by hand.

Billet: I AM/BM

Activity: J.

18. (3 men) HEAVES-AROUND ON PORT SWEEP WIRE TO BRING IN TO 25 FATHOMS. Man in charge tells winch operator to heave-in at speed No. 4; winch operator turns speed controller knob to speed No. 4; stackers turn stacker wheel manually to insure that wire is laying properly.

19. (2 men) REQUESTS BRIDGE TO STOP PORT SCREW. Man in charge tells phone talker to request bridge to stop port screw when gear is at approximately 25 fathoms; phone talker requests bridge to stop port screw; phone talker receives word from bridge that port screw has been stopped and relays this information to man in charge.

20. (3 men) HEAVES-AROUND AND BRINGS OTTER TO STERN CHOCKS. Man in charge signals winch operator to slow to speed No. 1; winch operator turns speed controller knob to speed No. 1; may use other winch speeds depending upon existing conditions; heaves-around until otter is clear of water; sets brake on winch by hand; disconnects port drum.

21. (8 men) HOISTS OTTER AND FLOAT. Hooks float pendant with boat hook and pulls in on float until it is possible to hook float tow line with boat hook; pulls tow line on deck by hand passing it outboard and forward of recovery davit; holds float under recovery davit with tow line; hoists float clear of water by using a float recovery wire fairleaded through recovery davit to gypsy head on winch; cradles float immediately; removes float recovery wire from gypsy head; swings recovery davit directly over otter by using hand crank on davit housing; attaches tripping hook to recovery shackle on otter; man in charge gives orders to man on minesweep winch to heave around until otter is two-blocked to davit head; man in charge gives orders to swing davit inboard swings davit inboard and lowers otter into water by means of hand operated winch; detaches float pendant from otter by unshackling; takes float pendant on deck by pulling by hand until it is clear of water.

22. (2 men) INFORMS BRIDGE PORT SIDE IS CLEAR TO USE SCREW. Man in charge tells phone talker to inform bridge that port screw is free for use; phone talker relays this message to bridge.

Billet: I AM/BM

Activity: J.

23. (2 men) DETACHES "L" BLOCK AND CHAIN FROM FOUR-WAY CONNECTOR. Detaches "L" type blocks and chains by removing screw pin shackles; stows "L" blocks and chains below.

24. (2 men) CONNECTS DEPRESSOR DRUM. Lines up holes on drum to lugs on drive shaft; pushes engaging lever to engage lugs on drive shaft to drum; locks lever in position with pin and releases brake by turning wheel which loosens band around brake drum.

25. (6 men) HOUSES DEPRESSOR ON DECK. Swings recovery davit over stern by using hand crank on davit housing; hooks tripping hook to recovery shackle on depressor; man in charge gives orders to men on mechanical winch to heave around until depressor is two-blocked to davit head; slacks-out depressor wire by winch in order to swing depressor on deck; swings davit inboard and lowers depressor into rack by means of hand operated winch, disengages davit hook from depressor.

26. (3 men) UNSHACKLES DEPRESSOR WIRE FROM DEPRESSOR AND REELS WIRE ON DEPRESSOR DRUM. Unshackles four-way connector from depressor wire by hand; reels depressor wire in on depressor drum by using mechanical winch; disconnects four way connector from depressor swivel by unscrewing screw pin shackle; stows four-way connector below.

27. (2 men) DISCONNECTS DEPRESSOR DRUM. Sets wheel type brake by hand; disconnects drum from power shaft by removing pin from lever and disengaging clutch.

28. (5 men) HOUSES STARBOARD FLOAT. Takes turns on starboard gypsy head with recovery wire fairleaded through starboard float recovery davit; hooks recovery wire into hoisting bail on starboard float; man in charge signals winch operator to heave around until tension is taken off chain and hook attached to davit head; removes chain and hook; lowers float into cradle by means of surging; makes-up recovery wire by hand on recovery davit in order to get wire off deck.

29. (3 men) DISCONNECTS SWEEP WIRES FROM OTTERS AND REELS WIRE ON SWEEP DRUMS. Unshackles sweep wire from otter

Billet: I AM/BM

Activity: J.

bridle by unscrewing screw pin shackle; reels sweep wire in on port and starboard sweep drums respectively.

30. (2 men) INFORMS BRIDGE ALL GEAR HAS BEEN SECURED. Man in charge tells phone talker to inform bridge that all minesweeping gear has been secured; phone talker relays message to bridge.

Specifications

I. RATE AND PAY GRADE:

Current: FPI, GM2, BM Striker

Recommended: BM Striker, BM2, FP1

Possible: Any rate with minesweeping experience can perform activity.

II. EDUCATION

Civilian: At least high school education.

Navy: Boot camp training only.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manuals: None

Check-Off Lists: None

Tools: Must be able to use simple hand tools, hand tools requiring accurate reading, portable power tools, and stationary machine tools.

Billet: I AM/BM

Activity: J.

IV. PHYSICAL REQUIREMENTS:

Seeing:	Man-in-charge must be able to distinguish between yellow and green in order to interpret float lights when streaming gear at night.
Hearing:	Must be able to hear well over sound powered phones in order to receive instructions from bridge.
Talking:	Must be able to speak well over sound powered phones; man-in-charge must be able to give clear and distinct orders.
Effort:	Occasional heavy work.

V. SUPERVISION:

Type:	Receives Close Supervision.
By:	CWC (CHBOSN)

VI. DANGERS - EFFECT OF ERRORS:

Material Loss:	Possibility of considerable material loss as a result of errors. Loss of time or material may result from receiving or interpreting instructions incorrectly, improperly securing Klein grips, using incorrect recovery speed, maintaining cutters improperly, fouling float pendant with otter, parting recovery pendant while hoisting float and otter, and fouling screw pin shackle with stern chock.
Personal Injury:	Some chance for serious cuts, bruises and strains; considerable chance for minor cuts and bruises. Dropping stacker on hand, catching hand in Klein grip while removing Klein grip, backlashing of parted wire, falling overboard, dropping "L" Block on hand or foot, swinging

Billet: I AM/BM

Activity: J.

depressor, and mashing hands when disconnecting wires, constitute hazards.

Safety Precautions: Wearing life jackets, avoid stepping over sweep or depressor wire, making sure screw is stopped, insuring replacement of life lines immediately after otter, float and depressor are housed.

Billet: I AM/BM

Activity: K. MAINTAINS "O" TYPE GEAR
(9 men)

1. (9 men) REPLACES TOWING AND DEPRESSOR WIRE AFTER TWO HUNDRED HOURS OF USE. Leads old wire off of drum; pulls pin securing "U" bolt clamp to end of sweep wire allowing wire to be pulled through hole in drum; leads bitter end of new wire through hole in drum and secures in place with "U" bolt clamp; winch operator heaves around on winch in order to reel new wire on drum; wraps old wire around reel so it can be turned into nearest facility.

2. (9 men) PAINTS NEW MARKINGS ON WIRE. Pays-out wire with winch; paints markings on wire at intervals of fifty fathoms according to following scheme: one red stripe at fifty fathoms, one white stripe at one hundred fathoms, two red stripes at one hundred and fifty fathoms, two white stripes at two hundred fathoms, three red stripes at two hundred and fifty fathoms, and three white stripes at three hundred fathoms.

3. (2 men) PAINTS, GREASES AND REPLACES NEW TEETH IN CUTTERS. Removes rust and old paint from cutters using hand wire brush; paints cutters with white paint; dabs grease over cutters in order to prevent rusting; inspects cutters to determine dull and/or rusty teeth which need replacing; removes old teeth by loosening bolts and slides new teeth in groove; tightens bolts in order to secure teeth.

4. (3 men) PAINTS DEPRESSORS, FLOATS AND OTTERS. Removes rust and old paint from depressors, floats, and otters with electric wire brush and scraper; lays equipment down on deck and paints with outside white paint.

5. (2 men) GREASES AND PAINTS KLEIN GRIPS, SNATCH BLOCKS, AND DAVIT. Removes old paint and rust from equipment with wire brush and scraper; dabs grease on all working parts and paints outside of equipment with outside white paint.

6. (1 man) REPLACES FLAGS ON STAFF OF FLOATS. Inserts flag rods in hole atop the staff and trips trigger of lock securing flag in place.

Billet: I AM/BM

Activity: K.

Specifications

I. RATE AND PAY GRADE:

Current: BM Striker, BM3

Recommended: BM Striker, BM3

Possible: GM, EM, or any rate with proper training.

II. EDUCATION:

Civilian: At least eighth grade education.

Navy: Shipboard training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manuals: None

Check-off Lists: Must be able to use grease log and keep a check-off list on operation of "O" type gear.

Tools: Must be able to use simple hand tools, portable power tools, hand tools requiring accurate readings, and stationary machine tools.

IV. PHYSICAL REQUIREMENTS:

No special physical requirements. Mostly light work; some heavy work.

V. SUPERVISION:

Type: Receives General Supervision.

By: BM1

Billet: 1 AM/BM

Activity: K.

VI. DANGERS - EFFECTS OF ERRORS:

Material Loss:	Most of activity performed with little chance for material loss due to errors; however, there is possibility of substantial loss when replacing towing and depressing wire. Loss of time or material may result from feeding drum wire incorrectly and getting paint in movable parts.
Personal Injury:	Little chance for accidents.
Safety Precautions:	Staying clear of wires, wearing gloves and life jackets.

Billet: I AM/BM

Activity: L. PREPARES FOR MAGNETIC SWEEP
(8 men)

Description

1. (8 men) ASSEMBLES MINESWEEPING DETAIL ON FANTAIL. Calls bridge over sound powered phone to request bridge to pass word "Minesweeping detail lay aft to fantail"; bridge passes word over PA system to assemble crew on fantail.

2. (1 man) MANS SOUND POWERED PHONE CIRCUIT ON FANTAIL. Takes phone out of box next to magnetic tail; places phone receiver over ears; plugs phone lead in jack-box near magnetic tail; establishes communication with bridge and informs bridge minesweeping detail manned.

3. (5 men) PASSES-UP GEAR USED IN STREAMING MAGNETIC TAIL. Proceeds to minesweeping locker located just aft of minesweeping winch; passes-up following equipment; two metal blocks, two 10 foot (5/8 inch) wires, one twenty foot (3/4 inch) wire, chafing gear, eight shackles, two position buoys with staffs and flags, towing lines for position buoy, marlin spikes, pliers; places gear in position on deck where it is to be used.

4. (1 man) CHECKS TOWING LINE AND POSITION BUOY. Checks towing lines for position buoys by touch and by sight to detect chafing and bad spots in towing line; checks flag staff by sight to insure that it is nailed in securely on position buoy; checks flag by sight to insure that it is properly tacked onstaff.

5. (6 men) PREPARES FLOATS FOR K SECTION. Grasps floats from top of magnetic reel and passes them down to men on deck; places six floats on port side and six floats on starboard side of fantail; inspects floats and securing pendants to insure that there are no breaks in the floats and that they are properly secured.

6. (2 men) PREPARES POSITION BUOYS ON PORT AND STARBOARD SIDE. Lays position buoys alongside otters on port and starboard side of fantail; leads one position buoy towing

Billet: I AM/BM

Activity: L.

line outboard of all obstructions and back through stern chock; secures line to cleat on davit to keep line from running back out of stern chock.

7. (6 men) REMOVES COVER FROM MAGNETIC REEL. Unlaces securing lines (12 thread manila) from grommets on canvas cover; rolls canvas up toward the top; secures canvas with nine thread manila; attaches tag with words "magnetic reel" printed on it to grommet on canvas; places canvas on main deck forward of reel.

8. (1 man) CHECKS VICINITY FOR LOOSE GEAR. Inspects reel and reel well and removes any loose gear that might hinder operation of magnetic reel.

9. (6 men) LAYS-OUT PART OF K SECTION ON DECK. Grasps end of magnetic tail and leads it over two fairleads (one fair lead located just aft of magnetic reel and the other located half way between there and the stern chock); lays end of tail in stern chock; winch operator applies foot brake when end of tail is in stern chock.

10. (3 men) ATTACHES THREE FLOATS TO K SECTION. Carries floats to K section; secures floats to K section by tying lines attached to K section around center of floats; ties lines attached to ends of floats to K section using rolling hitch.

11. (1 man) ATTACHES POSITION BUOY TO K SECTION. Unties tow line of position buoy from cleat on davit; ties end of tow line to K section just forward of aftermost float using rolling hitch backed up with half hitch.

12. (5 men) RIGS TOWING BRIDLE. Places bight of 20 foot pendant around double roller fairlead located on frame 96 of fantail; inserts two toggle pins in this fairlead to keep pendant in fairlead; runs ends of pendant aft to stern chocks and shackles eyes of pendant to two snatch blocks; opens eight inch snatch block and places bight of 10 foot pendant in it; opens other snatch block and places bight of other 10 foot pendant in it; shackles ends of each 10 foot pendant together. (If insufficient time is allowed for rigging, bridle is rigged while tail is being streamed).

Billet: I AM/BM

Activity: L.

13. (2 men) REPORTS TO BRIDGE MAGNETIC TAIL IS READY FOR STREAMING. Leading BM tells phone talker to inform bridge tail is ready for streaming; phone talker relays word to bridge over sound powered phone.

Specifications

I. RATE AND PAY GRADE:

Current: BM Striker, BM2, BM1

Recommended: BM Striker, BM3

Possible: GM, FC

II. EDUCATION:

Civilian: At least eighth grade education.

Navy: Only boot camp training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manuals: None

Check-off Lists: None

Tools: Must be able to use simple hand tools, and stationary machine tools.

IV. PHYSICAL REQUIREMENTS:

Seeing: No special requirements.

Hearing: Must be able to hear well over sound powered phones in order to receive instructions from bridge.

Talking: Must be able to speak clearly over sound

Billet: I AM/BM

Activity: L.

powered phones.

Effort: Only light and moderate work.

V. SUPERVISION:

Type: Receives General Supervision for half of activity and Direction for remainder of activity.

By: BMC

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Possibility of some material loss as a result of errors. Loss of time or material may result from receiving incorrect instructions, plugging telephone lead in wrong jackbox, using incorrect or insufficient gear, failing to keep strain on tail when reel is being turned, using incorrect knots, and using incorrect shackles and blocks.

Personal Injury: Some chance for minor cuts and bruises. Falling off reel, falling over side, smashing fingers while leading tail, and dropping gear, constitute hazards.

Safety Precautions: Wearing life jackets, and making sure power is OFF to magnetic reel

Billet: I AM/BM

Activity: M. STREAMS MAGNETIC TAIL
(8 men)

Description

1. (1 man) RECEIVES WORD FROM BRIDGE TO STREAM MAGNETIC TAIL. Receives word from bridge over sound powered phone to commence streaming; relays word to leading BM.

2. (2 men) DROPS FIRST POSITION BUOY AND FIRST FIFTY FEET OF TAIL. Runs fifty feet of tail out through fairleads on stern by cutting light line that holds this length to life lines; picks up position buoy and drops buoy over stern.

3. (2 men) RUNS LONG "A" SECTION OFF REEL. Winch operator releases foot brake and allows strain of tail already in water to unreel tail from reel; keeps fairlead which is on top of "0" type reel even with cable coming off reel; winch operator stops reel when ordered by leading BM so that second position buoy may be attached.

4. (2 men) ATTACHES SECOND POSITION BUOY TO SHORT SECTION. Pushes line which had been previously attached to the position buoy and which is located clear of gear on the fantail outboard through fairlead; grasps line as it comes through fairlead and secures line to short electrode using a rolling hitch followed by a half hitch.

5. (2 men) DROPS SECOND POSITION BUOY. Picks up buoy from deck and drops it over fantail; winch operator releases brake on reel to allow cable to pay out.

6. (3 men) PUTS FLOATS ON SHORT ELECTRODE. Carries floats to cables and attaches floats to short electrode as tail is being payed out; ties floats, using twenty-one thread line, with rolling hitch followed by half hitch.

7. (2 men) RUNS TAIL OUT TO "POWER" SECTION. Winch operator releases brake and allows tail to pay out at the speed the supervisor directs; keeps fair lead on top of "0" type winch even with reel; winch operator slows reel down by pressing foot brake when P section of cable is reached.

Billet: I AM/BM

Activity: M.

8. (5 men) PUTS-ON OUTBOARD BRIDLE. Winch operator stops winch with foot brake when stockings are unreeled from reel but still remain on the fantail; passes out board snatch blocks through fairlead; shackles snatch blocks to hard eyes on stocking; winch operator lets out tail slowly by releasing brake on reel so that bridle takes the whole strain of the tail away from the wheel brake; attaches rat tail stop to "H" bitts; attaches rat tail to "power" section of tail by using a rolling hitch and a half hitch in order to hold tail if bridle parts.

9. (4 men) REMOVES LINE OFF BITTER END OF "POWER" SECTION. Unties lines from each cable one at a time which hold bitter end of cable to reel; brings bitter end to junction box.

10. (2 men) ASSISTS ELECTRICIAN TO ATTACH "POWER"SECTION TO JUNCTION BOX. Lifts cable and lines-up bitter end of "power" section for insertion in junction box; stands-by while electrician inserts bitter ends in junction box.

Specifications

I. RATE AND PAY GRADE:

Current: BM Striker, BM3

Recommended: BM Striker, BM3

Possible: GM, FC

II. EDUCATION:

Civilian: At least eighth grade education.

Navy: Only boot camp training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manuals: None

Billet: I AM/BM

Activity: M.

Check-off Lists: None

Tools: Must be able to use simple hand tools and stationary machine tools.

IV. PHYSICAL REQUIREMENTS:

Seeing: No special requirements.

Hearing: Must be able to hear well over sound powered phones in order to receive instructions from bridge.

Talking: Must be able to speak well over sound powered phones.

Effort: Mostly light and moderate work; never heavy work.

V. SUPERVISION:

Type: Receives Close Supervision (when supervised by a BM).
Receives General Supervision (when supervised by a WO).

By: BMC (when Close Supervision given).
WO (when General Supervision given).

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Possibility of substantial material loss due to errors. Loss of time or material may result from failing to understand instructions from bridge, not securing line to tail properly, failing to test brakes, having too much slack in tail as result of running it out too fast, man operating level winder tearing up marriage boards, failing to overlap long section which would foul electrode with position buoy, misinterpreting signals, improper rigging, parting bridle wire, tearing

Billet: I AM/BM

Activity: M.

stocking, dropping bitter end and damaging it so it would not fit in junction box, and twisting towing stockings.

Personal Injury: Frequent chance for serious cuts, bruises and strains, getting tangled in bight of line and being pulled overboard, having fingers and hands wedged in tail, tail swinging, brake failing which would allow reel to run free and result in end of power section hitting someone, falling overboard, parting bridle cable (caused by heavy strain), being electrocuted if current is on in junction box, and cable shorting and burning personnel constitute hazards.

Safety Precautions: Wearing life jackets, keeping feet out of bights in lines, keeping deck clear of excess gear, keeping away from reel, making sure that men have bitter end in hand before slacking off on lines which tied bitter end to reel, keeping clear of junction box when power is on and allowing no unauthorized personnel to be on fantail.

Billet: I AM/BM

Activity: N. RETREIVES MAGNETIC TAIL
(10 men)

1. (2 men) RECEIVES ORDERS FROM BRIDGE OVER PUBLIC ADDRESS SYSTEM TO MAN MINESWEEP DETAIL. Tells sound powered phone talker to check phones with bridge and report to them that minesweep detail is manned and ready; receives orders from bridge via sound powered phone to recover magnetic tail.

2. (2 men) LASHES END OF TAIL TO REEL. Pulls end of tail out of junction box by hand; lashes tail to reel using 21 thread line; ties tail ends to ribs on magnetic reel on port side.

3. (1 man) TAKES-IN ON TAIL ABOUT TWO OR THREE FEET. Winch operator releases reel brake by turning wheel locking device; pushes controller lever over to port and takes-in on tail about two feet; pulls controller lever back to stop winch and engages foot brake to keep reel stationary.

4. (6 men) STACKS TAIL ON REEL. Operates level winding device by pushing it back and forth to insure that tail does not pile up on one section of reel; maneuvers tail by hand to insure that it is winding flat and level; continues procedure during the whole process of winding in the tail.

5. (2 men) INSPECTS TAIL AS IT REELS IN. Observes to see that marriage bands are properly secured; looks for cracks and splits in tail; observes tail for flatness and removes any seaweed or foreign matter that might be caught on tail; continues procedure during the whole process of winding in the tail.

6. (2 men) DISCONNECTS TOWING BRIDLE. Reaches over fantail and pulls snatch blocks on deck; opens snatch blocks and removes pendants which are attached to stockings; leads pendants through stern roller chock back on deck.

7. (2 men) BRINGS TOWING STOCKING INSIDE OF STERN ROLLER CHOCK. Winch operator releases foot brake and engages winch controller in order to pull in tail about three feet; grasps pendants and leads them forward so as to prevent them from fouling in stern roller chock as tail was brought in; stops tail when stocking is inboard of stern roller chock; winch operator applies foot brake in order to keep reel stationary.

Billet: I AM/BM

Activity: N.

8. (2 men) WRAPS CANVAS AROUND TOWING STOCKINGS. Doubles pendants back over stockings and wraps canvas over pendants in stockings; secures canvas by tying with marlin using a closed hitch backed up with a half hitch, so that shackles, wire, and stockings do not cut tail when tail is reeled over it.

9. (5 men) REELS TAIL UNTIL FLOATS ARE REACHED ON SHORT LEG. Winch operator releases foot brake and engages winch; slows speed of reeling in when floats are in sight.

10. (4 men) TAKES FLOATS OFF SHORT LEG. Unties float securing lines while tail is being reeled in; removes six floats from short leg and pulls floats out of the vicinity of tail.

11. (5 men) REELS-IN TAIL UNTIL SHORT LEG ELECTRODE IS ON DECK. Winch operator brings in tail slowly and stops reeling in when short leg electrode is just in front of magnetic reel; disengages winch and engages foot brake in order to keep reel stationary.

12. (1 man) LASHES SHORT LEG ELECTRODE TO LONG LEG. Ties manila line to short leg electrode with clove hitch; ties electrode to long leg using square knot.

13. (1 man) HEAVES-AROUND UNTIL POSITION BUOY IS REACHED. Winch operator disengages brake and engages winch; winch operator reels-in tail and slows speed when floats are in sight; winch operator stops reel when outboard float is halfway through stern roller chock.

14. (2 men) TAKES POSITION BUOY OFF TAIL. Unties position buoy tow line and pulls position buoy up on deck by hand from alongside the stern roller chock as it will not pass through chock.

15. (4 men) HEAVES-IN ON TAIL UNTIL LONG LEG ELECTRODE IS ON REEL. Winch operator reels-in tail slowly; picks-up lug as it comes through stern roller and carries it to reel as tail is reeled in final few feet; winch operator stops winch and engages foot brake in order to keep reel stationary.

Billet: I AM/BM

Activity: N.

16. (2 men) PUTS FLOATS ON TOP OF REEL. Carries floats by hand and places them on top of magnetic reel; turns floats upside down in order to allow them to dry.

17. (3 men) STOWS ALL GEAR. Lashes position buoy on port side of magnetic reel using marlin; stows remaining gear in minesweep locker.

18. (2 men) SECURES MINESWEEP DETAIL. Phone talker receives word from bridge to secure minesweep detail and relays word to leading BM; leading BM tells men to secure.

19. (3 men) COVERS REEL WITH CANVAS. Lifts, after the floats have had a good chance to dry, canvas cover over reel and pulls into position; covers minesweep winch in same manner.

Specifications

I. RATE AND PAY GRADE:

Current: BM Striker, EM Striker

Recommended: BM Striker

Possible: GM

II. EDUCATION:

Civilian: Eighth grade education is helpful but activity can be performed with only fourth grade education.

Navy: Only boot camp training is necessary to perform activity.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manuals: None

Check-off Lists: None

Billet: I AM/BM

Activity: N.

Tools: Must be able to use simple hand tools and stationary machine tools.

IV. PHYSICAL REQUIREMENTS:

Talking: Must be able to speak clearly over sound powered phones in order to talk to bridge and man-in-charge must be able to give orders distinctly.

Seeing: No special requirements.

Hearing: Must be able to hear well over sound powered phones in order to receive orders from bridge.

Effort: Mostly light and moderate work; heavy work for short period while man is stowing gear.

V. SUPERVISION:

Type: Receives Close and General Supervision.

By: BMC

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Possibility of some material loss due to errors. Loss of time or material may result from not securing line properly, breaking winch by handling it incorrectly, failing to pay attention to signals, allowing straps of towing stockings to get caught in stern roller, operating winch incorrectly, securing line incorrectly, not stacking tail properly, allowing oscar tow line to run out and losing it, securing detail prematurely, and failing to wind magnetic tail on reel evenly.

Personal Injury: Some chance for minor cuts and bruises during most of activity; possibility of falling over side when disconnecting towing bridle and taking oscar off tail. Dropping lugs

Billet: I AM/BM

Activity: N.

on man in reel well, getting hand caught in stern chocks, dropping gear on man's head in lazarette, and getting knocked down, also constitute hazards.

Safety Precautions: Wearing life jackets.

Billet: I AM/BM

Activity: O. RIGS AND PLANTS DAN BUOYS
(8 men)

Description

1. (2 men) RECEIVES ORDERS CONCERNING LAYING OF DAN BUOYS. Leading BM reports to bridge and confers with minesweep officer about number of buoys to be used and depth of water in which dan buoys will be planted.

2. (8 men) BREAKS OUT EQUIPMENT. Procures 150 pound iron anchors, 30 pound counter weights, counter weight tubes, mooring wires, quick recovery pendants, buoy staffs, flags, spare shackles, chafing chains, marlin line, marlin spike, radar reflector and radar adapters from the minesweep locker; carries all gear to the fan tail; procures dan buoy body from rack on 40 mm. gun tubs; places dan buoy body stern-forward along the port side for assembly.

3. (8 men) RIGS DAN BUOYS ON DECK. Pushes counter weight tube through hole in center of dan buoy body; locks counter weight tube in body with bolt; matches holes in counter weight with those in body of dan buoy; slips bolt through hole and tightens nut; shackles counter weight to ring on counter weight tube; shackles eight foot chafing chain to ring located at bottom of dan buoy; inserts wooden staff in hole at upper end of dan buoy; lashes staff in hole with marlin line and secures marlin line to pad eyes on upper part of dan buoy body; secures flag to staff by running marlin line through holes in flag and lashing to staff; slips radar adapter over top of staff and tightens set screws on adapter; places radar reflector in adapter until spring-lock pins match with holes in adapter thereby securing the two; secures large eye of quick recovery pendant below flag on staff with marlin line; leads bitter end of mooring wire through small shackle on chafing chain; secures moving chain to quick recovery pendant by means of a large shackle; leads free end of mooring wire outboard of all obstacles and shackles to cross bar in anchor.

4. (3 men) STREAMS MOORING WIRE. Pays-out mooring wire, by hand, off stern of ship; maintains slack in wire in

Billet: I AM/BM

Activity: O.

wire in order to keep strain off dan buoy and anchor (two men, stationed at buoy and anchor respectively, maintain slack in wire, while third man pays out on wire).

5. (5 men) LAUNCHES ANCHOR AND BUOY. Receives orders from bridge, by sound powered phone, to launch gear; drops anchor over stern manually; waits until anchor takes up slack in mooring wire; drops dan buoy in water manually

Specifications

I. RATE AND PAY GRADE:

Current: BM Striker

Recommended: BM3

Possible: GM

II. EDUCATION:

Civilian: At least tenth grade education.

Navy: Class C school training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manuals: None

Check-off Lists: None

Tools: Must be able to use simple hand tools.

IV. PHYSICAL REQUIREMENTS:

No special physical requirements.
Considerable but not continuous heavy work.

Billet: I AM/BM

Activity: O.

V. SUPERVISION:

Type: Receives General Supervision

By: BMC

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Possibility of very serious loss due to errors. Loss of time or material may result from incorrect knowledge of depth of water, improper rigging of quick recovery pendant; paying out coil unevenly, and launching dan buoy before anchor.

Personal Injury: Possibility of permanent disability. Dropping 150 pounds weights, catching hand in coil and being pulled overboard, losing balance and falling overboard, and getting tangled in gear constitute hazards.

Safety Precautions: Wearing life jackets, keeping lines rigged, and keeping fantail clear of all unauthorized personnel.

Billet: I AM/BM

Activity: P. RECOVERS DAN BUOYS
(9 men)

Description

1. (1 man) RECEIVES ORDERS TO RECOVER DAN BUOYS. Receives orders to stand by to recover dan buoys.

2. (3 men) ATTACHES GRAPNEL HOOK TO QUICK RECOVERY PENDANT. Hooks a hand grapnel hook on to the quick recovery pendant of the dan buoy; leads dan buoy aft to fantail by pulling in on hand grapnel hook; requests bridge, by sound powered phone, to stop screw on side of ship the dan buoy is to be recovered.

3. (4 men) LIFTS DAN BUOY ON BOARD. Attaches hand grapnel hook to pad eye on upper part of dan buoy; hauls-in manually on grapnel hook and lifts dan buoy on board; shackles wire from nigger head on winch to anchor pendant wire; unshackles buoy from anchor pendant wire; runs anchor pendant wire through "L" type snatch block on stern chock; opens snatch block hinge and manually places anchor pendant wire in block; closes snatch block hinge; grasps wire shackled to anchor pendant wire and leads it to nigger head on winch; wraps four turns of wire around nigger head and tells winch operator to heave around slowly on nigger head until anchor breaks water.

4. (5 men) LIFTS ANCHOR ON BOARD WITH STERN CRANE. Swings stern crane outboard by turning large hand crank on side until crane is at desired position; turns small hand crank on upper part of crane in order to lower hook; attaches hook to cross bar on anchor and raises anchor by heaving around on small hand crank until anchor is even with deck; swings crane inboard by turning large hand crank until anchor is over desired position on deck; lowers anchor to deck by turning small hand crank on upper part of crane; disconnects hook from cross bar of anchor and notifies bridge by sound powered phone that dan buoy and anchor are aboard.

Billet: I AM/BM

Activity: P.

Specifications

I. RATE AND PAY GRADE

Current:	BM Striker
Recommended:	BM Striker
Possible:	GM

II. EDUCATION

Civilian:	At least eighth grade education.
Navy:	Formal fleet training school (not on ship)

III. ESSENTIAL KNOWLEDGE AND SKILLS

Level	Journeyman
Manuals	None
Check-off Lists	None
Tools:	Must be able to use simple hand tools, portable power tools, hand tools requiring accurate readings, and stationary machine tools

IV. PHYSICAL REQUIREMENTS

No special physical requirements; however must be able to speak clearly over sound powered phones
Light and moderate work during most of activity; during short phase of activity occasional heavy work.

Billet: I AM/BM

Activity: P.

V. SUPERVISION:

Type:	Receives Safety Supervision or Observation.
By:q	BMC

VI. DANGERS - EFFECT OF ERRORS:

Material Loss:	Possibility of some loss, easily corrected during most of activity; during short phase of activity possibility of very serious loss if anchor pendant parts causing loss of anchor. Loss of time or material also may result from gapnel line parting, grapnel line going overboard,
Personal Injury:	Some chance of minor cuts and bruises during most of activity. Falling overboard, and wires parting constitute hazards.
Safety Precautions:	Keeping clear of anchor and wires, and wearing life jackets and gloves.

Billet: I AM/BM

Activity: Q. STANDS O TYPE GEAR M/S WATCH
(6 men)

Description

1. (2 men) CLEARS FANTAIL. Gives orders for minesweep detail to clear fantail; insures that watch is properly set (watch consists of a phone talker and a messenger); insures that all unauthorized personnel are kept clear of fantail.

2. (1 man) WATCHES DYNAMOMETER. Checks dynamometer continually for overstrain on wire; notifies bridge by sound powered phone of all tension changes.

3. (1 man) WATCHES FLOATS. Checks floats by sight to see that they are riding properly on surface of water; sends messenger to notify leading BM if floats are not riding properly; watches red light on floats at night, to insure that floats are riding properly.

4. (1 man) RECEIVES WORD THAT TURN IS TO BE EXECUTED. Receives word from bridge over sound powered phone as to degree and type of turn to be executed.

5. (2 men) NOTIFIES MINESWEEP DETAIL. Sends messenger to notify leading BM and minesweep detail that turn is to be executed. (If it is anticipated that there are frequent turns to be made, the leading BM and minesweep crew remain on the fantail.)

6. (4 men) UNHOOKS KLEIN GRIPS ON DEPRESSOR WIRE BY TAKING STRAIN ON WIRE WITH WINCH. Requests bridge to reduce speed to four to six knots; receives word by sound powered phone that speed has been cut; signals winch operator to take strain on depressor wire; winch operator takes strain off Klein grips by hauling in depressor wire; grasps Klein grips by hand; slips Klein grips off wire by hand.

7. (3 men) TWO-BLOCKS DEPRESSOR TO STERN CHOCKS. Signals winch operator to haul in on depressor wire until depressor is clear of water; winch operator hauls-in on depressor wire until depressor is clear of water; sets brake on depressor drum by turning wheel-type brake;

Billet: I AM/BM

Activity: Q.

notifies bridge by phone that depressor is clear of water.

8. (6 men) STANDS BY WHILE TURN IS EXECUTED. Stands clear of all gear while turn is executed; receives word by phone to re-stream depressor.

9. (3 men) RE-STREAMS DEPRESSOR. Releases winch brake by turning wheel-type brake by hand; signals winch operator to pay out on depressor wire; winch operator pays-out proper length following signals of leading BM.

10. (4 men) STOPS-OFF DEPRESSOR WIRE ON DECK WITH KLEIN GRIPS. Attaches Klein grips to depressor wire by hand; signals winch operator to pay on depressor wire; winch operator pays-out wire slowly until Klein grips take strain of depressor wire; sets wheel-type brake on winch by turning by hand; notifies bridge that gear is stopped off on deck and that ship may resume speed.

11. (1 man) WATCHES KLEIN GRIPS FOR SLIPPAGE. Checks Klein grips by watching marlin tied to depressor wire and by watching amount of slack between Klein grip and winch to insure that wire is not slipping.

Specifications

I. RATE AND PAY GRADE:

Current: BM Striker, BM3

Recommended: BM Striker, BM3

Possible: GM, EM

II. EDUCATION

Civilian: At least eighth grade education.

Navy: Only boot camp training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Activity performed by Journeyman.

Billet: I AM/BM

Activity: Q.

Use of any Manuals, Check-off Lists or Tools unnecessary.

IV. PHYSICAL REQUIREMENTS:

Seeing: Must be able to see float pennant at 400 fathoms and red light on float at night at 400 fathoms.

Hearing: No special requirements.

Talking: Must be able to give distinct orders and speak clearly over sound phones.

Effort: Light work only.

V. SUPERVISION:

Type: Receives only Direction for short phase of activity; most of activity performed under General Supervision.

By: BOSN

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Possibility of considerable loss due to errors. Loss of time or material may result from failing to pass word properly to clear fantail, failing to report dynamometer readings regularly, failing to read dynamometer properly, failing to report any erratic movements of floats, failing to understand instructions, improper signaling causing wire to part and damaging depressor, turn in chain on Klein grip causing kink in wire, and damaging Klein grip.

Personal Injury: Possibility of permanent injury caused by backlash of parted wire during short phase of activity; some chance for minor

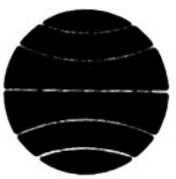
Billet: I AM/BM

Activity: Q.

cuts and bruises during most of activity. Stepping over wires while gear is streamed, and dropping Klein grip on hands or feet, constitute hazards.

Safety Precautions: Wearing life jackets.

DESCRIPTIONS AND SPECIFICATIONS FOR ELECTRICIAN'S MATE ON A MOTOR MINE SWEEPER



EM
ELECTRICIAN'S MATE



AMS Motor Mine Sweeper

PSYCHOLOGICAL RESEARCH ASSOCIATES

Billet: VI AMS/EM

Activity: A PREPARES FOR ACOUSTIC SWEEP
(1 man)

Description

1. RECEIVES SETTINGS FOR AUTOMATIC CONTROLLER. Receives memorandum from Mine Sweeping Officer which includes settings for automatic controller.

2. SETS-UP AUTOMATIC CONTROLLER. Sets right hand face plate on automatic controller by moving strips on face plate into desired position in order to induce desired resistance in face plate which determines operation and timing of type of sweep desired.

3. WARMS-UP AUTOMATIC CONTROLLER. Turns motor switch located on front of automatic controller which starts motor; permits motor to run for approximately fifteen minutes; checks to see that motor is running properly.

4. CHECKS AUTOMATIC CONTROLLER. Inspects visually to see that settings are correct; insures that points stop at particular spot regulated by previous setting.

5. LIGHTS-OFF, ON SHIPS USING WARSAW CONTROLLER, WARSAW CONTROLLER STARTING ACOUSTIC HAMMER. Moves arm on face of controller which varies resistance in hammer motor; permits current to enter motor gradually so as to preclude burning out the motor; adjusts resistance by moving arm until peak of resonance is reached; keeps log on length of time hammer is in operation.

6. LIGHTS-OFF, ON SHIP USING AUTOMATIC CONTROLLER, ACOUSTIC TROLLER STARTING ACOUSTIC HAMMER. Sets right hand face plate progression pointer; cuts in knife switch; cuts right hand face plate to OUT position; cuts automatic controller motor ON; turns right hand face plate switch to IN position when progression on right hand face plate reaches proper step; brings motor to speed with field rheostat.

7. CONNECTS AUTOMATIC CONTROLLER TO ACOUSTIC HAMMER. Throws single throw switch on automatic controller which connects automatic controller to acoustic hammer.

Billet: VI AMS/EM

Activity: A

8. BRINGS ACOUSTIC HAMMER TO RESONANCE PEAK. Cuts-in resistance into circuit using rheostat; regulates knob on rheostat until resonance peak is reached; simultaneously watches ammeter for sudden drop of three to five amperes which occurs when ammeter reads between eight and eleven amperes.

9. CHECKS TO INSURE PROPER OPERATION OF ACOUSTIC MINESWEEPING GEAR. Watches ammeter and automatic controller to insure that there is proper build up, pulsing, and off-time, now that hammer is connected to automatic controller.

10. REPORTS "PROPER OPERATION". Reports to bridge through sound tube "acoustic minesweeping gear is operating properly"; proceeds to fan tail and returns memorandum to Mine Sweeping Officer.

Specifications

I. RATE AND PAY GRADE:

Current: EM Striker, EM3, EM2

Recommended: EM3

Possible: IC, ET

II. EDUCATION:

Civilian: Eighth grade education is helpful but it is possible to perform activity with only fourth grade education.

Navy: Class C School training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Tools: Must be able to use simple hand tools --- screw drivers, hammers, etc.

Billet: VI AMS/EM

Activity: A

Manuals:	Must be completely familiar with BuShips Manual (Chapter on Electrical Circuits-Chapter 60).
Check-off Lists:	Inexperienced personnel should have "Ships 9" handy when performing activity.
Reading:	Must be able to read and interpret memorandum and numbers on face of plate on automatic controller.
Writing:	Must be able to keep time log of hammer when it is in operation.

IV. PHYSICAL REQUIREMENTS:

No special physical requirements. Mostly light and moderate work; never heavy work.

V. SUPERVISION:

Type:	Receives Direction.
By:	Mine Sweeping Officer.

VI. DANGERS - EFFECT OF ERRORS:

Material Loss:	Substantial losses due to errors. Loss of time or material may result from misinterpreting memorandum, putting strips on automatic controller incorrectly, failing to get acoustic hammer in proper resonance, putting resistance in circuit too quickly thus passing resonance peak, and incorrectly reading ammeter.
Personal Injury:	Some possibility of permanent injury caused by electrical shocks. Most of activity performed with little chance of accidents. Open knife switch constitutes a hazard.
Safety Precautions:	None

Billet: VI AMS/EM

Activity: B. HOOKS UP ACOUSTIC HAMMER
(2 men)

Description

1. (1 man) RECEIVES WORD FROM BM THAT ACOUSTIC HAMMER HAS BEEN STREAMED AND IS READY FOR ELECTRICAL HOOK UP.

2. (1 man) SELECTS PROPER TOOLS. Goes to tool bench and obtains sandpaper, screw drivers, pliers and tool belt from bench; attaches tools to belt and hooks tool belt around waist.

3. (2 men) CLEANS ELECTRICAL PLUG ON HAMMER LEADS. Goes to forecastle where bitter end of acoustic electrical leads is lying on deck; picks up male plug and pulls rubber tape from around contact points (rubber tape is put on plug after each retrieving so as to prevent corrosion on the contact points); insures that all tape is removed from plug; sandpapers copper contacts on plug until all corrosion is removed; makes visual inspection of plug to insure that it is undamaged.

4. (2 men) CLEANS FEMALE RECEPTACLE. Observes switch on female junction; insures that power switch is in the OFF position; wraps strip of sandpaper around screw driver; sticks screw driver inside receptacle and sands copper binding strips until all corrosion has been removed.

5. (2 men) PLUGS-IN ELECTRICAL LEAD. Threads male plug into female receptacle and insures that plug is not cross threaded; inspects hammer tow line to see that it is hooked up properly so as to prevent any strain on electrical lead; notifies, if improperly hooked up, BM in charge of streaming that present hook-up may cause damage to electrical lead; turns main power supply switch to the ON position and listens to determine if hammer vibrator motor is running; goes, if motor is not running, to generator room and checks-out circuit to junction box; notifies bridge power is ON.

6. (2 men) SECURES GEAR. Gathers all tools and returns them to the tool bench.

7. (2 men) CUTS-ON WARSAW CONTROLLER AND BRINGS HAMMER TO

Billet: VI. AMS/EM

Activity: B.

RESONANCE. Proceeds to pilot house and grasps arm-type switch on Warsaw controller; eases switch clockwise to extreme right taking about five or six seconds; turns switch counterclockwise slowly until ammeter drops off about two amperes (hammer is now in resonance); informs bridge hammer is operating.

Specifications

I. RATE AND PAY GRADE:

Current: EM Striker, EM3, EM2, EM1

Recommended: EM3

Possible: IC, ET

II. EDUCATION:

Civilian: At least eighth grade education.

Navy: Boot camp training.

III. ESSENTAIL KNOWLEDGE AND SKILLS:

Level: Journeyman

Tools: Must be able to use simple hand tools: hammers, screw drivers, etc.

Manuals: None

Check-off Lists: None

IV. PHYSICAL REQUIREMENTS:

Seeing: No special requirements.

Billet: VI AMS/EM

Activity: B.

Hearing:	Must be able to hear hammer motor above noise of ship to determine if circuit is complete.
Talking:	No special requirements.
Effort:	Light and moderate work; never heavy work.

V. SUPERVISION:

Type:	Receives Close Supervision.
By:	EM1

V. DANGERS - EFFECT OF ERRORS:

Material Loss:	Little chance of material loss due to errors. Loss of time or material may result from improper cleaning and cross threading plug.
Personal Injury:	Very little chance for accidents during most of activity, however, there is a possibility of permanent disability caused by electrical shock when plugging in electrical lead.
Safety Precautions:	Use of insulated tools.

Billet: VI. AMS/EM

Activity: C. INSPECTS AND MAINTAINS ACOUSTIC CONTROLLER
(1 man)

Description

1. OPENS INSPECTION PLATES. Unscrews two wing nuts on right side of each of three plates; swings door open by hand.

2. MAKES VISUAL INSPECTION. Checks front plate visually for presence of moisture on wire insulation, loose segments and loose jumper leads, excessive oil dripping from motor, excessive dust, play in linkage of chain drive; checks side plates visually for presence of loose jumper leads (1), dirty commutator segments (2), moisture on insulation, excessive wear on controller commutator brushers (3), burned commutator segments.

3. CLEANS CONTROLLER. Loosens dirt and dust from inside controller by brushing with small dry paint brush; removes loosened dirt by using hand vacuum cleaner; wipes commutator segments with clean piece of canvas or removes carbon collection with hand vacuum cleaner; polishes contacts with crocus cloth (4); blows out dust from resistor bank (5) using exhaust end of vacuum cleaner.

4. TIGHTENS ALL LOOSE CONNECTIONS. Tightens all slotted machine screws on terminal connection block (6) by turning with screw driver in order to insure that there are no loose electrical connections.

5. CHECKS OPERATING CONDITION OF MICRO-SWITCHES. (7). Closes micro-switch by depressing lever by hand; observes indicating lights, which go on when switches are closed, in order to insure that switches are on; checks by listening for distinct click which is heard when contact is made or broken to insure micro-switches are on.

6. WARMS-UP CONTROLLER MOTOR. Flips toggle switch on distribution panel to ON position which supplies power to controller; turns rotary ON-OFF switch located on face of controller to ON position, in order to start controller motor.

7. CHECKS SPEED CONTROL RHEOSTAT. Turns rheostat knob in counterclockwise direction in order to bring motor to

Billet: VI AMS/EM

Activity: C.

lowest speed; turns rheostat knob in clockwise direction slowly; listens for steady increase in speed of motor; turns rheostat knob clockwise as far as it will go and then slowly backs off on knob until desired motor speed is reached so that operation of relays can be checked.

8. CHECKS OPERATION OF RELAYS. Checks relays visually to insure that relay becomes energized at end of pulse.

9. CHECKS OPERATION OF CYCLING SWITCH (8). Turns rotary (cycling) switch to IN position; observes indicating lights to see that cycling switch is operating properly; turns controller motor off.

10. CHECKS LUBRICATION OF CONTROLLER MOTOR. Checks visually two lubrication fittings on motor to see if oil is needed; adds light oil if needed by using squirt can.

11. CHECKS BRUSHES AND COMMUTATOR OF CONTROLLER MOTOR. Unscrews brush cap by turning with screw driver; lifts spring and brush out by hand; inspects brush visually and by touch to see if brush is worn or chipped; replaces with new brush if necessary; seats brush on commutator using fine sandpaper; places brush and spring in brush holder; screws in brush cap to hold brush and spring in position.

12. TAKES GROUND READING. Removes one armature lead (9) with screw driver; attaches line side of megger to armature lead with alligator clip; attaches ground side of megger to any positive ground; turns crank on megger at approximately sixty RPM in order to generate five hundred volts; takes direct reading from indicator dial on megger to insure a minimum of one hundred thousand ohms.

13. CLOSES INSPECTION PLATES. Swings doors closed; screws wing nuts in clockwise direction to secure doors.

Definition of Terms

(1) Jumper lead - a flexible copper conductor which is used to make an electrical connection between two terminal points.

Billet: VI AMS/EM

Activity: C.

(2) Commutator segment - a copper strip on end of motor which carries current from source to armature windings.

(3) Commutator brushes - a brush which rides on the surface of the commutator completing circuit from resistor to commutator.

(4) Crocus cloth - a non-metallic, fine, abrasive, similar to a jeweler's rouge, used to clean commutators and electrical contacts.

(5) Resistor bank - a group of resistors which determines amount of current entering motor, thereby determining speed of motor.

(6) Terminal connection box - insulated block of bakelite in which machine screws are tapped or threaded to hold connections.

(7) Micro-switch - a very sensitive switch which opens or closes a circuit.

(8) Cycling switch - a switch which automatically opens and shuts, thereby controlling the number of pulses per cycle.

(9) Armature lead - a copper wire conductor which is insulated and comes directly from armature side of drive motor.

Specifications

I. RATE AND PAY GRADE:

Current: EM Striker, EM3, EM2

Recommended: EM Striker

Possible: Any rate with a basic knowledge of electricity can perform activity after a short period of instruction.

II. EDUCATION:

Civilian: At least eighth grade education.

Billet: VI AMS/BM

Activity: C.

Navy: Class C School training helpful but activity can be performed with only Class A School School training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manuals: None

Check-off Lists: None

Tools: Must be able to use paint brushes, meggers, simple hand tools, portable power tools, and electrical testing instruments.

IV. PHYSICAL REQUIREMENTS:

No special physical requirements; light work only.

V. SUPERVISION:

Receives No Supervision.

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Possibility of substantial loss due to errors. Loss of time or material may result from stripping threads on bolts, being careless; using incorrect cleaning cloth; not securing power; using improper screw driver; failing to check switches for cleanliness; bending lever on switch while checking; leaving tools or rags in machine; turning rheostat knob too far; having switch in improper position; failing to check brush tension when re-inserting; putting brushes in wrong position; and not turning megger fast enough.

Personal Injury: Some chance for minor cuts and bruises; possibility of electrical shock if power

Billet: VI. AMS/EM

Activity: C.

is not secured.

Safety Precautions: Securing power, tagging switch, wearing gloves, using insulated tools, and starting motor at slowest speed with rheostat all the way to the right.

Billet: VI AMS/EM

Activity: D. INSPECTS AND MAINTAINS ACOUSTIC HAMMER (2 men)

Description

1. (1 man, EM, or BM) REMOVES DIAPHRAGM AND TAIL SECTION OF WATER TIGHT CONICAL BOX. Loosens retaining bolts from bow section with speed wrench; places bolts in safe place making sure they are not lost; lifts bow section away from streamlined housing and sets on deck; loosens and removes diaphragm bolts; removes diaphragm and sets aside; loosens and removes tail section bolts; lifts tail section away from streamlined housing and sets on deck.

2. (2 men, EM or EM) REMOVES HAMMER MECHANISM FROM WATER-TIGHT CONICAL BOX. Removes retaining bolt and lifts handle of quick opening hatch located on after end of water-tight conical box; lowers hatch out of way; disconnects electric connectors by unscrewing connectors and unplugging sockets; loosens four clamp bar retaining bolts on each side of mechanism; loosens jam nut and turns adjusting bolt in counterclockwise direction until adjusting bolt is disconnected from mechanism; slides hammer mechanism out forward end of conical box.

3. (1 man) CHECKS SAFETY SWITCH AND DRAINS PLUG IN CONICAL BOX. Makes visual inspection of safety switch and drain plug in conical box: makes visual inspection of safety switch and drain plug located in lower forward part of conical box; removes any foreign matter that might cause malfunction of safety switch.

4. (1 man, EM or BM) CHECKS INSIDE OF WATER TIGHT CONICAL BOX FOR MOISTURE. Makes visual inspection of inside surface of conical box for presence of moisture; removes moisture, if present, by wiping with dry cloth.

5. (1 man) CHECKS STUFFING TUBE AND POWER CABLE LEADING INTO WATER TIGHT CONICAL BOX. Makes visual inspection of stuffing tube and power cable, checking for breaks in power cable and possible leaks in and around stuffing tube.

6. (1 man) INSPECTS D.C. MOTOR AND REPAIRS AS NECESSARY. Removes inspection plates with screw driver; makes visual

Billet: VI AMS/EM

Activity: D.

inspection of brushes, armature and bearings; checks for grease on leads into the motor; replaces brushes and cleans armature if necessary; makes ground test with megger for field by lifting brushes off commutator; replaces inspection plates upon completion of tests.

7. (2 men, EM or BM) REPLACES MECHANISM IN WATER-TIGHT CONICAL BOX. Slides mechanism into conical box far enough to make contact with adjusting bolt; connects adjusting bolt to mechanism; attaches adjusting bar across face of conical box in vertical position over diaphragm gasket; turns eccentric of hammer mechanism until striker is in most forward position; turns adjusting bolt until striker is one-quarter inch aft of adjusting bar; threads jam nut by hand to lock adjusting bolt and mechanism in place; tightens clamp bar bolts with one-inch socket wrench; removes adjusting bar from face of conical box; attaches socket and screws of electrical connector to electric motor.

8. (1 man, EM or BM) REPLACES DIAPHRAGM AND TAIL SECTIONS. Lifts tail section from deck and attaches to streamlined housing by replacing tail section bolts; places diaphragm into position and tightens diaphragm bolts; lifts bow section from deck and attaches to streamlined housing with retaining bolts.

9. (1 man) INSPECTS WATER-TIGHT CONNECTION BOX. Makes visual inspection of water-tight connection box; checks to see that receptable is free of foreign matter and that switch is functioning properly; cleans contacts of receptacle if necessary.

10. (1 man) INSPECTS POWER CABLE. Makes visual inspection of power cable for break(s) in cable insulation; repairs or replaces cable as necessary.

Specifications

I. RATE AND PAY GRADE:

Current: EM Striker, EM3, EM2

Billet: VI AMS/EM

Activity: D.

Recommended: EM3

Possible: No other rates can perform activity.

II. EDUCATION:

Civilian: At least eighth grade education.

Navy: Class C School training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manuals: None

Check-off Lists: None

Tools: Must be able to use simple hand tools and hand tools requiring accurate readings.

IV. PHYSICAL REQUIREMENTS:

No special physical requirements. Some heavy work but mostly light and moderate work.

V. SUPERVISION:

Type: Receives General Supervision.

By: EMC

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Some chance for considerable loss due to errors. Loss of time or material may result from testing and repairing incorrectly; aligning motor incorrectly; and forgetting to throw switch on jackbox.

Personal Injury: Some chance for accidents causing permanent disability. Dropping tail section, which is

Billet: VI AMS/EM

Activity: D.

Difficult to handle on foot; dropping mechanism on foot; and electrical shocks; constitute hazards.

Safety Precautions: Making sure all power to acoustic hammer is secured, and using caution as neutral position is passed when lifting handle on hatch.

Billet: VI AMS/EM

Activity: E. PREPARES FOR MAGNETIC SWEEP
(1 man)

Description

1. WARMS-UP PRIME MOVER OF 540 KW GENERATOR (INTERMITTENT). Tells engineman to warm up prime mover; makes visual check of generators to insure approximately 230 volts.

2. SETS-UP SPECIAL SERVICES SWITCHBOARD. Closes excitor switch; sets-up excitor voltage by rheostat; closes control switch; closes selector switch to obtain type of pulse; closes terminal box safe run switch which is located in pilot house; closes ground switch to obtain ground reading; opens ground switch; reports to bridge "no grounds".

3. WARMS-UP MAGNETIC CONTROLLER. Sets-up ON and OFF time on face plate; sets-up cams and gears; sets-up type of pulse; turns on power switch; starts controller; allows controller to warm up 15 to 30 minutes.

Specifications

I. RATE AND PAY GRADE:

Current: EM Striker, EM3, EM2, EM1

Recommended: EM3, EM1

Possible: IC, EN, ET

II. EDUCATION:

Civilian: High school education is helpful but it is possible to perform activity with only 10th grade education.

Navy: Class A school training or Class C school training.

Billet: VI AMS/EM

Activity: E.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level:	Activity may be performed by Journeyman under General Supervision or Close Supervision under direction.
Tools:	Must be able to use simple manual tools--- screw drivers, hammers.
Manuals:	Must be able to use G. E. 1-17121 Special Power Equipment.
Check-off Lists:	None

IV. PHYSICAL REQUIREMENTS

Seeing:	Must have good night vision because ship is darkened during night operations. Must be able to distinguish colors in order to interpret circuit indicator lights and in order to differentiate wire colors.
Hearing:	No special requirements.
Talking:	Must be able to speak clearly on telephones.
Effort:	Mostly moderate work; never heavy work.

V. SUPERVISION:

Type:	Receives General Supervision (if performed by Journeyman). Receives Direction (if performed by Close Supervisor).
By:	Ensign (if performed by Journeyman). LTJG. (if performed by Close Supervisor).

VI. DANGERS - EFFECT OF ERRORS:

Material Loss:	Errors which could result from bad fuel, pitted contacts, and dirty connections can cause considerable loss which would be difficult to correct.

Billet: VI AMS/EM

Activity: E.

Personal Injury:	Some chance for permanent disability. Faulty governors, possibility of electrical shocks, and burns constitute hazards.
Safety Precautions:	Checking governor, checking voltage, conducting ground test, and checking bad switch.

Billet: VI AMS/EM

Activity: F. HOOKS UP MAGNETIC TAIL
(1 man)

Description

1. CHECKS SAFE RUN SWITCH. Pushes rocker arm switch by hand to insure that the switch is on the OFF position. (This is done to insure that there is no power on the terminal box).

2. OPENS TERMINAL BOX. Loosens six hinged wing nuts on sides of box, by hand; pushes bolts off to side; lifts cover off by hand and sets on deck.

3. REMOVES CAPS FROM FRONT OF BOX. Unscrews cover from top of holes where cable is inserted; pushes cover off holes from inside using ratchet handle; places caps on deck.

4. INSPECTS TERMINALS AND TERMINAL BOX. Makes visual inspection of terminals for moisture and corrosion; wipes moisture off terminals with cloth; sandpapers corrosion from terminals if needed, using fine sandpaper; inspects terminal box visually for signs of further corrosion, moisture and shorts.

5. INSERTS TERMINALS IN TERMINAL BOX. Receives terminals from BM in reel well; inserts terminals in proper holes; tightens one bolt on each terminal opening using box end wrench or ratchet so as to hold terminals in terminal box.

6. CHECKS FOR GOOD CONNECTIONS. Grasps cable by hand; pulls and twists on cable to insure terminals do not move in connections; tightens bolts down more securely if connection is not secure, to prevent arcing of connections if connections were loose.

7. CLOSES CONNECTION BOX. Places cover over terminal box; pushes hinged wing bolts into "U" extending from cover; tightens six wing nuts by hand.

8. CLOSES SAFE-RUN SWITCH. Pushes rocker arm switch on ON button; insures switch is on by listening to switch drop into lock position.

Billet: VI AMS/EM

Activity: F.

9. NOTIFIES BRIDGE "READY FOR PULSING". Telephone talker receives word from man-in-charge, "ready for pulsing"; relays word to bridge using sound powered phone that "all ready for pulsing".

10. STANDS-BY MK 6 CONTROLLER. Goes up to pilot house; stands by load switch on front of MK 6 timer waiting for word to commence pulsing; receives word to commence pulsing.

11. THROWS LOAD SWITCH. Flips load switch by hand to ON position; insures MK 6 timer is on OFF when load switch is thrown.

Specifications

I. RATE AND PAY GRADE:

Current: EM Striker, EM3, EM2, EM1.

Recommended: EM Striker, EM3.

Possible: ET, IC, EN, DC, SO, RN, or any rate with proper experience.

II. EDUCATION:

Civilian: High school education is helpful but it is possible to perform activity with only eighth grade education.

Navy: Class A School training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Check-off Lists: None

Manuals: Must be able to use G.E. 1-17121 Special Power Equipment.

Billet: VI AMS/EM

Activity: F.

Tools: Must be able to use simple hand tools--- screw drivers, hammers, etc.

IV. PHYSICAL REQUIREMENTS:

Seeing: No special requirements.

Hearing: No special requirements.

Talking: Must be able to speak clearly over sound powered telephones.

Effort: Mostly moderate work; never heavy work.

V. SUPERVISION:

Type: Most of activity performed under Direction or No Supervision; short phase of activity performed under Observation.

By: Ensign.

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Possibility of very serious loss due to errors. Losses of material may result from observing incorrectly; cleaning improperly; breaking studs; securing studs on female fittings being twisted off; not locking switch correctly, being careless in checking work; jamming connections; marring surfaces; and using improper connections.

Personal Injury: Possibility of permanent disability during short phase of activity; constant chance for minor cuts and bruises. Electrical shocks, dropping cover on foot, bruising hands when tightening belts, and burns constitute hazards.

Safety Precautions: Wearing rubber gloves; insuring safe run switch is open and insuring load switch is OFF.

Billet: VI AMS/EM

Activity: G. OPERATES MINESWEEP WINCH
(1 man)

Description

1. CUTS-IN MAIN POWER SUPPLY. Proceeds to main generator room and throws switch labeled "drum winch" to ON position; checks to see that generator is producing enough power.

2. CHECKS CONTROLLER FOR GROUND AND OBSTACLES. Proceeds to engineer's storeroom with megger; connects one lead of megger to ground; connects other lead of megger to stationary contacts of controller; cranks megger and observes dial to insure that there is no ground; disconnects leads from megger; makes visual inspection of controller and removes obstacles and unnecessary gear from top and/or vicinity of panel.

3. CHECKS WINCH FOR PROPER OPERATION. Proceeds to winch on fantail; makes visual inspection to insure that all drums are disengaged; turns-on switch for power supply to controls.

4. DISENGAGES BRAKE. Removes locking pin in footbrake; throws engaging levers to proper position to engage drums to be used.

5. OPERATES WINCH. Obeys signals given by leading BM in charge of mine sweeping operation concerning the operation of the winch.

6. SECURES OPERATION OF WINCH. Disengages all drums by throwing engaging levers to neutral position; applies foot brakes; replaces locking pins in brake shafts.

7. SECURES WINCH. Throws control power supply switch to OFF position; proceeds to generator room and throws switch labeled "drum winch" to OFF position.

Specifications

I. RATE AND PAY GRADE:

Billet: VI AMS/EM

Activity: G.

Current: EM Striker, EM3, EM2

Recommended: EM3

Possible: EN, BM, or any rate with proper experience.

II. EDUCATION:

Civilian: Tenth grade education helpful but it is possible to perform activity with only eighth grade education.

Navy: Class C School training is helpful, but with proper experience activity can be performed with only boot camp training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Tools: Must be able to use electrical gauges --- megger, galvanometers, and voltmeter.

Check-off Lists: None

Manuals: None

IV. PHYSICAL REQUIREMENTS:

No special physical requirements but good night vision is helpful during night operations. Mostly light and moderate work, never heavy work.

V. SUPERVISION:

Type: Most of activity performed under General Supervision; short phase of activity performed under Direction.

By: LTJG.

Billet: VI AMS/EM

Activity: G.

VI. DANGERS - EFFECT OF ERRORS:

Material Loss:	Possibility of considerable loss of time and material due to errors when operating winch. Little chance of loss during rest of activity. Time or material may be lost as a result of being careless, and starting winch in wrong direction.
Personal Injury:	Some chance for minor cuts and bruises. Parting wire constitutes main hazard.
Safety Precautions:	None

Billet: VI AMS/EM

Activity: H. INSPECTS AND MAINTAINS MK VI CONTROLLER
(1 man)

Description

1. REMOVES CONTROLLER FROM CASE. Removes electrical connections below front panel; removes four holding bolts with socket wrench; slides controller from case insuring that electrical leads are not scraped or damaged.

2. MAKES VISUAL INSPECTION. Checks for presence of moisture on wire insulation, loose segments and jumper leads, excessive oil dripping from motor, excessive dust; checks for dirty commutator segments, excessive wear on controller commutator brushes, burned commutator segments.

3. CLEANS CONTROLLER. Loosens dirt and dust from inside controller by brushing with small dry paint brush; removes loosened dirt by using hand vacuum cleaner; wipes commutator segments with clean piece of canvas or removes carbon collection with hand vacuum cleaner; polishes contacts with crocus cloth; blows-out dust from resistor bank using exhaust end of vacuum cleaner.

4. TIGHTENS ALL LOOSE CONNECTIONS. Tightens all slotted machine screws on terminal connection blocks by turning with screw driver in order to insure that there are no loose electrical connections.

5. LUBRICATES CONTROLLER. Lubricates bearings and gears of following components according to lubrication chart: timing mechanism, field control unit, sequence-selector-relay, motor.

6. MAKES MECHANICAL INSPECTION. Rotates motor by hand to insure that it is free to turn; moves oscillating arm back and forth between zero and total stop to see that it is free to turn; checks mechanical operation of sequence-selector-relay, by operating armatures manually with fingers; checks field control unit to insure that brush and cam follower are free to move through their complete arc.

Billet: VI AMS/EM

Activity: H.

7. MAKES OPERATIONAL TEST. Connects 250 volt power supply to controller; turns power switch to ON position; insures that amplidyne motor starts and that timing mechanism and field controller are functioning properly; insures that field control unit cam turns in proper direction and in proper sequence; presses stop button on panel; insures that pulse polarity switches are operating properly; sets operation switch to AC-Master, DC-Slave, and AC-Slave in succession, to insure that each of these operating phases are functioning properly.

8. REPLACES CONTROLLER IN CASE. Slides controller in case insuring that electrical leads are not damaged; inserts four holding bolts in place and tightens with socket wrench; replaces all electrical connections below front panel.

Specifications

I. RATE AND PAY GRADE:

Current: EM Striker

Recommended: EM3

Possible: MN, IC, ET

II. EDUCATION:

Civilian: At least eighth grade education

Navy Class A and Class C school training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Close Supervisor

Manuals: Must be able to use General Electrical Instruction Manual.

Billet: VI AMS/EM

Activity: H.

Check-off Lists: None

Tools: Must be able to use simple hand tools, hand tools requiring accurate readings, and electrical gauges.

IV. PHYSICAL REQUIREMENTS:

No special physical requirements. Occasional heavy work.

V. SUPERVISION:

Receives No Supervision.

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Possibility of serious material loss as a result of errors. Damage to controller may result from lack of lubrication and faulty electrical connections.

Personal Injury: Little chance for accidents

Safety Precautions: None

Billet: VI AMS/EM

Activity: I. INSPECTS AND MAINTAINS SWEEP GENERATOR AND EXCITERS
(1 man)

Description

1. CHECKS ELECTRICAL COMPONENTS. Removes inspection plates on sweep generator and exciters; checks brush spring tension with brush tension gauge; checks to see that armatures are clean; inspects all wire connections to see that they are secure.

2. CHECKS BELTS. Inspects pulley belts to insure that the right tension is on each belt and replaces belts when necessary.

3. CHECKS CLEANLINESS. Makes an over-all check for dirt and excess oil; checks generator for proper ventilation; replaces inspection plates.

Specifications

I. RATE AND PAY GRADE:

Current: EM striker

Recommended: EM3

Possible: EN, MN, IC, ET

II. EDUCATION:

Civilian: At least eighth grade education.

Navy: Class A and Class C School training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manuals: Must be able to use General Electric Instruction Manual.

Billet: VI AMS/EM

Activity: I

Check-off Lists: None.

Tools: Must be able to use simple hand tools, hand tools requiring accurate readings, and electrical gauges.

IV. PHYSICAL REQUIREMENTS:

No special physical requirements, occasionally heavy work.

V. SUPERVISION:

Receives No Supervision.

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Very serious loss of time and material may result from errors.

Personal Injury: Possibility of minor cuts and bruises.

Safety Precautions: None.

Billet: VI AMS/EM

Activity: J. INSPECTS AND MAINTAINS MAGNETIC TAIL (2 men)

Description

1. (1 man) INSPECTS COPPER CABLE FOR CORROSION. Checks tail by touch, to detect any soft spots caused by electrolytic action; cuts-away insulation from soft spot using a knife; inspects opening visually.

2. (1 man) WRAPS, WHEN DAMAGE IS MINOR, SELF-VULCANIZING RUBBER TAPE AROUND OPENING. Wipes tail dry of water with dry cloth; unrolls two inch wide tape from roll and winds by hand, around break, using continuous length of tape; continues winding tape until area six inches forward and six inches aft of break is covered; insures that tape is wound with a half-inch overlap; cuts-off tape from roll with knife.

3. (1 man) WRAPS FRICTION TAPE OVER RUBBER TAPE. Unrolls two inch wide friction tape from roll and winds, by hand, around break using continuous length of tape; continues winding tape until area two inches forward and two inches aft of break is covered; insures that tape is wound with half-inch overlap; cuts-off tape from roll with knife.

4. (1 man) INSPECTS, IF CABLE IS DAMAGED, COPPER CABLE FOR EXTENT OF CORROSION. Cuts insulation from cable in both directions from damaged section until non-damaged section appears.

5. (2 men) REMOVES DAMAGED PORTION OF TAIL. Holds tail steady with hands and cuts-out damaged portion of cable with a hack saw; gives damaged portion of cable to minesweeping officer.

6. (2 men) SKINS INSULATION BACK FROM CUT ENDS OF TAIL. Makes cross-sectional circular cut with knife, six inches from each cut end of tail; removes insulation by cutting pulling motion; discards cut insulation.

7. (2 men) FOLDS BACK FIRST LAYER OF WIRE. Places finger between insulation and wire to insure that wire will not be bent too sharply; grasps end of first layer of wire

Billet: VI AMS/EM

Activity: J.

with hand and bends back over insulation; tapes bent wire in position over insulation with single strip of friction tape to insure that wire does not get tangled with second layer of wire.

8. (1 man) CUTS-AWAY FIBER BETWEEN WIRE LAYERS. Unwraps fiber covering between wire layers by grasping and pulling loose end; cuts fiber loose and discards.

9. (1 man) FOLDS BACK SECOND LAYER OF WIRE. Places finger between insulation and wire to insure that wire will not be bent too sharply; grasps end of second layer of wire with hand and bends back over insulation; winds single strip of friction tape to insure that wire does not get tangled with first layer of wire.

10. (1 man) PULLS-OUT WOODEN CYLINDERS. (1) Presses screw driver between cylinders; prys-out cylinders from end of tail to start of insulation; discards removed cylinders.

11. (2 men) INSERTS BRONZE SLEEVE (2) INTO END OF BUOYANT SECTION. Knocks-out face on wooden cylinder in tail, using chisel and hammer; inserts bronze sleeve into hollow cylinders on both ends of wires.

12. (1 man) MAKES TEMPORARY BANDIT SPLICE. (3) Bends inner layer of wire, previously bent back, to original position; bends outer layer of wire, previously bent back, to original position; insures that all wires are laid back over cylinder; applies band (4) over wires coming from one end of tail and re-bends wires so that they now are in same position as original bend; applies band over wires coming from other end of tail and re-bends wires so that they now are in same position as original bend; lays all wires smooth along cylinder and cuts them off flush against insulation of outer cable.

13. (1 man) WRAPS WITH SELF-VULCANIZING TAPE. Builds-up hollow where splice is made, by filling with any dry non-conductive material; unrolls two inch wide rubber tape from roll and winds continuous length of tape around splice, overlapping each turn one half inch; uses amount of tape sufficient to insure water tightness.

Billet: VI AMS/EM

Activity: J.

14. (1 man) WRAPS FRICTION TAPE OVER RUBBER TAPE. Unrolls two inch wide friction tape from roll and winds, by hand around break using continuous length of tape; continues winding tape until all vulcanized rubber tape has been covered; insures that tape is wound with half-inch overlap; outs-off tape from roll with knife.

15. (1 man) PAINTS WITH INSULATING VARNISH. Applies varnish to taped area using paint brush; insures that varnish is dry prior to putting tail in water.

Description of Terms

(1) Wooden cylinders - Plywood cylinders about two and one-half inches long and two inches in diameter, closed on both ends; serves to make tail buoyant.

(2) Bronze sleeve - Bronze cylinder (seven inches long and two inches in diameter) fitted with wooden plugs held in place by bolt running lengthwise through cylinder; serves as a connector for bandit splice.

(3) Bandit splice - Splice consisting of four bands and bronze sleeve, used as a temporary splice only.

(4) Bands - Stainless steel metal band (three-quarters inch wide) used to hold copper wire to bronze sleeve; band is secured by clamp.

Specifications

I. RATE AND PAY GRADE:

Current: EM Striker, EM3, EM2, EM1, EMC
BM Striker, BM3, BM2, BM1, BMC

Recommended: EM3

Possible: ET, EN, RM, or any rate with the proper experience.

Billet: VI AMS/EM

Activity: J.

II. EDUCATION:

Civilian: At least eighth grade education.

Navy: Class C School training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manuals: None

Check-off Lists: None

Tools: Must be able to use simple hand tools, hammers, screw drivers, etc.

IV. PHYSICAL REQUIREMENTS:

No special physical requirements. Light work only.

V. SUPERVISION:

Type: Receives General Supervision.

By: Ensign or LTJG.

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Constant possibility of substantial loss due to errors. Loss of time or material may result from cutting cable needlessly, wrapping the wrong way, wrapping too loosely, failing to overlap tape, using incorrect tape, being careless when cutting cable, improper inspection, cutting insulation too deeply resulting in the wire being cut, breaking wires by sharp bends, using wires incorrectly, improper fitting of sleeve into buoyant section, improper adjustment of bands, crossing wires, and failing to let part dry before insertion in water.

Billet: VI AMS/EM

Activity: J.

Personal Injury:	Some chance for minor cuts and bruises. Breaking hack saw blade which could injure face and failing to stop off properly on deck prior to cutting, constitute hazards.
Safety Precautions:	Insuring tail is properly stopped on deck prior to repairing.

Billet: VI AMS/EM

Activity: K. INSPECTS AND MAINTAINS MAIN MAGNETIC DISTRIBUTION BOARD (1 man)

Description

1. OBTAINS PROPER TOOLS AND EQUIPMENT. Obtains manual from engineroom, and tools and equipment from generator room; uncoils megger leads and positions all tools in convenient location.

2. MAKES VISUAL INSPECTION OF BOARD. Obtains key to open lock on door and unlocks door; inspects board for general cleanliness and action of all moving parts; checks board for any naked electric wires or burned connections and repairs as necessary.

3. MAKES GROUND TEST OF BOARD. Connects one megger lead to board housing or to any other good ground point on ship; connects other megger lead to individual coil terminals, switch terminals, and switch contacts; turns megger handle and observes megger dial to check ground of each individual terminal; disconnects and secures megger.

4. MAKES CLEARANCE TEST. Obtains feeler gauge and looks-up proper clearance as prescribed in instruction manual; inserts appropriate feeler blade between moving contact and core of electromagnet; adjusts clearance to prescribed gauge by moving adjusting screw; checks and adjusts each relay, individually, by the same procedure.

5. CLEANS AND ADJUSTS OPERATING COMPONENTS. Obtains sandpaper and sands all charred or pitted contacts; polishes each contact with crocus cloth, and applies light coat of vasoline in order to prevent arcing; adjusts all movable contacts so that maximum contact is attained; adjusts each contact for proper spring tension according to instruction manual specifications.

6. SECURES GEAR. Replaces all tools and equipment on tool bench and locks door of board.

Billet: VI AMS/EM

Activity: K.

Specifications

I. RATE AND PAY GRADE:

Current: EM Striker, EM1

Recommended: EM3

Possible: ET, IC

II. EDUCATION:

Civilian: At least high school education

Navy: Class A School training

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman

Manuals: None

Check-off Lists: None

Tools: Must be able to use simple hand tools and electrical test equipment.

Reading: Must be able to read complicated technical manuals, diagrams, and blueprints.

IV. PHYSICAL REQUIREMENTS:

No special physical requirements. Mostly light and moderate work; never heavy work.

V. SUPERVISION:

Type: Receives Direction.

By: Ensign.

Billet: VI AMS/EM

Activity: K.

VI. DANGERS - EFFECT OF ERRORS:

Material Loss:	Possibility of some loss, easily corrected, due to errors. Loss of time or material may result from reading scales incorrectly, using incorrect feeler gauge, and improper adjustments.
Personal Injury:	Very little chance for accidents.
Safety Precautions:	None

Billet: VI AMS/EM

Activity: L. OPERATES DEGAUSSING SYSTEM
(1 man)

Description

1. TURNS POWER ON TO DEGAUSSING PANEL. Goes to main distribution board and observes letters on panel to insure that proper switch is being turned on; turns safety switch counter-clockwise; closes knife switch (double throw single pole switch).

2. OBTAINS INFORMATION AS TO DESIRED CURRENT. Observes chart in degaussing folder to see proper setting for degaussing in intermediate location.

3. CLOSES INDIVIDUAL COIL SWITCHES. Closes switch to main degaussing coil; closes switch to main auxiliary coil; closes switch to A (athwartship) coil; closes switch to L (longitude) coil. (Direction that switches are to be closed is given in degaussing folder. Each folder is set up in accordance with ships magnetic signature).

4. ADJUSTS FLOW OF CURRENT THROUGH COILS. Goes to degaussing panel; turns rheostat; observes ammeter scale deflection; adjusts flow of current to proper amperage.

5. SECURES DEGAUSSING SYSTEM. Opens switch to main auxiliary coil; opens switch to A (athwartship) coil; opens switch to L (longitude) coil; observes ammeter scale deflection; throws polarity switch to opposite polarity; turns rheostat so as to reduce amperage approximately 20 amperes; throws polarity switch to opposite polarity; continues decreasing amperage and reversing polarity until amperage reaches zero; opens switch to main degaussing coil; goes to main distribution board and opens knife switch (double throw single pole switch); turns safety switch clockwise.

Specifications

I. RATE AND PAY GRADE:

Current: EM Striker, EM3, EM1

Billet: VI AMS/EM

Activity: L.

Recommended: EM3

Possible: EN, QM, ET

II. EDUCATION:

Civilian: At least high school education.

Navy: Class A School training.

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level: Journeyman.

Manuals: Must be able to use degaussing folder

Check-off Lists: None

Tools: Must be able to use electrical test equipment.

Reading: Must be able to read blueprints and diagrams in order to interpret degaussing folder.

IV. PHYSICAL REQUIREMENTS:

No special physical requirements. Light work only.

V. SUPERVISION:

Type: Receives Direction.

By: Ensign

VI. DANGERS - EFFECT OF ERRORS:

Material Loss: Some chance of material loss; easily corrected. Loss of time or material may result from losing folder; closing switch in wrong direction; regulating current incorrectly; and using incorrect securing procedures.

Billet: VI AMS/EM

Activity: L.

Personal Injury:	Very little chance for accidents during most of activity; possibility of permanent injury caused by electrical shock when turning power on to degaussing panel.
Safety Precautions:	None

Billet: VI AMS/EM

Activity: M. INSPECTS AND MAINTAINS DEGAUSSING SYSTEM (1 man)

Description

1. SECURES ALL POWER. Observes position of main power switch and insures that main power switch is on OFF position; attaches danger tag to switch in order to warn other personnel not to turn on switch.

2. PREPARES FOR MEGGER READING. Obtains megger from electricians shop and proceeds to degaussing panel; uncoils megger leads from around megger; closes all coil switches.

3. TAKES MEGGER READING. Attaches one electrical lead from megger to base plate of degaussing panel; attaches other lead from megger to fuse clip that is to be tested; turns hand crank on megger; observes scale deflection; lights-off, if megger reading is below specification, degaussing system and allows to run until megger readings are correct; takes megger readings on each individual coil; disconnects electrical leads.

4. FILLS-OUT LOG ON COMPLETED TEST. Obtains megger cards from shop files and enters megger readings on megger cards; returns megger cards back to file.

5. SECURES MEGGER. Coils electrical leads around megger, and returns megger to electrician's shop.

6. OPENS COIL SWITCHES. Turns each coil switch to OFF position; removes danger tag from coil switch.

Specifications

I. RATE AND PAY GRADE:

Current: EM Striker, EM3, EM1

Recommended: EM3

Possible: ET, IC, EN

Billet: VI AMS/EM

Activity: M.

II. EDUCATION:

Civilian:	At least high school education.
Navy:	Class A School training

III. ESSENTIAL KNOWLEDGE AND SKILLS:

Level:	Journeyman
Tools:	Must be able to use electrical gauges.
Check-off Lists:	None
Manuals:	None
Writing:	Must be able to keep a log.

IV. PHYSICAL REQUIREMENTS:

No special physical requirements.
Mostly light and moderate work; never heavy work.

V. SUPERVISION:

Type:	Receives Direction
By:	Ensign

VI. DANGERS - EFFECT OF ERRORS:

Material Loss:	Possibility of substantial loss; difficult to correct. Loss of time or equipment may result from dropping meter; reading meter incorrectly; and receiving improper information.
Personal Injury:	Very little chance for accidents.
Safety Precautions:	Attaching danger tag to switch.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

Technical Report-Part I-Procedures, Manuals, and Forms for Interviewing, Tabulating, and Compiling Billet Analysis Information (Unclassified) has described the initial phases of a series of studies of mine warfare personnel administrative procedures. This report presents the research methodology used to collect the basic data for further steps of the project to be discussed in later reports. In addition two by-products of this research are reported here. One is the development of requirements for personnel to be "qualified in mine warfare". The other is a research memorandum concerning several areas of administrative concern within the mine forces. This chapter will present a brief summary of Technical Report-Part I, and some conclusions resulting from the experience obtained with the method of job analysis used in these studies.

A survey of the literature of conventional job analysis techniques was made and the agencies that would use the end product of this research were consulted as to their needs. From these considerations it was determined that conventional

techniques of job analysis would not be adequate for this study; therefore, new methods were devised.

A group interview technique was developed, pre-tested, and used as the basic data collecting device of this research. Three hundred seventy group interviews were held with a total of 1145 interviewees. The data collected were tabulated, compiled, and analyzed by methods developed by Psychological Research Associates.

Since the method of data collecting used in this report contained some unusual features, the experience obtained by its use in this study will be of interest. This is especially true because the method was designed for use with all Naval billets and is not limited to mine warfare. The conclusions resulting from this experience with the new method are reported below.

Psychological Research Associates used a group interview situation to obtain data necessary for writing descriptions and specifications. There are several advantages of such a technique. First, it is possible to interview a large number of people in a relatively short period of time. Second, the group interview eliminates a great deal of personal eccentricity and bias and thereby produces a much more representative set of opinions and judgments making it unnecessary to interview a large number of super-

visors to insure accuracy. Third, the group interview provides a means whereby the interviewees actually receive training during the course of the interview by hearing of other methods of doing their own jobs, some of which might be superior to the method they currently use. In short, the group interview provides training as a by-product. Fourth, since many of the tasks were performed on a team basis rather than on an individual basis, the use of group interviews was advantageous in that it provided a situation whereby more members of the team were present, hence not only more details but a more global picture of the team's function could be elicited. Fifth, the operational interview alleviated considerably the administration and recording difficulties encountered in the experimental interviews, since it gave the interviewers the liberty of accepting any or all of many responses rather than considering the merits of a single response. Sixth, the greater total experience of a group as opposed to an individual helped the interviewers to identify and eliminate those non-unique aspects of mine warfare.

The interview Form and Manual, developed by Psychological Research Associates, and included in Appendices A and B were designed so that they might be applied to any other Navy billet. With very few minor changes, these instruments should prove perfectly suitable for any Navy billet.

The same is true for the methods of tabulation analysis and synthesis that were used.

The interviewing techniques discussed in the "Manual to Accompany Billet Descriptions and Specification Forms" (See Appendix B) were designed to permit the use of inexperienced interviewers. With the exception of a two weeks' training course, administered by this office, the members of the interviewing teams were without experience or training. The training course can be given by the Navy using the suggestions given in this report. The work performed by these Navy personnel gives positive evidence that subsequent applications of the techniques developed by Psychological Research Associates can be readily administered by inexperienced Navy personnel after a brief training session.

The flip cards and newsprint pads contributed a great deal to the success of the interviews. Such devices are inexpensive but quite useful, in that they help to keep a group interview organized, and help the interviewees to better understand what is desired of them.

The Billet Compilation is almost a necessity in this type of undertaking. It is important that the Billet Compilation be initiated as soon as the first interviews are completed. Failure to do so could result in a large duplication of effort. Even more important, failure to administer the Billet Compilation could result in an inadequate coverage

of activities involved in the billet(s) under consideration.

These unusual techniques, employed by Psychological Research Associates, while representing a somewhat radical departure from job analysis protocol, were necessitated by the rather peculiar demands of this research. The experience gained from this report indicates that they are sound, both from the standpoint of utility and economy.

Future Reports

This is the first of five reports to be submitted by Psychological Research Associates. Future reports are:

Technical Report - Part II - Mine Warfare Billet Descriptions and Specifications (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 Certain Key Mine Warfare Billets. (Classification undetermined).

Appendices A, B, C, D, and E are found in "PERSONNEL STUDIES IN MINE WARFARE, Appendices to Technical Report - Part I - Procedures, Manuals, and Forms for Interviewing, Tabulating, and Compiling Billet Analysis Information" under separate cover.

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PERSONNEL STUDIES IN MINE WARFARE

APPENDICES TO TECHNICAL REPORT—PART I

PROCEDURES, MANUALS AND FORMS FOR INTERVIEWING, TABULATING AND COMPILING BILLET ANALYSIS INFORMATION

By:
MILTON H. IREDELL
HARRY J. OLDER
JOHN A. SCOPINO
ANDREW C. HILTON

A RESEARCH PROJECT CONDUCTED FOR THE DEPARTMENT OF THE NAVY UNDER CONTRACT Nonr 902 (00).
PRA REPORT 53-6 • AUGUST 1953

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

PERSONNEL STUDIES IN MINE WARFARE

Appendices to Technical Report - Part I
Procedures, Manuals and Forms for Interviewing Tabulating and Compiling Billet Analysis Information

By:
Milton H. Iredell
Harry J. Older
John A. Scopino
Andrew C. Hilton

A Research Project Conducted for the Bureau of Naval Personnel Under Contract Nonr 902 (00)
PRA Report 53-6 . August 1953

The opinions or assertions contained herein are the private ones of the writers and are not to be construed as official or reflecting the views of the Department of the Navy or the Naval Service at large.

PSYCHOLOGICAL RESEARCH ASSOCIATES
1025 Connecticut Avenue, N. W.
Washington 6, D. C.

APPENDICES

A Mine Warfare Personnel Analysis Billet Description and Specification Forms

B Mine Warfare Personnel Analysis Manual to Accompany Billet Description and Specification Forms

C Qualifications for Mine Warfare Personnel

D Administrative Problems in the Mine Warfare Area

E Revisions to the Operational Form and Manual

APPENDIX A

MINE WARFARE PERSONNEL ANALYSIS BILLET DESCRIPTION AND SPECIFICATION FORMS

(Page numbers for the Form do not correspond to the numbering system of this report since the Form presented here is the exact Form used by the interview teams.)

CLAM

MINE WARFARE PERSONNEL ANALYSIS

BILLET DESCRIPTION AND SPECIFICATION FORMS

PSYCHOLOGICAL RESEARCH ASSOCIATES
1025 Connecticut Avenue, N. W.
Washington 6, D. C.

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	2b.	Present Designator (O)	Cafe	10
	3a.	Present Paygrade (EM)	Cafe	10
	3b.	Present Rank (O)	Cafe	10
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	21.	Next Best Training Method	Pink	15
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MINE WARFARE PERSONNEL ANALY

I. IDENTIFYING INFORMATION

A. Interviewer: _____ D. Date: _____

B. Recorder: _____ E. Time: _____

C. Interview Team Code: _____ F. Place (Base) of Interview: _____

G. Interviewees:

1. Interviewees' Name	2. Interviewees' Rank/Rate	IF APPLICABLE 3. Ship Information Type	No.	Name	IF APPLICABLE 4. Unit Assigned
(1)					
(2)					
(3)					
(4)					
(5)					
(6)					
(7)					
( )					

II. BILLET DESCRIPTION.

This section of the interview must be done according to the Manual. Before conducting the interview, the interviewers should be so familiar with the Manual that no steps will be omitted. Briefly the steps in obtaining the Billet Description are as follows:

A. List the team functions. Ask what the major operations (activities) are in the interviewees' jobs. Mention that only activities that are done in mine warfare operations are wanted.

B. Select one activity. Select one activity from the list for further discussion.

C. Describe this activity. Obtain from the group a general description of what is done in the activity, how it is done, and why it is done. Also obtain a general picture of the job in terms of the number of men performing the activity, level (paygrade or rank) of the supervisor and the type of supervision given.

D. Define task under this activity. Obtain a detailed description of all the tasks which are done in the selected activity. Place these tasks on the answer form in the space provided.

E. Eliminate non-mine warfare tasks from the list. The final step is to eliminate all tasks which are done in other operations besides mine warfare operations.

This description should be obtained in sequential form, i.e., each description should describe each of the tasks in the selected activity from the beginning of the activity to the end in terms of:

What are the tasks?
How is each done?
Why is it done?

A. LIST OF ACTIVITIES

B. DESCRIPTION OF SELECTED ACTIVITY

(_____)

1. Number in team _____

2. Usually supervised by _____

_____

3. Type of supervision _____

_____

_____

4. Summary of Activity

Page B lank

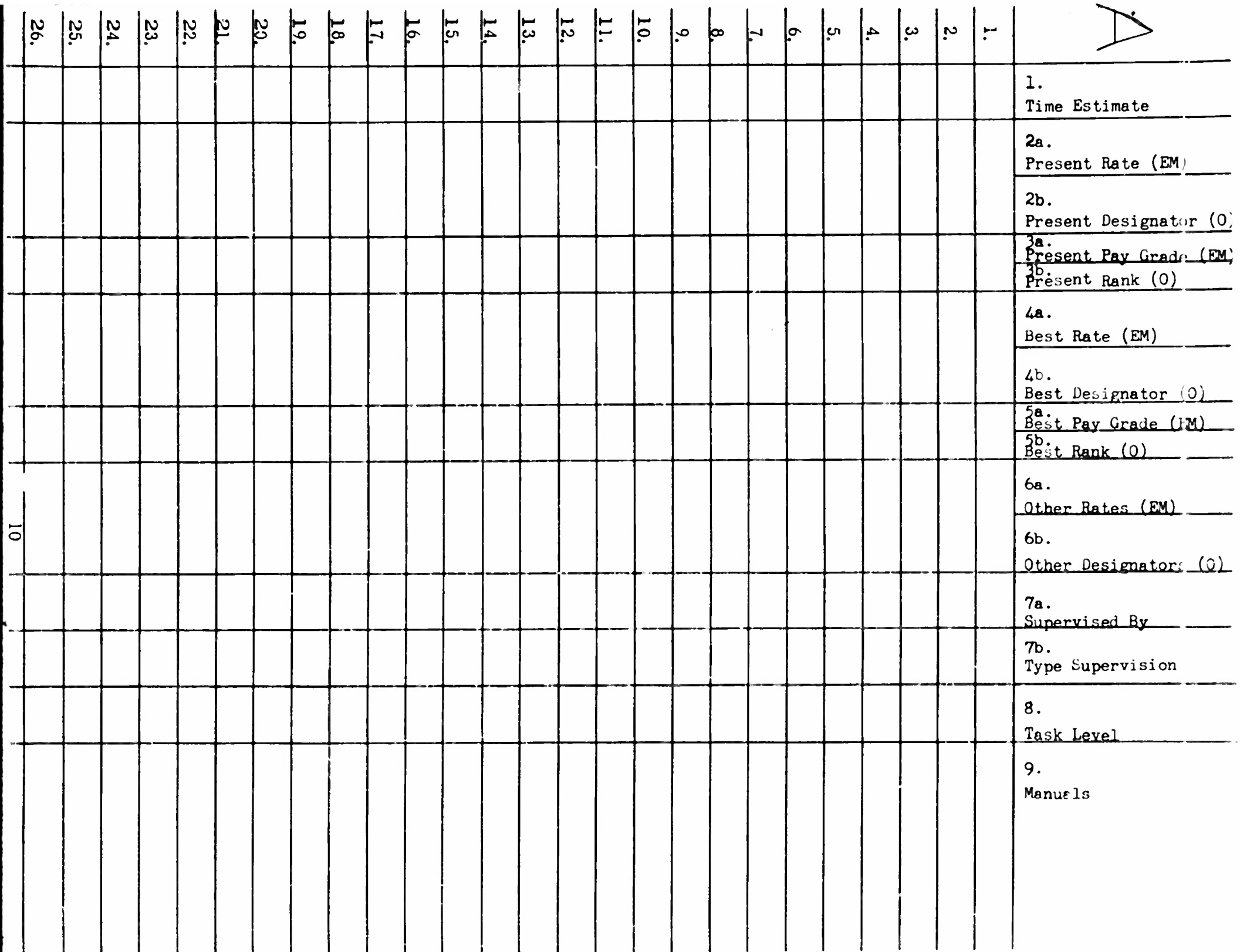
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BILLET DESCRIPTION

C. SELECTED ACTIVITY

D. LIST OF TASKS

	NUMBER
	1.
	2.
	3.
	4.
	5.
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	7.
	8.
	9.
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	23.
	24.
	25.
	26.


1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26.
A
1. Time Estimate
2a. Present Rate (EM)
2b. Present Designator (O)
3a. Present Pay Grade (EM)
3b. Present Rank (O)
4a. Best Rate (EM)
4b. Best Designator (O)
5a. Best Pay Grade (EM)
5b. Best Rank (O)
6a. Other Rates (EM)
6b. Other Designators (O)
7a. Supervised By
7b. Type Supervision
8. Task Level
9. Manuals
10

	10. Check Off Lists	11. Tools	12. Foul Ups
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
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11.			
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23.			
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26.			

C	13. Effect of Error	14. Dangers	15. Accidents
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26.			

	16. Safety	17. Civilian Schooling
1.		
2.		
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25.		
26.		

	18 a Type Navy Training (EM)	18 b Type Navy Training (O)
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3.		
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23.		
24.		
25.		
26.		

	19 a When Training Given (EM)	19 b When Training Given (O)	20. Best Training Method	21. Next Best Training Method	22. Task Hardness
1.					
2.					
3.					
4.					
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26.					

G

23. Seeing

24. Hearing

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25. Reading

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J

26. Writing

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26.	

K

27. Talking

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14.
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	28. Physical Effort	COMMENTS
1.		
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MINE WARFARE PERSONNEL ANALYSIS

IV. INFORMATION OBTAINED FROM PERSONNEL JACKETS.

A. Name: _____

B. Service No.: _____ C. Rank/Rate: _____

D. Primary ENJC: _____ E. Secondary ENJC: _____

F. Designator: _____ G. Billet Title: _____

H. Age: _____ I. Time (Mos.) in Navy: _____

J. Time (Mos.) in Present Job: _____

K. Other Pertinent Information to Include Pre-Navy Experience: _____

_____

_____

_____

_____

_____

_____

L. Navy Schools Attended:

SCHOOL	COURSE	DATES

M. Other Schools Attended:

SCHOOL	DATES	GRADUATE (Yes or No)

N. Previous Duty Assignments:

DUTY ASSIGNMENT	TIME SPENT (Mos)

MINE WARFARE PERSONNEL ANALYSIS

IV. INFORMATION OBTAINED FROM PERSONNEL JACKETS.

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B. Service No.: _____ C. Rank/Rate: _____

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F. Designator: _____ G. Billet Title: _____

H. Age: _____ I. Time (Mos.) in Navy: _____

J. Time (Mos.) in Present Job: _____

K. Other Pertinent Information to Include Pre-Navy Experience: _____

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_____

L. Navy Schools Attended:

SCHOOL	COURSE	DATES

M. Other Schools Attended:

SCHOOL	DATES	GRADUATE (Yes or No)

N. Previous Duty Assignments:

DUTY ASSIGNMENT	TIME SPENT (Mos)

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F. Designator: _____ G. Billet Title: _____

H. Age: _____ I. Time (Mos.) in Navy: _____

J. Time (Mos.) in Present Job: _____

K. Other Pertinent Information to Include Pre-Navy Experience: _____

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L. Navy Schools Attended:

SCHOOL	COURSE	DATES

M. Other Schools Attended:

SCHOOL	DATES	GRADUATE (Yes or No)

N. Previous Duty Assignments:

DUTY ASSIGNMENT	TIME SPENT (Mos)

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F. Designator: _____ G. Billet Title: _____

H. Age: _____ I. Time (Mos.) in Navy: _____

J. Time (Mos.) in Present Job: _____

K. Other Pertinent Information to Include Pre-Navy Experience: _____

_____

_____

_____

_____

_____

_____

L. Navy Schools Attended:

SCHOOL	COURSE	DATES

M. Other Schools Attended:

SCHOOL	DATES	GRADUATE (Yes or No)

N. Previous Duty Assignments:

DUTY ASSIGNMENT	TIME SPENT (Mos)

MINE WARFARE PERSONNEL ANALYSIS

IV. INFORMATION OBTAINED FROM PERSONNEL JACKETS.

A. Name: _____

B. Service No.: _____ C. Rank/Rate: _____

D. Primary ENJC: _____ E. Secondary ENJC: _____

F. Designator: _____ G. Billet Title: _____

H. Age: _____ I. Time (Mos.) in Navy: _____

J. Time (Mos.) in Present Job: _____

K. Other Pertinent Information to Include Pre-Navy Experience: _____

_____

_____

_____

_____

_____

_____

L. Navy Schools Attended:

SCHOOL	COURSE	DATES

M. Other Schools Attended:

SCHOOL	DATES	GRADUATE (Yes or No)

N. Previous Duty Assignments:

DUTY ASSIGNMENT	TIME SPENT (Mos)

MINE WARFARE PERSONNEL ANALYSIS

IV. INFORMATION OBTAINED FROM PERSONNEL JACKETS.

A. Name: _____

B. Service No.: _____ C. Rank/Rate: _____

D. Primary ENJC: _____ E. Secondary ENJC: _____

F. Designator: _____ G. Billet Title: _____

H. Age: _____ I. Time (Mos.) in Navy: _____

J. Time (Mos.) in Present Job: _____

K. Other Pertinent Information to Include Pre-Navy Experience: _____

_____

_____

_____

_____

_____

_____

L. Navy Schools Attended:

SCHOOL	COURSE	DATES

M. Other Schools Attended:

SCHOOL	DATES	GRADUATE (Yes or No)

N. Previous Duty Assignments:

DUTY ASSIGNMENT	TIME SPENT (Mos)

APPENDIX B

MINE WARFARE PERSONNEL ANALYSIS MANUAL TO ACCOMPANY BILLET DESCRIPTION AND SPECIFICATION FORMS

(Page numbers for the Manual do not correspond to the numbering system of this report since the Manual presented here is the exact Manual used by the interview teams.)

MINE WARFARE PERSONNEL ANALYSIS

MANUAL TO ACCOMPANY BILLET DESCRIPTION AND SPECIFICATION FORMS

Psychological Research Associates
1025 Connecticut Avenue, N.W.
Washington, D.C.

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3) Introduce yourself and your partner before asking interview questions.	white	10
4) Do not discuss research implications.	white	10
5) Try to get all the interviewees to talk.	white	10
6) Be impartial.	white	10
7) "Yes" or "No" questions.	white	11
8) Do not accept generalities.	white	12
9) Control the interview.	white	12
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Present Rank (O)	cafe	A 3b
Best Rate (EM)	cafe	A 4a
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Best Pay Grade (EM)	cafe	A 5a
Best Rank (O)	cafe	A 5b
Other Rates (EM)	cafe	A 6a
Other Designators (O)	cafe	A 6b
Other Pay Grades (EM)	cafe	A 7a
Other Ranks (O)	cafe	A 7b
Task Level	cafe	A 8
Manuals	cafe	A 9
Check-off Lists	salmon	B 10
Tools	salmon	B 11
Foul-Ups	salmon	B 12
Effect of Error	green	C 13
Dangers	green	C 14
Accidents	green	C 15
Safety	goldenrod	D 16
Civilian Schooling	goldenrod	D 17
Type Navy Training (EM)	russet	E 18a
Type Navy Training (O)	russet	E 18b
When Training Given (EM)	pink	F 19a
When Training Given (O)	pink	F 19b

MINE WARFARE PERSONNEL ANALYSIS

MANUAL TO ACCOMPANY BILLET DESCRIPTION AND SPECIFICATION FORMS

Introduction

The mine warfare personnel analysis forms were developed to obtain complete and accurate information about:

1) What is done in mine warfare jobs, and how this is done (billet description).
2) What is required of the men who are to fill these jobs (billet specification).
3) Information concerning classification, selection and training of men who will fill mine warfare billets.

More specifically, the information obtained from this interview will be used to:

1) Set up training requirements: the amount and type of Navy training that men need to do their jobs well.
2) Set-up qualification requirements: what training, experience, physical and personal qualifications each man should have in each job.
3) Classify mine warfare jobs.
4) Establish requirements for selection: determine what the training, experience, physical and personal qualifications should be for men to be selected for mine warfare jobs.
5) Establish billet requirements: determine what activities and tasks should go together to make one billet.
6) Determine what activities and tasks should be performed by each rate or rank.

While one of the purposes of this project is to develop a procedure which may be applied to all Navy jobs, the present interviews you are to conduct will deal only with mine warfare activities.

Before any teams will interview, they will be given a thorough training course in the use of the interview form.

Interview Teams

To get a good coverage of mine warfare operations throughout the Navy, five interviewer teams will be used. Each team, after being trained, will administer the interviews in five naval areas. Interview teams will select mine warfare personnel to be interviewed. The five teams and corresponding areas are:

TEAM	LOCATION
A	East Coast
B	West Coast
C and D	Pearl Harbor, Hawaii
E	Japan and Okinawa

Each of the interview teams will consist of an officer and two enlisted men. Teams C and D will have but one officer, since both will interview at Pearl Harbor.

Interview teams will conduct their work as follows:

The team leader will explain and discuss this project with appropriate personnel of the command visited. He will explain his requirements for space, interviewees, interview time and make other arrangements as necessary to insure successful interviews. Working with the local command, he will set up an interview schedule. He will make sure that the men selected are satisfactory to interview and that proper measures are taken to tell each interviewee when and where he is to be interviewed

Mine warfare men will be interviewed in groups of from three to five men, preferably five. All men interviewed in the same interview session should be from the same billet. The team is to interview men to record the information and at the same time to get information about the interviewees from their personnel jackets. Two men will conduct the interviews; one will act as interviewer, one as recorder. The third man, meanwhile, will take down information from the personnel jackets. The interviewer and the recorder can change places if the

team captain sees fit. However, if enlisted men are being interviewed, the two enlisted men on the interview team will conduct the interview. If officers are being interviewed, the team leader will conduct the interview and one of the enlisted men will be recorder.

The interviewer's main duty is to conduct the interview: to ask the questions, to keep the interview going, and make sure that useful information is being obtained. He will decide when to shift topics, what questions to ask, how to ask them. The recorder's duty is to see that all important information is recorded so it can be easily read. He should only ask questions to make sure that his record is accurate and complete. Occasionally, he may need to ask interviewees to repeat their statements. If they talk too fast for him, he should ask them to talk more slowly.

It is also the team leader's job to stamp each page of the interview with the security stamp which has been provided. This stamp reads "Security Information -- Confidential When Filled In." One stamp, a pad and ink is provided each interview team.

The interviewer should set a pace which will allow the recorder to write down the necessary information. The recorder's notes must be accurate and legible. Obviously, analysis of the interview will be of little use if the interview is not recorded accurately according to the manual instructions or if it is not readable. Finally, the recorder should keep the pages of each interview as a package so that the interview may be readily analyzed when it is received. As each interview has been numbered, the recorder should have no difficulty keeping all of the pages of a single interview together.

Preparing for the Interview

Physical Facilities. To be successful, an interview must be conducted in an air of privacy and comfort. A private room should be obtained for the interview. Get a room that other men will not wander through. As a rule, interviews

should not be conducted on board ship when more convenient facilities are available on shore. Shipboard interviews may well disrupt the activities of the ship's crew. Furthermore, a room large enough for interviewing may not be available aboard ship. Whenever possible, get a room where smoking is permitted. Sometimes you will have as many as five to interview, so get a room large enough for at least seven persons. The room should be free from noise (noisy machinery, noisy pipes, etc.). Table facilities should be large enough to accomodate all personnel, and chairs should be obtained for everyone. Illumination should be good enough to allow easy reading and writing but should not be so bright as to promote discomfort. When arrangements are made for the use of a room, the room would be available for the whole length of the interview. An interview room should be reserved for an entire day. Do not try to change rooms in the middle of an interview.

Scheduling. All of these arrangements must be made well before the time of the interview. All arrangements for rooms and personnel must be made several days before the interview.

Final Note. Remember that while interviewees can be ordered to report to you, they can not be ordered to give you adequate information. This is up to you. The amount of information you will get will depend upon your methods and techniques and your care in conducting the interview. One thing that will help is to see that the interviewees are comfortable and that there is a feeling of privacy. Set the stage well and your interview is one step closer to becoming a good one.

Interview Hints

It is absolutely essential that the interviewers be completely familiar with the manual and with the forms which have been developed. No interview is ever successful if either the interviewer or recorder are unsure of what they are doing, or if the interviewees are unsure of what is wanted.

There are no iron-clad rules applying to interviewing in general. A specific technique which proves successful in a given situation does not guarantee results in all situations. As a result the interviewer must to some extent change his ways of obtaining the desired and necessary information according to the situation at hand. This, of course, does not mean that the general methods or purposes of the interview change in any way. The objective remains the same. In this regard, the questions in the interview forms should be regarded as a guide for the interviewer rather than a set of inflexible questions to be asked verbatim. Situations will arise in which the interviewer may deem it best to approach a topic from a different direction. Some questions will require amplication in one interview and not in another. Use probing questions to get a complete story. A probing question is a question to get more detailed and specific information. Such questions as, "What do you mean by that; how is this done; what do you mean?" are probing questions. In general, any question is a probing question which is asked to get more detailed information and to get the interviewees to state what they mean. The purpose of each section of the forms is described in this manual so that interviewers may determine the type of probing questions which will be best for any given topic.

There are certain things which will always help to promote a successful interview. Some of the most important things to remember are:

1) Do not keep the interviewees waiting. Interviewers should arrive at the interview room early enough so that all facilities and material are ready for the interviewees at the time set for them to appear.

2) Put the interviewees at ease. Before beginning the formal part of the interview, be sure to answer any questions that the interviewees may have. This initial warming-up period serves to break the ice and the interviewers will find that it will be much easier to procede when the interviewees are completely at ease and ready to talk.

3) Introduce yourself and your partner before asking interview questions. At this time the interviewee should be given the purpose of the interview and an assurance that his remarks will be treated confidentially. Before asking interview questions, state clearly to the interviewees the purpose of the interview. A general guide for these remarks is presented in Section I. Identifying Information of this Manual on Page 15. The confidential nature of the interview should be stressed and the interviewees should be assured that anything they say will not affect their record or position in the Navy in any way.

4) Do not discuss the research implications. A complete explanation of all the phases of this research project is unnecessary and serves no useful purpose. A great deal of time would be spent in this discussion that could be used better in other ways.

5) Try to get all the interviewees to talk. You may find that one or two members of your group are doing most of the talking. Do not try to stop these members from talking so much, but rather try to encourage the other members to talk more. You may sometimes promote this by looking directly at these men as you address them with a question, by telling that they may enter into the discussion at any time, or by repeating a statement of one of the "talkative" interviewees and asking them what they think about it. "What do you think about that?" is a good lead question. If a member of a group does not seem particularly talkative, do not forget him for the more talkative ones. Give him plenty of time, and carefully try to help him to organize his ideas without putting words in his mouth. A good interviewer is patient.

6) Be impartial. You as an interviewer will often want to disagree or agree with what your interviewees say. Above all, you should never express what your feelings are on any matter. Never indicate whether you agree or disagree with what the interviewees are saying. This is not your duty. Your duty, as an interviewer, is to collect information, not to teach or correct. You are not to evaluate in any way the information you get during the interview. Your job as

an interviewer is to probe and to get all of the information that you possible can using the interview forms in the way in which they have been set up. Under no circumstances should you argue with the interviewees. Avoid implying the answer to your own question. Very often, the interviewer may unintentionally imply the response he desires to a specific question. You should guard against doing this. For example, if the interviewee says that he does not feel that the training that the Navy gives is adequate, the interviewer, under no circumstances, should either agree or disagree with this statement. No interviewer must ever make a comment such as, "I agree with you," or "I disagree with you," or "We have been interviewing lots of men who do not think the same way," or "Other men think that their training was good enough," or "I don't see how you can believe that," or "I've been to the Naval Training School and the program is good". Furthermore, the interviewer should never ask a question such as "This kind of training is good, don't you think?" The interviewer here is biasing the question by pre-evaluating this type of training. The chances are very good that the interviewees will answer "yes" to this question. This is one of the most important and critical things that an interviewer should know. Probably no one thing can damage an interview more than to be a partial interviewer.

One other point: you can give away your feelings even though you don't say anything. This may be done by changes in your facial expression or in your voice inflection. Guard against these things. Keep a pleasant expression on your face at all times. A raised eyebrow may be as significant as any word.

7) <u>"Yes" or "No" questions</u>. Interviewers should guard against asking questions in which only a "yes" or "no" answer is required. Questions should be asked in such a way that a discussion is necessary. For example in the question, "All of these tasks are done by the same rate, aren't they?" is a double-barreled error. First of all, the interviewer is biasing the response by putting words into the mouth of the interviewees; and secondly, the interviewer has asked the interviewees for a one word response and not a discussion.

8) Do not accept generalities. The interviewer must be on guard at all times against accepting generalities from the interviewees. Accepting a generality is a very easy habit to get into. Some information obtained may at first sound plausible and useful, but after thinking about it, you will see that the information is useless, because it is so general in nature that it can not be analyzed. In this project we want detailed and specific information which will help in mine warfare personnel problems. One indication that information obtained is too general is if the interviewers do not understand what the interviewees mean. Another danger is the use of adjectives. Adjectives at first glance seem to make a statement more specific. However, many times they do not at all. For example, "very heavy" is a relative statement; "300 pounds" on the other hand, is a specific statement. Accepting generalities is the easiest of all traps to fall into in the interview. Interviewees may often trick you by giving information which sounds at first to be the typed desired. However, upon careful thought, it becomes apparent that the information is only a generality. Try not to fall into this trap. For example, if to the question, "What are the kinds and chances for accidents in doing this task?" the interviewees respond, "A man might get hurt in this task when he throws over the otter." This, at first, seems to be the answer to the question. However, it is only a generality. Such information is needed as the chances for him being hurt (does this happen every time the task occurs or is it only a rare event) and the extent of his injury (is it a simple scratch or does he lose a leg).

9) Control the interview. The questions on these forms will not get good results if they are not administered correctly. All of the information areas and every question on the form must be covered. Unless you control the interview, it may get out of hand. To cover all of the questions and areas of the interview, sufficient control over the interview situation is necessary to keep the conversation on one topic at a time until it has been exhausted. Then go on to the

next topic. Sometimes you will have to bring the conversation back to the subject at hand. This must be done in as tactful a way as possible, so that cooperation is maintained on the part of the interviewees.

10) Gripes. Many interviewees have gripes they wish to unburden during the interview. It is unwise to refuse to listen to gripes, since tension can often be relieved and the atmosphere cleared, if the interviewees are allowed to get it "off their chests." It must be remembered, however, that this is not the purpose of the interview and that you can not listen to gripes for a whole interview session. Interviewers should be good listeners. However, they should not take sides with or against the interviewees or allow the interviewees' gripes to wander too long from the main purpose of the interview. You, as interviewers, will have to make the decision as to how long to let the gripes last. Often, you can guide the interview back to the point without making an issue of it. You can do this by trying to tie in what is being said to some item in the interview. It is always better to control the interview in this way rather than making a sudden stop saying, "Let's get back to the point." No time limit can be given as to how long to let the gripes go on but a little practice should give you a fairly good idea of when to get back to the interview proper.

11) Be straight-forward and frank, not shrewd or clever. Talk to your interviewees in a clear and simple language. Don't try to be clever. Some of them may not think you are clever and you will stop them from talking. Tell the truth in all statements and be frank.

12) Verify answers by summarizing information. After a question has been asked, and has been discussed, the interviewer should summarize the answer that the interviewees have given. This will prove extremely helpful not only to the interviewees who may have overlooked some important information, but also to the recorder, who will verify his recording of the answers. This is especially important where interviewees have been talking fast. Be extremely careful about

what you repeat to them. Repeat only what they have told you. Do not add anything to what they have said or omit any important information in the summaries.

13) End the interview in a friendly manner. After you have obtained all the information required, thank the interviewees and tell them they have been of great service to you. Remember that you will probably have to interview some of their buddies. If the interviewees see you are sincere and interested, they will encourage their buddies to cooperate.

List of Materials

Each interview team should have the following materials:

1) 75 copies of Mine Warfare Personnel Analysis Billet Description and Billet Specification Interview Forms.
2) 25 copies of Mine Warfare Personnel Analysis Manual to Accompany Billet Description and Billet Specification Forms.
3) Three black crayons.
4) One newsprint pad.
5) One data box.
6) One set of Interview Flip Cards.
7) One rubber stamp marked "Confidential - Security Information".
8) One ink pad.
9) One dozen pencils.
10) One box of addressed mailing envelopes.
11) Stamps.

The Interview Forms

The next section of the manual discusses each of the Sections of the interview forms. Instructions are given to the interviewer and recorder as to how to fill in the required information in Sections I and IV and what information is required in Sections II and III.

ADMINISTRATION OF MINE WARFARE PERSONNEL ANALYSIS FORMS

The interviewer should begin the interview along the following lines: MY NAME IS _____. I REPRESENT BU.PERS. AND I WOULD LIKE TO TALK TO YOU ABOUT YOUR JOBS. WE ARE MAKING A COMPLETE STUDY OF THE JOBS INVOLVED IN MINE WARFARE AND THE NAVY FEELS THAT THE BEST SOURCE OF INFORMATION FOR RESEARCH OF THIS KIND IS THE MEN THEMSELVES WHO ARE ACTUALLY DOING THESE JOBS. WE FEEL THAT BY TALKING TO MANY MEN ON THESE JOBS WE CAN DEVELOP A CLEAR PICTURE OF WHAT MEN IN MINE WARFARE JOBS MUST BE LIKE AND WHAT THEY MUST KNOW AND DO. THIS INFORMATION WILL HELP IN THE SELECTION OF FUTURE MEN FOR THESE JOBS, THE TRAINING OF MEN FOR THESE JOBS, DETERMINING EXACTLY WHAT THESE MEN DO, AND SETTING QUALIFICATIONS FOR THESE JOBS. WHAT YOU SAY WILL BE KEPT CONFIDENTIAL AND WILL NOT AFFECT YOUR RECORDS OR POSITION IN THE NAVY IN ANY WAY. NOW WE ARE GOING TO ASK YOU A LOT OF QUESTIONS. BUT FIRST YOU MAY HAVE SOME QUESTIONS TO ASK US. ASK ANY QUESTIONS THAT YOU WOULD LIKE ABOUT THE INTERVIEW AT ANY TIME DURING THE INTERVIEW.

I. IDENTIFYING INFORMATION. Section I of the Mine Warfare Personnel Analysis Forms deals with information needed to identify the interview and interviewees. The interviewer should gather the information at the beginning of the interview as there will be in all probability very little opportunity of getting these data prior to the interview itself. If some information has been obtained before the interview, however, it should be verified by the interviewees.

A detailed account as to what information is needed and how it is to be obtained follows:

I. A. Interviewer: Indicate the full name of the man actually conducting the interview. Include the name of the recording interviewer.

I. B. Recorder: Indicate the full name of the man recording the interview.

I. C. Interview Team Code: Each interview team has been assigned a letter code to identify their team. Write in the space provided, the code of your

team.

I. D. Date: Indicate the date or dates on which the interview is conducted.

I. E. Time: Indicate the time that the interview is begun and finished so that a complete record of the amount of time taken for the interview is made.

I. F. Place: (Base) of Interview: Indicate the name of the base or installation at which the interview is held.

I. G. 1. Interviewees Name: In this column list the full names of the interviewees.

I. G. 2. Interviewees Rank/Rate: In this column indicate the interviewee's rank or rate corresponding to the appropriate name in I. G. 1. Interviewee's Name.

I. G. 3. Ship Information: List in these columns if applicable the type, number and name of the ship to which the interviewee may be assigned.

I. G. 4. Unit: List in this column if applicable the unit to which the interviewee may be assigned.

II. BILLET DESCRIPTION.

This section of the interview form deals with what men in mine warfare billets do, how they do it, and why they do it. The purpose of a billet description is to get detailed and specific information about:

a. What men do.

b. How they do it.

c. Why is this done.

Information about billets must be obtained in an accurate, meaningful and readable way. There is a standard way to get and record a billet description so that all information that you have collected in interviews can be compared. You must use this standard way of getting and recording the billet description so that one billet can be compared with another billet.

Before we tell you about this standard way of getting and recording the billet description we will tell you what we mean by a task, an activity and a billet. A task is a small unit of work or effort done for a specific purpose. It is what one man does on a particular job. A task is not what he does in his entire billet but rather what he does in one small part of a job in this billet. For example, a task is "runs wire to winch from acoustic hammer" or "leaves float aft after setting on water." These statements are tasks. They are only the name of the task or what is later called the flag statement of the task. They are not a description of the task. How to get a description of a task will be discussed later.

An activity is a group of several related tasks which make up a major part of a man's total job. More than one man is required to do an activity, since an activity is made up of tasks. Examples of activities for boatswain's mates assigned to mine warfare billets are: (a) "Streams to the 'O Type' gear," (b) "Maintains the 'O Type' gear," (c) "Retrieves the 'O

Type' gear," (d) "Streams the magnetic tail," (e) "Maintains the magnetic tail," (f) "Retrieves the magnetic tail," (g) "Streams the acoustic hammer," (h) "Maintains the acoustic hammer," and (i) "Retrieves the acoustic hammer."

A billet is a group of activities which takes up all of one man's job time. For example, the billet of a boatswain's mate who is assigned to an AMS would be what he does in each of the activities listed above.

The material which is needed by the interview team to conduct this section of the interview is:

a. Newsprint chart and crayon.

b. Manual to Accompany Billet Description and Specification Forms.

c. Section II. of the Interview Form.

Page five of Section II. of the Interview Form summarizes the major steps that must be done by the interviewer and recorder to conduct this section. The details of these steps will now be discussed.

A. List the Team Functions.

1. Interviewer. Ask the interviewees what the major operations are that they have to do in their jobs. An operation is an activity. It is easier for the interviewees to understand what is meant by the word "operation" than by the word "activity." Tell the interviewees that what is wanted are the major things that they do. In case the interviewees in one particular interview make up a team, the question can be asked, "What are the major things that your team does?" Tell the interviewees that you are only interested in operations or activities that are done in mine warfare operations. Tell them that you are not interested in operations

or activities that can be and are done anywhere else in the Navy. What is wanted here is only the name of the activity. Do not get a detailed description of the activity in this part of the interview.

2. Recorder. Copy down the names of the activities which the interviewees mention on page six of the Interview Form. Activities should be recorded under II. A. List of Activities on the left hand side of this page.

B. Select One Activity.

1. Interviewer. Select one activity from this list. The activity which you select will be used for the remaining part of this interview.

2. Interview Team Leader. Make sure that the activity that you have selected for each interview is one which is required in the schedule (see Manual, pages seven and eight). Remember that only one activity will be discussed in each interview. It is the interview team leader's duty to make sure that all activities are covered in every billet. You will have to check your notes as to what activities your team has covered in past interviews so you will know what activities must yet be covered in this billet.

3. Recorder. Write down the name of the selected activity in the space provided in II. B. on page six and in II. C. on page nine of the Interview Form.

C. Describe this Activity.

1. Interviewer. Ask the interviewees to give a general description of what is done in the selected activity, how this is done, and why it is done. In this section try to get a general picture of the job. Find out (a) how many men work together in this activity as a team, (b) who these men are supervised by and (c) the type of supervision which they receive. The information required under Usually Supervised by (II. B. 2) is the rate or designator and pay grade or rank of the man who is the supervisor of this activity. What is wanted under Type of Supervision (II. B. 3) is whether this supervision is close or whether the men do the activity almost alone.

2. Recorder. Copy the number of the men in the team under Number in Team in II. B. 1 on page six of the Interview Form. Copy who the team is usually supervised by under Usually Supervised by in II. B. 2 on page six of the Interview Form. Copy the type of supervision which the interviewees receive in this activity under Type of Supervision in II. B. 3 on page six of the Interview Form. The general description of what is done in the activity, how it is done and why it is done should be placed under Summary of Activity in Section II. B. 4 on page six of the Interview Form. Use the back of page six if more space is needed for this summary.

D. Define Task Under This Activity.

1. Interviewer. One of the most important things to remember in getting billet descriptions is to make sure you get the information in an organized way. If the facts about the task are obtained in an organized way in the interview, it will be much easier for the recorder to write the details and the description of the duties of the activity. A well-organized description of the task is much easier to read, more meaningful, more precise and can be analyzed. It should be kept in mind that all of the information you collect in the interview will be analyzed. Only organized information can be analyzed. Task descriptions will be organized in this interview in sequential form. Sequential form means putting down the tasks which are in the activity from the first task which is done in the activity to the last task which is done. Tell the interviewees that you want to know what happens in doing this selected activity from the very beginning to the very end. From the beginning of the activity to the end you want to know, "What do you do in doing this; how do you do it; and why is this done?" It may not be always possible to get a task description of all activities in sequential form. Some activities are not done in this way. In any event, all information about one phase of the job should be placed in one section.

2. Recorder and Interviewer. The interviewer should get the Flag Statement (title or name of the tasks) which have to be done in doing the selected activity. A Flag Statement

is a summary or a name or a title of the task. It is what the task is called. All information following the Flag Statement which will be obtained in the next step will be about this Flag Statement. These flag statements are then written by the interviewer on the newsprint chart. Each of these tasks in the list must be numbered. At the same time, the recorder will copy down on page nine of the Interview Form under II. D. List of Tasks, the flag statements of the task. Be sure that the tasks that the interviewer lists on the newsprint chart and the list of tasks that the recorder writes in the Interview Form are the same and have the same number.

3. Interviewer. Now ask the interviewees how each of the tasks which they have named is done and why this is done. Get specific and detailed information, but not so specific that it amounts to a time and motion study.

4. Recorder. Write down the description of the task on pages seven and eight of the Interview Form. Pages seven and eight are two blank blue pages which have been included in the interview for this purpose. If you need more space, you may use the front side of page nine and the backs of pages seven and eight. Be sure you number the tasks and that this number is the same as the number of the Flag Statement of the task you listed in page nine (II. D.) Use the following standard way of writing task descriptions:

a) Write Flag Statements for the tasks first. They are

the what of the tasks.

b) All that follows the Flag Statement describes the how and why of the tasks.

c) Be direct and to the point in writing task descriptions.

d) Do not use complicated sentence structure.

e) Omit all words or phrases which do not include necessary information.

f) Begin each sentence or phrase with a functional verb. Avoid passive verbs. That is, begin each sentence or phrase with verbs such as "opens, distributes, answers, assists, obtains, reviews, supervises, writes, approves, places, inspects, takes, makes, receives, starts, completes, compares, hooks up, closes, replaces, installs, fastens, attaches, corrects, cleans, paints, scrubs." All of these are functional verbs.

g) Use the present tense in writing the task description.

h) The task description should be specific with the stress on the skills and purposes involved. Do not allow the task description to develop into a detailed time and motion study.

i) Use semi-colons after each phrase or sentence in the description. For example, "installs extender with detonator in mine; checks initial arming clock to see that it is in the unarmed position; puts clock in mine and secures it; checks detonator now in extender for final extender leads to make sure that no voltage comes through and that there is no connection between extender leads and mine case which may cause an explosion; installs

extender mine and secures extender; blanks out "not" of sign "detonator not installed on mine."

j) Underline all of the functional verbs you have used. A functional verb should follow each semi-colon. See example above.

k) The term "occasionally" should be used to introduce statements describing tasks done once in a while or tasks not usually done by any particular man while doing the activity.

l) Every time other billets, individuals, machines, etc. are mentioned, they should be written down very clearly and accurately, so that there will be no doubt as to who or what they are.

m) Extra information should be written in parentheses to show that it is not an important part of the description of the task, but is written down only to explain or add to some point which might not be clear.

E. Eliminate Non-Mine Warfare Tasks from the List. The final step is to cross off all tasks which are done in other operations besides mine warfare operations. In this interview we are interested just in those tasks which are done only in mine warfare operations.

F. Time Considerations.

1. Interview Team Leader. A goal has been set of one interview per day. In addition it has been stated that each interview will cover but one activity. This must be an approximate goal. If a selected activity is very short, the interviewer should select a second activity and repeat the interview.

Consider this second activity for the same interviewees as a new interview. The same group of interviewees may be called back to be re-interviewed about a different activity if this is needed to get all of the activities in one billet.

III. BILLET SPECIFICATIONS.

This section of the interview form contains 28 questions about each of the tasks listed in Section II. D. The information in this section is needed to determine the qualifications of men who do the tasks described in Section II. D. Training requirements are also covered in this section.

The material which will be neededby the interview team to conduct this section of the interview is:

A. Flip cards.

B. Record sheets from Section III. of the Interview Form.

C. Manual to Accompany Billet Description and Specification Forms.

D. Newsprint chart having list of tasks from Section II. D. of the Interview Form.

A. Flip Cards. There is one flip card for each of the 28 questions of this section. Some questions have answers already printed on the flip card. These answers are numbered and printed on the flip card. During the interview the interviewees will select the best answer to each question. The recorder will copy down in the record sheet of the interview form the number of the answer which the interviewees agree best answers the question. The number of the answer is printed in black, while the answers are printed in red on the flip card. Other questions do not have answers on the flip card and require the interviewees to answer in their own words. For these questions more space is left in the record sheet for the recorder to write down the answers.

In the lower left-hand corner of each flip card is a letter and a number. The letter and the number are printed in green. The letter matches the letter on the record sheet which the answer

to the question is to be recorded. The number on the flip card is the number of the question. Numbers of the questions are at the top of the columns of each record sheet in the interview form. Several questions are placed on each record sheet. Each record sheet in the form is a different colored paper.

Printed in green in the lower right-hand corner of the flip card is either Q, Q/EM, or EM. This tells you that those flip cards marked with Q should be given only to officer interviewees. Those marked with EM should be given only to enlisted men interviewees. Those marked with Q/EM should be given to both officers and enlisted men.

B. Record Sheets from Section III. of the Interview Form. The numbers of the answers to the questions given on the flip cards should be placed by the recorder in the record sheet of the interview form. Each record sheet has a letter which is located in the upper left hand corner of each page. The letter printed in green on the lower left-hand corner of each flip card refers to this letter. It tells you on which record sheet the answer to the flip card must be placed. Each record sheet has a different color so you can easily tell it apart.

At the top of the columns on each record sheet are the titles of the questions which match the titles printed in blue on each flip card. Questions that should be given only to enlisted men have an (EM) behind the title of the question in the column. Questions that should be given only to officers have an (O) behind the title of the question in the column. Nothing is put in the column if the question is given to both officers and enlisted men.

C. Manual to Accompany Billet Description and Specification Forms. The

Manual has a detailed description in Section III, covering:

1. The purpose and idea behind each question.
2. Specific information as to how to get what is required in the question.
3. What the question is about and to what group it should be given.
4. Details of the numbered answers where it was not possible to put all of this information on a flip card. The same information that is on the flip cards is also in the Manual. The interviewer and recorder must use the Manual along with the flip cards and record sheet when giving the interview.

   The questions in the Manual are on the same colored paper as on the record sheet which the answers to the question are to be recorded. Each question in the Manual is on a separate page. It is easier for the interviewer and recorder to find the page they want in the Manual by finding the color which matches the record sheet.

Each question in the Manual has not only all of the information printed on the flip card but in addition the:

1. <u>Idea</u>. Here is given:
   a) What information is desired from this question.
   b) The purpose of the question.
   c) The general thought behind the question.

Interviewers may find that they must state the question in a different way from that printed on the flip card. The <u>idea</u> will help the interviewer to re-state the question and ask probing questions, because he will know what information is required.

2. Specifics. Here is given:

a) The exact limits of the question.

b) Exactly what the question covers.

c) To what interviewees the question should be given.

3. Details of Answers. Here is given a more detailed description of the answers to the questions. The answers printed on the flip cards are sometimes short because there isn't enough space to print more words. Details of answers is included under questions where more information is necessary to make the answers on the flip cards more inclusive and realistic.

D. Newsprint Chart Having List of Tasks from Section II. D. The newsprint chart on which the tasks of the selected activity in Section II. D. of the interview are listed will be needed in giving this part of the interview. This chart is filled-in by the interviewer during Section II. of the interview. How to fill in this chart is discussed in Section II. of the Manual.

E. Procedure. The procedure that the interviewer and recorder should use in giving this section of the interview is as follows:

1. Interviewer. Put the newsprint chart in front of the interviewees so that they can see the flag statements of each of the tasks they gave in Section II. D. These tasks were written on the chart during Section II. of the interview.

2. Recorder. Be sure that you have filled in the flag statements of Section II. D. on the form and that these statements are the same as those listed on the newsprint chart.

3. Recorder. Line up the task numbers on the right-hand side of page nine of the Interview Form with the numbers listed on the left-hand side of record sheet A on the form.

4. Interviewer. Flip the flip card to the first question. The questions are numbered in green in the lower left-hand corner of the flip card. Note that this question should be given to both officers and enlisted men. This is indicated by O/EM in the lower right-hand corner of flip card one.

5. Recorder. Make sure that you have the right record sheet opposite "List of Tasks." Each flip card tells you on which record sheet the answer to the question should be recorded. The letter which is placed in green in the lower left-hand corner of the flip card for question 1 tells you that the answer to this question should be recorded on record sheet A. Record sheets are lettered in the upper left-hand corner.

6. Recorder. Make sure that you are ready to record the answer to the question in the correct column on the record sheet. Each column is numbered at the top of the sheet. In addition, the question title is printed alongside of the question number. The question title in each column of the record sheet is the same as the question title printed in blue on the flip card.

7. Interviewer. Begin the interview by telling the interviewees that they are to pick out the best answer for each of the tasks listed on the newsprint chart.

8. Interviewer. Repeat the question which is given on the newsprint chart so that all interviewees will know what the question is. It is a good idea to give the question in several ways so you can be sure the interviewees know what is wanted. You can get help in asking the question in several ways by looking in the Manual under Idea for the question you want.

9. Interviewer. Be sure you know the limits of the question and exactly what the question should include. The Specifics which can be found under each question in the Manual will give these facts.

10. Interviewers. Go through the interview answer at a time for each task rather than task at a time for each answer. For example, this means that the interviewer should ask for question 1, "Which of these tasks may be done in less than five minutes?" The interviewees then decide which of the tasks listed on the newsprint chart can be done in less than five minutes. The interviewees will then discuss the tasks and agree as to which ones take less than five minutes to do. Most times all of the group will agree as to the best answer; however, when there is some disagreement, the answer which will be recorded will be the answer in which most of the group agrees.

11. Recorder. Write the number 1 in column 1 of record sheet A opposite those tasks which the interviewees have agreed take less than five minutes to do.

12. Interviewer. Then say for question 1, "Which of these tasks take up to ten minutes to do?" The interviewees will then

decide which tasks on the newsprint chart take up to ten minutes to do.

13. Recorder. Put the number 2 in column 1 of record sheet A after those tasks which the interviewees have agreed take up to ten minutes to do.

14. Interviewer and Recorder. Use the same procedure for the remaining three answers in question 1. This procedure should be used in the entire interview where answers to the questions are already printed on the flip cards.

15. Recorder. Be sure you have an answer for every task before you let the interviewer go on to the next question.

16. Interviewer. Go on to question 2. Notice that there are two questions in question 2. Question 2 a. has EM printed in green in the lower right-hand corner of the flip card. This question should be given only if the interviewees are enlisted men. Question 2 b. has O printed in green in the lower right-hand corner of the flip card. This question should be given only if the interviewees are officers.

17. Recorder. Get ready to record the answers to this question in column 2 of record sheet A.

18. Interviewer. Repeat the question to the interviewees. Notice that this question does not have any answers printed on the flip card. You should ask the question for each task listed on the newsprint chart for all questions which do not have answers printed on the flip card. For example, for question 2 a. ask,

"What rate does task number 2 now?"

19. Recorder. Record the answer which the interviewees have agreed is the best answer to the question for each task in column 2 of record sheet A. See the Manual under Specifics to get the details of recording the answer. This question is discussed in the Manual on the page titled A 2a (EM) Present Rate. The color of the page in the Manual matches the color of record sheet A.

20. Interviewer and Recorder. Repeat this procedure for the rest of the questions of the interview.

21. Recorder. Remember that when answers are already printed on the flip cards, record only the number of the answer on the record sheet. Do not write the answers to the questions themselves.

22. Recorder. When question 9 has been completed and the interviewer is ready to begin question 10, pull out record sheet A and place it in the back of your notebook. Questions 10, 11 and 12 will be recorded on record sheet B. Repeat this procedure whenever a new record sheet must be used. Remember you can tell what record sheet should be used by the letter in the lower left-hand corner of the flip card.

A 1 (O/EM) TIME ESTIMATE.

How long does this task take?

1. Less than five minutes.
2. Up to ten minutes.
3. Up to 30 minutes.
4. Up to one hour.
5. More than one hour.

Idea: The amount of time that each of the tasks listed in Section II. D. require.

Specifics:

a. Consider the length of time that this task requires under average wartime conditions.

b. Do not consider the amount of time required under extremely poor conditions or when there is enemy action.

c. Consider the length of time required to do this task with the usual number of men assigned to the selected activity.

d. This question should be given to both officers and enlisted men.

A 2 a (EM) PRESENT RATE.

What rate does this task now?

Idea: The rate of the man who has the responsibility or who is assigned to do each of the tasks listed in Section II. D. at the present time.

Specifics:

a. Do not write the full name of the rate, but use the code usually used by the Navy. For example, boatswain's mate would be BM.

b. Ditto marks may be used when all of the tasks listed in Section II. D. are done by the same rate.

c. This question should be given to enlisted men only.

A 2 b (O) PRESENT DESIGNATOR.

What designator does this task now?

Idea: The designator of the man who has the responsibility or who is assigned to do each of the tasks listed in Section II. D. at the present time.

Specifics:

a. Write either the number of the designator or the name of the designator if the number is not known.

b. Ditto marks may be used if all of the tasks listed in Section II. D. are done by the same designator.

c. This question should be given to officers only.

A 3 a (EM) PRESENT PAY GRADE?

What pay grade does this task now?

1. Pay grade 1 --- seaman recruit.
2. Pay grade 2 --- seaman apprentice.
3. Pay grade 3 --- seaman.
4. Pay grade 4 --- third class petty officer.
5. Pay grade 5 --- second class petty officer.
6. Pay grade 6 --- first class petty officer.
7. Pay grade 7 --- chief petty officer.

Idea: The pay grade of the man who has the responsibility or who is assigned to do each of the tasks listed in Section II. D. at the present time.

Specifics:

a. Where the task may be done by more than one pay grade use all of the numbers of the answers which apply.

b. Do not use ditto marks as each of the tasks probably will not be done by the same pay grade.

c. This question should be given to enlisted men only.

A 3 b (0) PRESENT RANK.

What rank does this task now?

1. Ensign.
2. Lt. j. g.
3. Lt.
4. Lt. Commander.
5. Commander.
6. Captain.

Idea: The rank of the man who has the responsibility or who is assigned to do each of the tasks listed in Section II. D. at the present time.

Specifics:

a. Where the task may be done by more than one pay grade, use the numbers of the answers which apply.

b. Do not use ditto marks as each of the tasks probably will not be done by the same rank.

c. This question should be given to officers only.

A 4 a (EM) BEST RATE.

What rate is best suited to do this task?

Idea: The rate which is best qualified by training and experience to do each of the tasks listed in Section II. D.

Specifics:

a. Do not write the full name of the rate but use the code usually used in the Navy. For example, boatswain's mate would be BM.

b. Ditto marks may be used if the interviewees believe that all of the tasks in Section II. D. are best done by the same rate.

c. This question should be given to enlisted men only.

A 4 b (O) BEST DESIGNATOR.

What designator is best suited to do this task?

Idea: The designator which is best qualified by training and experience to do each of the tasks listed in Section II. D.

Specifics:

a. Write either the number of the designator or the name of the designator if the number is not known in the appropriate space.

b. Ditto marks may be used if the interviewees believe that all the tasks in Section II. D. are best done by the same designator.

c. This question should be given to officers only.

A 5 a (EM) BEST PAY GRADE.

What pay grade is best suited to do this task?

1. Pay grade 1 --- seaman recruit.
2. Pay grade 2 --- seaman apprentice.
3. Pay grade 3 --- seaman.
4. Pay grade 4 --- third class petty officer.
5. Pay grade 5 --- second class petty officer.
6. Pay grade 6 --- first class petty officer.
7. Pay grade 7 --- chief petty officer.

Idea: The pay grade which is best qualified by training and experience to do each of the tasks listed in Section II. D.

Specifics:

a. Ditto marks may be used if the interviewees believe that all of the tasks in Section II. D. are best done by the same pay grade.

b. This question should be given to enlisted men only.

A 5 b (0) BEST RANK.

What rank is best suited to do this task?

1. Ensign.
2. Lt. j.g.
3. Lt.
4. Lt. Commander.
5. Commander.
6. Captain.

Idea: The rank which is best qualified by training and experience to do each of the tasks listed in Section II. D.

Specifics:

a. Ditto marks may be used if the interviewees believe that all of the tasks in Section II. D. are best done by the same rank.

b. This question should be given to officers only.

A 6 a (EM) OTHER RATES.

What other rates are able to do this task?

Idea: All rates which are qualified by training and experience to do each of the tasks listed in Section II. D.

Specifics:

a. Ditto marks may be used if the interviewees believe that all of the tasks listed in Section II. D. may be done by the same rate.

b. This question should be given to enlisted men only.

A 6 b (O) OTHER DESIGNATORS.

What other designators are able to do this task?

Idea: All designators which are qualified by training and experience to do each of the tasks listed in Section II. D.

Specifics:

a. Write either the number of the designator or the name of the designator if the number is not known.

b. Ditto marks may be used if the interviewees believe that all of the tasks listed in Section II. D. may be done by the same designator.

c. This question should be given to officers only.

A 7 a (O/EM) SUPERVISORS.

Who supervises this task?

Idea: The (rate and paygrade) or (rank) of the man who supervises each of the tasks listed in Section II D.

Specifics:

a. Use ditto marks where each of the tasks may be supervised by the same man.

b. Use the code for rate, paygrade, and rank usually used by the Navy.

c. This question should be asked to both enlisted men and officers.

A 7 b (O/EM) TYPE SUPERVISION.

How is this task supervised?

1. Close supervision.
2. General supervision.
3. Safety supervision or observation.
4. Direction.
5. None.

Idea: The kind of supervision which is given to each of the tasks listed in Section II. D.

Specifics:

a. Consider the type of supervision given by the man who supervises each of the tasks listed in Section II. D. (See question A 7 a)

Details of Answers:

1. Close Supervision. The supervisor must be present at all times when this task is being done, either because the man doing the tasks themselves or because close supervision is needed to make on-the-spot decisions. The task may be a very delicate operation requiring a very careful check. The supervisor tells the men how to do the task, when they are doing something wrong and how to do it right.

2. General supervision. The supervisor may not always have to be present when the task is being done. He makes frequent checks while the task is being done. The men doing the task have considerable training and experience and the task does not require the supervisor to be present at all times to check the work and make decisions.

3. Safety supervision or observation. The supervisor is present while the task is being done to insure that prescribed safety precautions are followed. He may or may not have to know how to do the task. He acts as an overall observer from strictly the safety angle. He can stop the entire operation or any part of the operation when there is any danger to equipment and/or personnel.

4. Direction. The supervisor is rarely present while the task is being done. He tells the men what should be done and then may check to see that the task is done. The task does not require the supervisor to be present. The men are fully trained and experienced to do the task themselves. No major decisions about how to do the task are required.

5. None. There is no supervisor present. No supervisor is needed for this task. No decisions requiring a supervisor are made. The men doing the task are fully trained and experienced so that the task is routine.

A 8 (O/EM) TASK LEVEL.

Who should do this task?

1. Apprentice.
2. Journeyman.
3. Close Supervisor.
4. Director.

Idea: The general level, as defined below, in terms of training, experience, supervision, given and received, of the man who should be assigned to each of the tasks listed in Section II. D.

Specifics:

a. There should be no more than one answer for each task. As the four levels are different from each other, the interviewees will have to make a choice for each task.

b. Be sure the interviewees understand what is meant by each answer.

c. This question should be given to both officers and enlisted men.

Details of Answers:

1. Apprentice. This man is just learning how to do the task and may not know how to do it well. He doesn't have a lot of experience and doesn't need a lot of experience. He doesn't need a lot of education but needs a little general Navy training. The apprentice is supervised by a man who checks all of his work very often. The supervisor tells him how to do new tasks that he hasn't learned yet. The supervisor also tells the apprentice when he is doing something wrong and shows him how to do it right. This man sometimes shows another apprentice how to do something but he is never a supervisor.

2. Journeyman. This man has learned to do the task well because he has had quite a bit of experience in it. He doesn't need a lot of education, but he should have some Navy specialized training. The journeyman needs quite a bit of knowledge to do his work but he may get this from experience. His supervisor checks all of his work to make sure that it is correct. Sometimes the journeyman supervises the work of an apprentice but the journeyman is not considered a supervisor.

3. Close Supervisor. This man has learned how to do a lot of tasks well. He has a great deal of experience. He knows how to do the work of the apprentices and journeymen under him, and shows his men how to do their jobs. He doesn't actually do their work, but he sees to it that the men do it. The Close Supervisor has a lot of knowledge. He has had a lot of Navy specialized training. Usually the Close Supervisor acts as a boss for a lot of jobs, but the jobs are not very different from each other. He is supervised by a director, but the director only tells the Close Supervisor what he wants done, not how it should be done.

4. Director. The Director is in charge of men doing a lot of different kinds of jobs. He assigns work to his close supervisors under him, but he doesn't watch the men to see how they do the job. He may not know how to do all of the tasks that have to be done. He is only interested in seeing that the work is done on time and done well. This man has had a lot of education and Navy training. He may not have as much experience as the supervisors, but he knows how to plan work and decide what each unit should do and when they should do it. He checks with his own superiors on some matters.

A 9 (O/EM) MANUALS.

What manuals are needed for this task?

Idea: The manuals which are required and used in doing each of the tasks listed in Section II. D.

Specifics:

a. Include the name and number of the manual where possible.

b. This question should be given to both officers and enlisted men.

B 10 (O/EM) CHECK-OFF LISTS.

What operating check-off lists are needed for this task?

Idea: The name and number of the operating check-off lists which are required and used for each of the tasks listed in Section II. D.

Specifics:

a. Secure a copy of these check-off lists and attach them to the interview forms.

b. This question should be given to both officers and enlisted men.

B 11 (O/EM) TOOLS.

What tools are used in this task?

1. Simple hand tools --- screw driver, hammer

2. Portable power tools --- electric drill, sander

3. Hand tools requiring accurate readings --- micrometer, calipers, slide-rule.

4. Stationery machine tools --- lathe, shaper, miller

5. Office machines --- calculator, accounting machine

6. Electronic guages --- oscilloscope, galvanometer, etc.

Idea: The general level and category (considering skill and training required to operate) of the tools required for each of the tasks listed in Section II. D.

Specifics:

a. If the interviewees believe that not all categories are covered in this question, the name of the tool which doesn't fit the categories should be placed in the appropriate column in the interview form.

b. If more than one answer applies to each task, include all the numbers of the answers which do apply.

c. This question should be given to both officers and enlisted men.

B 12 (O/EM) FOUL-UPS.

What are the ways this task can be fouled up?

Idea: The things that can go wrong in doing each of the tasks listed in Section II. D. The wrong ways the tasks can be done by a man who is not experienced or by a man who is not good in this work. How you tell when these tasks are not being done well.

Specifics:

a. Do not include foul-ups which might happen under very unusual conditions.

b. Consider the task as taking place in combat conditions but with no enemy action.

c. Be specific in stating what can be fouled-up.

d. There should be an answer for each task listed in Section II. D.

e. This question should be given to both officers and enlisted men.

C 13 (O/EM) EFFECT OF ERROR.

What is the effect of error on time and equipment in this task?

1. No loss; immediately corrected.
2. Some loss; easily corrected.
3. Substantial loss; difficult to correct.
4. Considerable loss; very difficult to correct.
5. Very serious loss; endangers lives.

Idea: The seriousness of a mistake or error in judgment in each of the tasks listed in Section II. D. The responsibility of a man doing this task of preventing waste or loss of gear through carelessness or doing a poor job.

Specifics:

a. Consider the gear which might be ruined before the error is found out and corrected.

b. Consider the value of the gear and the possibility of salvage.

c. Consider how long it might take before the error were corrected.

d. Consider whether the error would affect the work of only the man making the error or a small number of men or many men.

e. Consider how great the damage would be by the error.

f. This question should be given to both officers and enlisted men.

Details of Answers:

1. Little or no chance of causing poor work or loss of gear due to doing a poor job or making a mistake; little or no chance to make an error in the task.

2. Small losses in gear might occur; poor work usually caught quickly by other men before damage is great; mistakes found out when the task is done; up to one man-hour might be required to correct the mistake.

3. Substantial loss or repeated small losses in gear could occur from doing a poor job; man must be careful to avoid losses; mistakes caught in later tasks of the activity; up to three man-hours might be required to correct the mistake.

4. Considerable care on the part of the man is necessary to avoid losses of gear; gear requires careful setting and attention from man doing task; mistakes are hard to correct; error in judgment would cause considerable confusion in doing the activity.

5. Precision work on expensive gear that needs exact setting and adjustment; mistakes might cause considerable loss; error in judgment might result in a serious loss of personnel and equipment.

C 14 (O/EM) DANGERS.

List any dangerous things in this task.

Idea: The dangers which are present in doing each of the tasks listed in Section II. D. What is dangerous in doing this task?

Specifics:

a. Include only things which happen in doing this task during wartime operations but under no enemy fire.

b. Do not include things which happen under enemy fire, or if hit by a mine.

c. Be specific in filling in the dangers for each task.

d. This should be given to both officers and enlisted men.

C 15 (O/EM) ACCIDENTS.

What are the kinds and chances for accidents in this task?

1. Very little chance; accident minor.
2. Some chance; minor cuts, bruises, etc.
3. Frequent chance; serious cuts, bruises, strains.
4. Some chance for permanent disability.
5. Constant chance for permanent disability.

Idea: The usual amount and seriousness of accidents in doing each of the tasks listed in Section II. D.

Specifics:

a. Include only things which happen in doing this task during war-time operations but under no enemy fire.

b. Do not include things which happen under enemy fire, or if hit by a mine.

c. This question should be given to both officers and enlisted men.

Details of Answers:

1. Task has almost no accident or health dangers; man works regularly under desirable conditions.

2. Task has minor health dangers; accidents beside minor injuries such as abrasions, cuts and burns not likely; man works regularly under poor conditions.

3. Man doing task is exposed to accident and health dangers from which he loses time due to more serious cuts, bruises and muscle strain, but he is able to get back on the job; rare exposure to more serious dangers.

4. Man doing task is frequently exposed to accident or health dangers that might cause him to be unable to work; chances for eye injuries, loss of fingers, or serious burns. Frequent minor injuries likely but more serious accidents are very rare.

5. Man doing task has considerable or continual exposure to accidents or conditions that might result in his not being able to work. Accidents happen frequently in spite of precautions.

D 16 (O/EM) SAFETY.

What are the special safety precautions for this task?

Idea: The special safety precautions that have been set-up for those tasks listed in Section II. D. which are dangerous or on which the accident rate is high.

Specifics:

a. Include any special safety devices or safety procedures which may be used in this task.

b. Be specific in recording this answer.

c. Only those tasks will generally be answered for this question which have been previously answered in questions C 14 and C 15 as having a high accident rate or having some dangers.

d. This question should be given to both officers and enlisted men.

D 17 (O/EM) CIVILIAN SCHOOLING.

How much education should a man have to do this task?

1. At least fourth grade.
2. At least sixth grade.
3. At least eighth grade.
4. At least tenth grade.
5. At least high school graduate.
6. At least two years of college.
7. At least college graduate.
8. Post-graduate training.

Idea: Basic knowledge, specified civilian education, and specialized civilian training required to do each of the tasks listed in Section II. D. What grade of school the man should complete to do this task.

Specifics:

a. Include either civilian schooling or study outside of school or a combination of both.

b. Do not include specialized Naval schools such as Mine Warfare school or Navy training of any type.

c. This question should be given to both officers and enlisted men.

E 18 a (EM) TYPE NAVY TRAINING.

What type of Navy training must a man have before he is good at this task?

1. Boot camp only.
2. Class A school.
3. Class B school.
4. Class C school.
5. Factory school.
6. Formal fleet training school (not on ship).

Idea: The type of Navy training that is needed before a man will be good in doing each of the tasks listed in Section II. D.

Specifics:

a. If a man needs more than one type of training for any task, include all of the numbers of the answers which apply.

b. If no specialized Navy training is required to do this task, 1. should be placed on the record sheet. It is assumed that Boot Camp training is required of all tasks.

c. Ditto marks may be used if the training for all of the tasks should be the same type.

d. This question should be given to enlisted men only.

E 10 b (O) TYPE NAVY TRAINING.

What type of Navy training must a man have before he is good at this task? (Give name of school.)

Idea: The type of Navy training that is needed before an officer will be good in doing each of the tasks listed in Section II. D.

Specifics:

a. Give the name of the school which applies to each task.

b. If an officer needs more than one type of training for any task, include all of the names of the schools which he needs.

c. If no specialized Navy training is required to do this task, write "none" in the column on the record sheet.

d. Ditto marks may be used if the training for all of the tasks should be the same type.

e. This question should be given to officers only.

F 19 a (EM) WHEN TRAINING GIVEN.

When should training be given for this task?

1. Before coming to unit.
2. After some experience but still non-rated.
3. Third class petty officer.
4. Second class petty officer.
5. First class petty officer.
6. Chief petty officer.

Idea: The stage in the man's Navy career that training should be given for each of the tasks listed in Section II. D.

Specifics:

a. The type of training for each task refers to the type of training given in question E 18 a.

b. This question should be given to enlisted men only.

F 19 b (0) WHEN TRAINING GIVEN.

When should training be given for this task? Include plus years.

1. Ensign.
2. Lt. j. g.
3. Lt.
4. Lt. Commander.
5. Commander.
6. Captain.

Idea: The stage in the officer's Navy career that training should be given for each of the tasks listed in Section II. D.

Specifics:

a. The type of training for each task refers to the type of training given in question E 18 b.

b. (Include plus years.) If the interviewees believe that the training should be given in the stage of the officer's career somewhere between the answers given on the flip card, the number of years can be placed in the record sheet after the answer which applies. For example, if the interviewees believe that training should be given two years after the officer has been a Lt. j. g., but before he is a Lt., the question should be answered 2 (+3) in the record sheet. As another example, if the interviewees believe that the training should be given after the officer has been a Lt. Commander for two years but before he is a Commander, the item should be marked 4 (+2).

c. This question should be given to officers only.

F 20 (O/EM) BEST TRAINING METHOD.

Which training method should be stressed most to teach this task? Why?

1. Movies.
2. Lecture.
3. Demonstration.
4. Sea lab.
5. Practice on ship.
6. Cut-away models.
7. Other _____

Idea: The best way to get across what each task listed in Section II. D. involves and how the task should be done. How the tasks should be taught.

Specifics:

a. Include only the training method which should be stressed most.

b. Do not include any combinations of the above methods of training.

c. In case a special method of training not given in the answers is believed by the interviewees to be the one to be stressed, include it under answer 7 : Other, i. e. put down what this method is on the record sheet.

d. This question should be given to both officers and enlisted men.

F 21 (O/EM) NEXT BEST TRAINING METHOD.

What is the second best training method to teach this task? Why?

1. Movies.
2. Lecture.
3. Demonstration.
4. Sea lab.
5. Practice on ship.
6. Cut-away models.
7. Other _____

Idea: The second best way to get across what each task listed in Section II. D. involves and how the task should be done. How the task should be taught.

Specifics:

a. Include only the second choice training method which should be stressed.

b. Do not include any combinations of the above methods of training.

c. In case a special method of training, not given in the answers, is the interviewees' second choice, include it under answer 7: Other _____; that is, put down what this method is on the record sheet.

d. This question should be given to both officers and enlisted men.

F 22 (O/EM) TASK HARDNESS.

How hard is it to learn this task?

1. Very easy.
2. Easy.
3. Average.
4. Hard.
5. Very hard.

Idea: The length of time in training and/or experience that is required to learn how to do each of the tasks listed in Section II. D.

Specifics:

a. This question should be given to both officers and enlisted men.

Details of Answers:

1. Very easy --- One day's training and/or experience.
2. Easy --- One week's training and/or experience.
3. Average --- Two week's training and/or experience.
4. Hard --- Three week's training and/or experience.
5. Very hard --- More than three week's training and/or experience.

G 23 (O/EM) SEEING.

Which tasks is it important to be able to see well? What does a man doing this task have to see that is important (night vision, color vision, near vision, far vision?)

Idea: The critical (important and necessary) vision requirements for each of the tasks listed in Section II. D.

Specifics:

a. Do not get such answers as "needs good eyesight," or "needs 20-20 vision," but get answers in behavior form. This means the answers should describe what it is about the tasks that make it important to be able to see well. Such statements as "must be able to see the pendant at 2,000 yards" are needed. Where the interviewees believe that color vision is required, the information should be obtained which answers the questions, "What type of color vision is required?" and "Why is this required?" Such answers as "must be able to tell the difference between red signals and green signals on the electrician's board so man will know which switch to pull" are needed.

b. Seeing is important for the task, for example, if the man doing the task must be able to see close things or far away things, if he has to see things at night, or if he has to tell the difference between colors.

c. This question should be given to both officers and enlisted men.

H 24 (O/EM) HEARING.

Which task is it important to be able to hear well? What does a man doing this task have to hear that is important (loudness, tone)?

Idea: The critical (important and necessary) hearing requirements for each of the tasks listed in Section II. D.

Specifics:

a. Do not get such answers as "needs to hear well" or "has to hear everything," but get answers in behavior form. This means the answers should describe what it is about the tasks that make it important to be able to hear well. Such statements as "must be able to hear orders from the bridge under noisy and masking conditions" are needed.

b. Hearing is important for the task, for example, if the man doing the task must be able to tell the difference between high and low tones and between loud and soft tones.

c. This question should be given to both officers and enlisted men.

I 25 (O/EM) READING.

Which task is it important to be able to read well? What does a man doing this task have to read that is important? (complicated technical manuals, diagrams, blue prints, logs).

Idea: The critical (important and necessary) reading requirements for each of the tasks in Section II. D.

Specifics:

a. Do not get such answers as "needs to be able to read well" or "must read manuals," but get answers in behavior form. This means that the answer should describe what is about the tasks that make it important to be able to read well. Such statements "must read complicated technical manuals about electronics in order to do task" or "must read simple diagrams telling how to use mine test sets" are needed.

b. Reading is important for the task, for example if the man doing the task must be able to read complicated technical manuals, diagrams, blue prints, or logs.

c. This question should be given to both officers and enlisted men.

J 26 (O/EM) WRITING.

Which task is it important to be able to write well? What does a man doing this task have to write down that is important? (log, complicated report, notes).

Idea: The critical (important and necessary) writing requirements for each of the tasks listed in Section II. D.

Specifics:

a. Do not get such answers as "needs to write a lot" or "doesn't write much" or "must write fast" but get answers in behavior form. This means the answers should describe what it is about the tasks that make it important to be able to write well. Such statements as "must be able to write complicated reports about mine test sets" or "must keep simple log of operations every day" are needed.

b. Writing is important for the task, for example, if the man doing the task must write things which are to be read by others or which he will have to read later himself.

c. This question should be given to both officers and enlisted men.

K 27 (O/EM) TALKING.

Which task is important to be able to speak well? What does a man doing this task have to say that is important? (orders, telephone, directions).

Idea: The critical (important and necessary) speech requirements for each of the tasks listed in Section II. D.

Specifics:

a. Do not get such answers as "has to have good speech" or "must talk fast" but get answers in behavior form. This means the answers should describe what it is about the tasks that make it important to be able to talk well. Such statements as "must give orders to his men" or "directs operations of men over communications system aboard ship" are needed.

b. Talking is important for the task, for example, if the man doing the task must give or repeat orders, use the telephone often, or relay messages.

c. This question should be given to both officers and enlisted men.

L 28 (O/EM) PHYSICAL EFFORT.

How much physical effort is required for this task?

1. Light work only.
2. May do moderate work; never heavy work.
3. Only occasional heavy work.
4. Considerable heavy work, but not steady.
5. Steady heavy work.

Idea: The amount of effort required to do each of the tasks listed in Section II, D.

Specifics:

a. Consider the availability or lack of availability of gear or devices which lessen the physical effort requirement of the man doing this task.

b. This question should be given to both officers and enlisted men.

Details of Answers:

1. Light work requiring little physical exertion.

2. Physical effort required for frequent handling of light gear; occasionally works with average gear.

3. Repetitive or sustained physical effort required for usual handling of light or average gear; occasionally works with heavy gear.

4. Considerable physical effort required for usual handling average weight gear; frequently works with heavy gear.

5. Steady or repeated physical effort required to handle heavy gear. Hard work with constant physical strain or some severe strain.

COMMENTS

Space has been left on the record sheet following question L 28 for the interviewer or recorder to write under Comments any information about the interviewees or the interview itself which has not been covered during the interview. Place here any side-comments or information concerning the problems faced by the interviewer team or by the interviewees at their particular base.

Information is desired about any special conditions that existed during the interview, or any problems which the interview team had. Any special field conditions in mine warfare operations should also be recorded here.

IV. INFORMATION OBTAINED FROM PERSONNEL JACKETS.

This section of the Mine Warfare Personnel Analysis Interview Forms deals with further information necessary to identify the interview and the interviewees. This section differs from Section I. Identifying Information of these forms in that Section IV. can be obtained from the Personnel Jackets of the interviewees rather than during the interview.

After the name (IG1) and the rank or rate (IG2) of each of the interviewees have been obtained in Section I. of the interview, each interviewees' name and rank or rate should be copied on a separate page in Section IV (IV A and IV C). There are six sets of Section IV forms provided for this purpose. One member of the interview team should look up the required information for Section IV. from the Personnel Jackets during the interview. Remember that this procedure is repeated for each of the interviewees, on a separate sheet of Section IV. There are six sets of forms in the interview package.

A detailed account as to what information is needed and how it is to be obtained follows:

IV A. Name: Indicate the full name of the interviewee. This will be obtained from Section IG 1.

IV B. Service Number: Indicate the service number of the interviewee.

IV C. Rank/Rate: Indicate the rank of the interviewee in case of an officer or the rate of the interviewee in the case of an enlisted man. This will be obtained from Section IG 2.

IV D. Primary ENJC: This item applies only to enlisted men. Indicate the primary ENJC of the interviewee.

IV E. Secondary ENJC: This item applies to only enlisted men. Indicate the secondary ENJC of the interviewee.

IV F. Designator: This item applies only to officers. Indicate the designator of the interviewee.

IV G. Age: Indicate the age (in years) of the interviewee.

IV H. Time (mos.) in Navy: Indicate the number of months that the interviewee has been in the Navy.

IV I. Time (mos.) in Present Job: Indicate the number of months that the interviewee has been in his present job.

IV J. Other Pertinent Information to Include Pre-Navy Experience: Indicate other information which may be obtained from the Personnel Jacket which may be important. Also indicate the interviewee's pre-Navy experience (type and time spent) in this space.

IV K. Navy Schools Attended: Indicate in the three columns all Navy schools attended, courses at these schools, and the dates of attendance.

IV L. Other Schools Attended: Indicate in the three columns, the interviewee's civilian education, the dates of attendance, and whether or not he graduated.

IV M. Previous Duty Assignments: Indicate under duty assignment, the interviewee's past Navy duty assignments. After each assignment indicate the number of months that the interviewee spent in that assignment.

A FINAL REMINDER

You have been given 75 copies of the Interview Form. Five copies of the interview form have been placed in an addressed envelope. As you will conduct one interview per day, each envelope has a one week's supply of forms. Five Manuals to accompany the forms have been given to each team. The manuals have been placed in a separate envelope labeled "Manual."

After each week of interviewing the team captain will put the five completed copies of the Interview Form in the envelope and mail it. Stamps have been provided for mailing.

Before mailing the envelopes, the team captain will have to make sure that each of the five Interview Forms in the envelope are clipped together as a package. He must check to see that each page in the package belongs to that interview. This may be checked by noting the interview code number which has been placed in the upper right-hand corner of every page in the form. Each Interview Form has a different code number. This code number is the same on each page of the Interview Form.

The team captain must check to see that every page of the Interview Form has been stamped "Confidential -- Security Information."

Keep us informed with your progress and with any problems you face.

APPENDIX C

QUALIFICATIONS FOR MINE WARFARE PERSONNEL

QUALIFICATIONS FOR MINE WARFARE PERSONNEL

Introduction

The Chief of Naval Operations directed the Chief of Naval Personnel to study and make recommendations concerning the requirements for personnel to be qualified in mine warfare. Since Psychological Research Associates had information available on this topic as by-products of the data collection phase of this project, Personnel Analysis Division (Pers. 15) requested Psychological Research Associates to study and make recommendations on this topic and by oral request Psychological Research Associates was given the task of preparing the requirements of personnel to be "qualified in mine warfare".

Considerable information regarding this subject was available to Psychological Research Associates due to the large scale interviewing of mine warfare personnel accomplished in order to meet the primary objectives of this project. The concensus of individuals interviewed was that (a) such qualifications in mine warfare should be set up, (b) a special designation for those qualified should be made, and (c) an identifying insignia should be given. COMINLANT strongly recommended these items be made policy and necessary additions be incorporated in BuPers Manual

and U. S. Naval Uniform Regulations. Plans Officer, COMINPAC staff also recommended that these items be incorporated in BuPers Manual.

Presented below is the proposal, called Plan A, of Psychological Research Associates as to the requirements necessary for personnel who are to be "qualified in mine warfare". This proposal was synthesized not only from information collected from our billet analysis interviews but also from information obtained from cognizant personnel in BuPers, U. S. Naval Schools, Mine Warfare, and COMINLANT and COMINPAC staffs.

The requirements initially proposed for officers were generally accepted by cognizant personnel who were consulted. Such agreement of opinion concerning qualifications for enlisted men was not found however. Consequently, three alternative plans were developed. Before discussing Plan A, the alternative plans will be presented together with the considerations which led to their formulation and subsequent rejection.

Basic Considerations

From the standpoint of administrative simplicity it was desirable to have one set of requirements for mine warfare enlisted personnel. Also, this would seem logically consistent since it was anticipated that only one insignia

would be awarded. However, it soon became evident that there are definite disadvantages in having one set of requirements for men who have widely differing backgrounds. Because of the differentiation in training and experience available to Minemen, Boatswain's Mates, and other rates it seems not feasible to set one high standard that all men can reach. If the requirements were set at the level that most of the men could reach, little over-all improvement of standards would result. However, if the requirements were set so high that few men became qualified, the objectives of this program would not be fully realized.

In developing these plans Psychological Research Associates had in mind the primary objective of raising the standards of mine warfare personnel and the secondary objective of increasing esprit de corps. In addition, as such qualification would enable the designation to become a part of each man's record, it would provide some stability to the personnel in mine warfare.

It soon became apparent that the first two of the above objectives were partially in conflict. To achieve the primary objective it is necessary that the requirements be such that the personnel must increase their knowledge and skill in mine warfare. If the requirements are so high, however, that even the men with the rating of Boatswain's Mate, Electrician's Mate, and Minemen are required to learn

new skills, men in mine warfare units with other ratings such as Radiomen or Yeomen would find the requirements practically impossible to meet. With this plan part of the crew of a DMS, for example, might be "qualified in mine warfare" and wear the insignia while perhaps the larger part of the crew would never be able to reach this goal. This might affect esprit de corps adversely rather than favorably. In answer to this consideration Plans B and C for enlisted men were developed.

Plans B and C

Plan B would provide one set of requirements which all mine warfare personnel afloat could meet with moderate effort and would provide one insignia which all men could earn. This qualification and insignia would be given on a temporary basis and would be nullified when a man left a mine warfare unit. The requirements would be that a man already proficient in his billet be given a written examination on the general principles of mine warfare and demonstrate to his commanding officer knowledge of the principles of good seamanship and of the safety and combat measures that he may be required to take in an emergency situation. The advantages of this plan would be:

1. It would increase the knowledge of shipboard personnel in the general principles of mine

warfare and in the practical aspects of seamanship, thus attaining in part the primary objective.

2. By providing an insignia available to all personnel it would tend to increase the feeling of belonging to an organization having prestige, thus achieving the secondary objective.
3. It requires only one examination for all personnel and thus avoids the objections raised to the other plans on this score.

The basic objections to Plan B would be that: (a) the qualifications would be available only to those personnel a aboard ships, and (b) that the requirements would be too easily met. It is believed that condition (b) would have two undesirable results:

1. The standards of mine warfare personnel would not be raised to the degree possible under the other plans.
2. If the men felt that the insignia was awarded indiscriminately it would mean little to them and would not increase morale.

Plan C is a combination of the other two plans and would provide for two levels of qualifications. The first level would provide qualifications which would carry the privilege of wearing the insignia while assigned to a mine warfare unit. The requirements for this qualification would

be similar to those of Plan B. All personnel in mine warfare units afloat would be eligible for this award if they met the requirements that are recommended by their commanding officer.

The second level of qualification of Plan C is designed primarily for Minemen, Mine Sweeping Boatswain's Mates, and Mine Sweeping Electrician's Mates. Depending on administrative feasibility this qualification may or may not be available to men in other rates who develop the required skills. It is not thought likely that many men in other rates would be able to meet the requirements.

The requirements for this higher level of qualification in Plan C are identical with those of Plan A, to be presented below. Under Plan C the men who qualify for this higher level would retain their qualification permanently with the same stipulations of Plan A. Also, they would have an additional symbol on their insignia to indicate the higher level permanent qualification.

The objections to Plan C are similar to objections (b)1 and (b)2 to Plan B. In addition, Plan C is administratively complex.

In the judgment of Psychological Research Associates and of the cognizant naval personnel who were consulted, Plan A best meets the needs of the service. Plan A was considered best because it will achieve to the maximum

degree possible the objective of raising training and performance standards of mine warfare units. Also, it was felt that it is more likely that the men would consider the "qualified in mine warfare" insignia to be more desirable if it were something difficult to obtain. This would provide a greater incentive for the men; it would also mean that the insignia would have a greater effect on increasing esprit de corps. The Commanding Officer of U. S. Naval Schools, Mine Warfare has approved in substance the recommendations below (Plan A) for officers and enlisted men to be "qualified in mine warfare". COMINLANT has also approved in substance the enclosed recommendations. These recommendations have been submitted to the Bureau of Naval Personnel for desired modification.

In summary then, it is believed that if the following recommended requirements for officers and enlisted men to become "qualified in mine warfare" are implemented, two major results will be obtained: (a) performance and training standards will be considerably raised in mine warfare units, and (b) esprit de corps will be raised. The following recommendations were developed to attain these two objectives.

It is recommended that article B-7303 BuPers Manual, 1948, be used as a guide in preparing the "qualified in mine warfare" requirements and that the new article be numbered C-7312 and read in substance as follows:

"C-7312 MINE WARFARE OFFICER'S QUALIFICATION

(1) Assignment to mine warfare duty. - Upon successful completion of instruction at the U. S. Naval Schools, Mine Warfare, in the Mine Countermeasures Course, or the Mine Warfare Staff Officers' Course, or the Mines Officers' Course, or such other schools or courses as may in the future be designated by the Chief of Naval Personnel, officers normally will be ordered to mine warfare duty billets. Only in special cases will officers be ordered to mine warfare duty without first being assigned to one of the courses of instruction mentioned above.

(2) Procedure for Qualification in Mine Warfare.

(a) At the end of twelve months' service involving duty in mine warfare, an officer if so recommended by his Commanding Officer shall be examined by a board to determine his qualification in mine warfare. If the officer successfully passes the examination, he will be recommended for qualification in mine warfare and, upon final approval by the Chief of Naval Personnel, he will be designated as "qualified in mine warfare". Upon being notified of this final approval by the Chief of Naval Personnel, he is authorized to wear the mine warfare insignia as prescribed

in U. S. Navy Uniform Regulations.

(b) When an officer has achieved qualification in mine warfare, an entry to that effect will be made by the Bureau of Naval Personnel in his next report of fitness, giving date of qualification.

(c) If the candidate fails to pass the examination, the board will so state in its report and recommend if and when re-examination is feasible.

(d) In every case a report of the examination shall be forwarded to the Chief of Naval Personnel via official channels and it shall include the recommendation of each endorser.

(e) Commanding officers of mine warfare units, mine warfare officers, mining officers, and mine countermeasures officers must be "qualified in mine warfare", officers now performing these duties must become "qualified in mine warfare" within six months after the effective date of this regulation, except those officers who will complete the minimum twelve months of mine warfare service more than six months after the effective date of this regulation. These latter officers must become""qualified in mine warfare upon completing the minimum twelve months' service. Officers in training for these duties must

become "qualified in mine warfare" as soon as they have completed both a period of six months in training for these duties and twelve months' service involving duty in mine warfare. If at the end of the six months' training period these officers have not become "qualified in mine warfare" they will no longer be considered as candidates for these duties. If after six months of training for these duties these officers have not been "qualified in mine warfare" the Commanding Officer will forward a report to that effect to the Chief of Naval Personnel, stating the reasons therefore. The Chief of Naval Personnel will upon receipt of this notification remove these officers from consideration for these duties.

(f) Officers other than those in training for duties named in (2) (e) who have been eligible for examination in accordance with paragraph (2) (a) of this article for a period of six months and have not been recommended or have failed the examination by the board, shall be considered by the board as to the advisability of re-examination at a later date.

An entry of the board's recommendation will be made by the officer's commanding officer in the next report of fitness. Any officer who is not recommended

by the board for future re-examination shall not be considered for these duties.

(g) The examining board will be appointed by the Type Commander and will normally consist of one Squadron or Division Commander and two Commanding Officers all of whom shall be themselves "qualified in mine warfare", and none of whom shall be the Commanding Officer of the officer to be examined.

(3) Eligibility for Examination. - Before being recommended for examination, the candidate must have shown marked ability and attention to duty. His Commanding Officer must have satisfied himself and so state in the recommendation to the board that the candidate has accomplished the following:

(a) Completed the required notebook work as required by BuPers Manual.

(b) Prepared himself thoroughly for the examination.

(c) Demonstrated his leadership and general efficiency.

(d) Demonstrated that he is tempermentally qualified for mine warfare duty.

(e) Served the required time in operating units involving mine warfare.

(f) Completed required course or courses in mine warfare.

(g) Be familiar with the mine warfare organization throughout the Navy including the fleet and activities on shore.

(h) Be familiar with the operation order form and its preparation.

(i) Acquired a general knowledge of:

1. Capabilities and limitations of all U.S. mines.
2. Capabilities and limitations of all mine laying agents, U.S. and foreign.
3. Sources of intelligence applicable to mine warfare planning.
4. Numbers and types of mines required to comprise an effective field including replenishment estimates.
5. Mine field types.
6. Operational settings for service mines.
7. Mine countermeasures systems and equipments, including mine hunting, operational characteristics, capabilities, and limitations.
8. Advanced base functional components related to mine warfare.
9. Logistics support system concerning mines, mine countermeasures, equipments, and vessels.

(4) Scope of qualifications. - The examination for qualification in mine warfare will consist of two parts. Part I will be a written multiple choice examination consisting of three sections. All officers desiring qualification will be required to take all sections of Part I. Part II will be a practical examination consisting of two sections. An officer desiring qualification must take one section of Part II.

The three sections in Part I are:

Section 1 - General written section to be given to all officers.

Section 2 - Mining section to be given to all officers.

Section 3 - Countermeasures section to be given to all officers.

The two sections in Part II are:

Section 1 - Countermeasures section to be given to all officers who desire qualification in this field.

Section 2 - Mining section to be given to all officers who desired qualification in this field.

(a) Part I. Written

1. General
   a. History and import of mine warfare.

b. Missions and organization of mine forces and relationships to other fleet and shore organizations.

c. Knowledge of mine warfare instructions, tactics, and doctrines.

d. Safety precautions for mining and mine sweeping.

e. Actions to be taken in emergencies.

f. Questions on purely mine warfare subjects pertaining to intelligence, operations, training, and up keep.

g. General geographical aspects affecting mine fields.

2. Mining

a. Principles of operation of one of each type of current service mines.

(1) Acoustic

(2) Magnetic
a. search coil types
b. needle types

(3) Pressure - combination

(4) Contact

b. Operational capabilities and limitations of current service mines.

c. General mine laying capabilities of the

several mine laying agents.

(1) Surface

(2) SS

(3) Aircraft

d. Recognition characteristics of selected U.S. mines.

e. Types of mine fields.

f. Fundamental hydrographic - oceanographic aspects affecting mine fields.

g. General organization and missions of mine warfare functional components.

3. Countermeasures

a. Operational characteristics, capabilities, and limitations of U.S. service mine countermeasures.

b. Practical working knowledge of all current types of U.S. sweeps to include a knowledge of deck seamanship in upkeep, repair, rigging, streaming, and recovery of all type sweep gear.

c. General knowledge of magnetic, pressure, and acoustic signatures.

d. Knowledge of capabilities and limitations of each type of U.S. sweeper and associated sweep gear.

e. General methods of mine disposal.

f. Elementary knowledge of degaussing.

g. Maneuvering in mined waters.

h. General knowledge of foreign mines.

(b) Part II. Practical

1. Countermeasures

a. Demonstrate ability in navigational procedures unique to mine warfare.

b. Direct the laying and recovery of dan buoys.

c. Be a qualified CIC watch officer.

d. Be a qualified officer of the deck underway and in port.

e. Demonstrate ability to perform the duties of the officer of the deck in the following circumstances:

(1) Mine sweeping
(2) Mooring and unmooring

f. Direct the streaming, recovery, and adjustment of the following sweeps at sea:

(1) O type (single and both sides)
(2) Magnetic including jig sweep
(3) Acoustic sweep abeam and astern

2. Mining

a. Test components of, assemble, and operationally test one of each of the following type mines:

(1) Contact
(2) Acoustic
(3) Magnetic
(4) Pressure - combination

b. Prepare a mining annex to an operation order.

c. Prepare a mine assemble order in conjunction with a mining annex to an operation order.

d. Demonstrate ability in navigational procedures unique to mine warfare.

e. For officers assigned to surface and submarine mine layers.

(1) Be a qualified CIC watch officer.
(2) Be a qualified officer of the deck under-way and in port.
(3) Demonstrate ability to perform the duties of the officer of the deck during mining operations.

f. For officers assigned to aviation mine layers.

(1) Demonstrate proficiency to lay mines by air during a mining operation.

(c) While it is highly desirable that the examining board itself witness those phases of the candidates' practical examination, the Type Commander or Squadron Commander may authorize the board to accept the certification of the candidates' Commanding Officer as to his ability and knowledge in the following sub-headings only: (b) 1.a.; (b) 1,b.; (b) 1.c.; (b) 1.d.; (b) 1.e.; (b) 2.d.; (b) 2.e.(1); (b) 1.e (2); (b) 2.e. (3); and (b) 2.f. The remainder of both the written and practical

sections of the examination must be administered under the supervision of the examining board.

(5) Qualifications for Mine Warfare Command. - An officer who has previously qualified in mine warfare in accordance with the provisions of the foregoing paragraphs may be recommended by his Commanding Officer as qualified for mine warfare command. Division and squadron commanders shall forward these recommendations approved only if they are willing to receive the applicant as a Commanding Officer in their organization. The Bureau of Naval Personnel as the final approving office will record these recommendations and make necessary additions to the list of officers qualified for mine warfare command.

(6) Duration of Qualification. -

(a) An officer once having "qualified in mine warfare" or for mine warfare command will be considered to retain such qualifications indefinitely unless his performance of mine warfare duty is such as to demonstrate his unfitness. In such cases, the immediate superior in command will report the circumstances to the Chief of Naval Personnel, via official channels, and recommend that the officer's qualifications be revoked. A special report of fitness will be submitted direct to the Chief of Naval

Personnel to substantiate the recommendation. Concurrence by the Chief of Naval Personnel in this recommendation will result in the revocation of the qualification and withdrawal of the insignia.

(b) Officers previously qualified who have been separated from mine warfare duty for some time may be permitted a brief period of instruction upon being reassigned to mine warfare duty prior to assuming a mine warfare command.

(7) Assignment of Division and Squadron Commanders. - Officers assigned to command mine divisions will be qualified for mine warfare command and will have had duty in command of mine force ships or other operating units afloat. Officers assigned to command mine squadrons will be qualified for mine warfare command, will have had duty in command of mine force ships or other operating unit afloat, and will ordinarily have had duty in command of a mine division.

(8) Code Designation. -

(a) Officers who are "qualified in mine warfare" in accordance with the foregoing paragraphs shall receive an appropriate code designation from the Bureau of Naval Personnel which shall be made a part of the officer's records and all future official correspond-

ence concerning this officer. In addition, an appropriate insert shall be made in the appropriate column of the Navy Register to indicate those officers who are "qualified in mine warfare".

(b) Should an officer "qualified in mine warfare" demonstrate his unfitness to remain qualified, his Commanding Officer shall set forth all the circumstances surrounding the case and shall forward them to the Chief of Naval Personnel via the administrative chain of command. The Chief of Naval Personnel shall decide and notify the Commanding Officer concerned of the action taken. All related correspondence will be made a part of the officer's official record. Once an officer has had his qualifications revoked, he will no longer wear the mine warfare insignia nor will he be considered at any future time to requalify in mine warfare.

(9) Eligibility and Qualification for Reserve Officers on Inactive Duty. -

(a) Reserve officers who since June, 1940 have at one time been in a mine warfare billet, on active duty for 18 months are eligible to become "qualified in mine warfare". Such officers to be qualified must pass the written examination (Part I) as outlined in paragraph (4): to be taken during their active duty training period.

(b) Records of such officers who successfully pass the written examination (Part I) will be evaluated by the Chief of Naval Personnel to ascertain if the officer's prior training and experience in mine warfare is equivalent to the practical part (Part II) of this examination.

(c) Officers in this category who become "qualified in mine warfare" will be rewarded with the mine warfare insignia and _____ points toward promotion.

(10) The mine warfare combat insignia is awarded individually to qualified officers of the service, who, after June 1940, have been regularly assigned to mine warfare duty and who have completed one or more wartime combat mine warfare operations designated as successful. A "Mine Warfare Combat Operation" is one where mines are swept, recovered, or otherwise disposed of or mines are successfully planted in enemy waters, or the ship or unit concerned has accomplished a combat mission of comparable importance. The insignia indicates one successful operation. Each gold star counted on the combat insignia indicates an additional successful operation. A silver star indicates five successful operations. A decision as to whether an operation is successful is made by the Fleet or Force

Commander under whose command the ship or unit operates. In addition, any particular, important, dangerous, or difficult mining or mine clearance operation may be designated combat warfare operation for purposes of this insignia at the discretion of the responsible commander. The mine warfare combat insignia may not be awarded to mine warfare personnel prior to qualification for the mine warfare insignia, but award of the combat insignia and respective stars will be retroactive for those who later become qualified and may be worn in conjunction with the mine warfare insignia as soon as appropriate notation shall be made in the service record of each enlisted man who receives this award. An additional entry shall be made for each succeeding successful operation. See U.S. Navy Uniform Regulations for instructions covering the wearing of the mine warfare combat insignia."

6. Since the program of qualifying officers requires the qualification board to be themselves "qualified in mine warfare", and since there exist certain officers in the service, both on active and inactive duty, who have sufficient training and experience to possess the requirements to become "qualified in mine warfare" without being examined in Part II of the examination, it is suggested that these officers

be qualified by meeting the following requirements:

(a) Graduate of the U.S. Naval Schools, Mine Warfare in the Mine Countermeasures Course, or the Mine Warfare Staff Officers Course, or the Mine Officers Course.

(b) Eighteen months as Commanding Officer of a Mine Warfare Unit or two years of active duty in a mine warfare billet.

(c) Satisfactorily pass Part I of the examination.

It is suggested that the Chief of Naval Personnel promulgate an All-Navy Instruction setting forth the above requirements and directing that officers who meet these requirements and desire to be "qualified in mine warfare" submit their names through the proper channels to the Bureau of Naval Personnel for consideration.

It is also suggested that the Chief of Naval Personnel also designate officers in high administrative or command positions as "qualified in mine warfare" by virtue of their position.

Below are the recommended qualifications for enlisted men to be designated as "qualified in mine warfare". It is recommended that a paragraph designed as C-7417 be added to BuPers Manual to include the following:

"C-7417 QUALIFICATION FOR MINE WARFARE

(1) A school for the training of enlisted men in mine warfare is established at U.S. Naval Schools, Mine Warfare. Commanding officers receiving men from this school will not consider them as "qualified in mine warfare". Commanding officers will continue the training of graduates with a view to their early qualification in mine warfare. Training will be started also for men received from other sources. During the period of training men may be required to keep notebooks.

(2) Eligibility for Qualification. -

(a) A graduate of the appropriate course for his rating at U.S. Naval Schools, Mine Warfare, who has not been previously "qualified in mine warfare" is not eligible to be so designated by his commanding officer until he has served at least six months in operating mine warfare units.

(b) A man who is not a mine warfare school graduate is not eligible to be designated by his commanding officer to be "qualified in mine warfare" until he has

served at least twelve months in operating mine warfare units. Operating mine warfare units will include all those personnel assigned to a unit, the primary mission of which is:

1. Mine laying activities
2. Countermeasures activities
3. Mine assembly and preparation activities.

(3) Before being designated as "qualified in mine warfare" every man must be recommended by his commanding officer and pass satisfactorily the written and practical examination, which shall be administered under the supervision of the commanding officer.

(4) The examination for qualification will consist of two parts. Part I will be a written multiple choice examination consisting of four sections. Part II will be a practical examination consisting of two sections. Enlisted men desiring to be "qualified in mine warfare" must take Section 1 of Part I and one additional section of Part I. In addition, one section of Part II must be taken.

The sections of Part I are:

Section 1. - General section to be given to all enlisted men.

Section 2. - Countermeasures section to be given

to boatswain's mates and all other enlisted men who desire qualification in countermeasures associated with deck rates.

Section 3. - Countermeasures, section to be given to electrician's mates and all other enlisted men who desire qualification in electrical aspects of countermeasures.

Section 4. - Mines section for Minemen, Torpedomen, Aviation Ordanancemen, and Gunner's Mates, and all other enlisted men who desire qualification in mines.

The two sections in Part II are:

Section 1 - Countermeasures section to be given to those enlisted men selecting Sections 2 or 3 of Part I.

Section 2. - Mines section to be given to those enlisted men selecting Section 4 of of Part I.

(5) Part I, Section 1 of the examination will include the following topics:

(a) History and import of mine warfare.

(b) Types and capabilities of mine force vessels.

(c) General knowledge of mine types.

(d) Administrative organization and missions of mine warfare units.

(e) General knowledge of mine countermeasures.

(f) General knowledge of magnetic pressure and acoustic signatures.

(g) Mine laying methods including surface, air, and submarine.

(h) General knowledge of explosives to include safety precautions.

(6) Part I, Section 2 of the examination will include the following topics:

(a) Thorough knowledge of care, operation, and preservation of all mine sweeping equipment associated with the billet.

(b) Detailed knowledge of the mechanics of all types of sweeps; moored, magnetic, and acoustic including thorough knowledge of deck seamanship and upkeep, repair, rigging, streaming, and recovery of sweep gear.

(c) Practical knowledge of degaussing (operation and shipboard maintenance).

(d) Knowledge of capabilities and limitations of each type of sweeper and associated sweeping equipment.

(e) Navigational charts and piloting including rules of the road.

(f) Records and publications pertaining to mine countermeasures.

(7) Part I, Section 3 of the examination will include the following topics:

(a) Thorough knowledge of electricity, magnetism, and acoustics, as applied to mine warfare.

(b) Thorough knowledge of care, operation, and preservation of all mine sweeping equipment associated with minesweeping.

(c) Care, operation, and preservation of shipboard degaussing installations.

(d) Knowledge of capabilities and limitations of each type of sweeper and associated sweeping equipment.

(e) Ability to read and interpret simple blue prints and wiring diagrams.

(f) Records and publications pertaining to mine countermeasures.

(8) Part I, Section 4 of the examination will include the following topics:

(a) Test and adjust mine firing mechanisms.

(b) Electricity, AC and DC, magnetism, electrical terms, problems involving Ohm's law, including

troubleshooting.

(c) Electronics, vacuum tubes as applied to mine warfare material.

(d) Acoustics as applied to mine warfare material.

(e) Blue prints and wiring diagrams.

(f) Detailed knowledge of all current U.S. mines and mine mechanisms.

(g) General knowledge of foreign mines.

(h) Mine fields, the elementary theory and practices governing the use of mines, mine spacing, countermining, etc.

(i) Elementary mechanics, the understanding of the terms of same: weight, pressure, and center of gravity. Principles of buoyancy and problems in buoyancy.

(j) Handling and storage of mines and components.

(k) Mine laying: surface, air, and submarine.

(l) Records and publications pertaining to mining.

(m) Use of hand and power tools, soldering and brazing, and electrical instruments.

(9) Part II, Section 1 of the examination will include the following topics:

(a) Demonstrate thorough knowledge of preparation, streaming, adjustment, recovery, and maintenance

of all current types of sweeps applicable to appropriate section of Part I.

(b) Show ability to direct the above.

(c) Show ability to instruct untrained personnel in the above.

(d) Demonstrate ability for small boat handling.

(e) Demonstrate workable knowledge of mine warfare logistics.

(10) Part II, Section 2 of the examination will include the following topics:

(a) Demonstrate thorough knowledge of testing components, assembling, and operationally testing one of each type of mine.

(1) Contact
(2) Acoustic
(3) Magnetic
(4) Pressure - combination
(Mine Firing Mechanism Technicians, Class A, are exempt from this requirement.)

(b) Show ability to instruct untrained personnel in the above.

(c) Demonstrate workable knowledge of mine warfare logistics.

(d) Preparation of mine assembly order as part of mine warfare annex to an operation order.

(11) When a man has been examined and found "qualified in mine warfare", entry shall be made in his service record to that effect. A man who is so qualified and who subsequently is detached from duty in mine warfare will retain his qualification. Should a man who has been designated "qualified in mine warfare" by his actions demonstrate his unfitness, his Commanding Officer will set forth all circumstances in the case and submit this with pertinent extracts of the man's service record via the chain of command to the Type Commander who will be the final authority for revocation. Copies of all related correspondence will be made a part of the man's service record. Enlisted men who have been designated "qualified in mine warfare" and who have an entry to that effect in their official records shall be entitled to wear the mine warfare insignia until the priviledge is specifically revoked. See U.S. Navy Uniform Regulations for reasons set forth covering the wearing of the Mine Warfare insignia.

(12) The mine warfare combat insignia is awarded individually to qualified enlisted men of the service, who, after June 1940, have been regularly assigned to mine warfare duty and who have completed one or more wartime combat mine warfare operations designated as successful.

A "Mine Warfare Combat Operation" is one where mines are swept, recovered or otherwise disposed of, or mines are successfully planted in enemy waters, or the ship or unit concerned has accomplished a combat mission of comparable importance. The insignia indicates one successful operation. Each gold star counted on the combat insignia indicates an additional successful operation. A silver star indicates five successful operations. A decision as to whether an operation is successful is made by the Fleet or Force Commander under whose command the ship or unit operates. In addition any particular, important, dangerous, or difficult mining or mine clearance operation may be designated combat warfare operation for purposes of this insignia at the discretion of the responsible commander. The mine warfare combat insignia may not be awarded to mine warfare personnel prior to qualification for the mine warfare insignia but award of the combat insignia and respective stars will be retroactive for those who later become qualified and may be worn in conjunction with the mine warfare insignia as soon as appropriate notation shall be made in the service record of each enlisted man who receives this award. An additional entry shall be made for each succeeding successful operation. See U.S. Navy Uniform Regula-

tions for instructions covering the wearing of the mine warfare combat insignia.

(13) Designation Code. - Enlisted men who have become "qualified in mine warfare" will receive an appropriate special program job code. Necessary additions to the Navy Job Code Classification Manual should be incorporated as follows:

(SPJC) Qualified in Minewarfare (Countermeasures)

(SPJC) Qualified in Minewarfare (Mining)

Detailed descriptions describing the SPJC should be incorporated and the SPJC's assigned should be included in all official correspondence concerning the individual.

A Final Note

The recommendations above are presented exactly as they were submitted to the Bureau of Naval Personnel. These recommendations were written based upon what information Psychological Research Associates obtained on the topic. Some modifications in the form of the insignia have already been made in the recommendations by the Bureau of Naval Personnel to conform with current Navy policy. It is contemplated that other changes will be made before they are implemented.

APPENDIX D

ADMINISTRATIVE PROBLEMS IN THE MINE WARFARE AREA

ADMINISTRATIVE PROBLEMS IN THE MINE WARFARE AREA

Introduction

This appendix is the substance of a research memorandum submitted to the Personnel Analysis Division (Pers. 15).

During the data collecting phase of this project several by-products were obtained; one of the most important of which consists of several areas of administrative concern within the mine warfare organizations. These areas have been brought to the attention of Psychological Research Associates by means of:

A. Interviewees' comments to the interviewer teams

B. Staff personnel comments to the interviewer team leaders

C. Staff personnel comments to representatives of Psychological Research Associates.

Some of these areas pertain to individual ships or individual shore units; others are relevant only to MINLANT or MINPAC; while some areas are pertinent to the mine forces world-wide. Psychological Research Associates is not prepared at this time to comment upon which of these areas pertain to all units or how many of the areas pertain to the mine forces in general. In addition, these comments run the continuum from one isolated incident to unanimity of opinion.

We are not prepared to say at this time how much concurrence of opinion there is about any one of these areas. We can state, however, that these are definite areas of concern within the mine forces and it appears well worth the time of the Navy to examine them. Since at this time these areas are considered as by-products only, Psychological Research Associates has no firm opinion or recommendations on any of the areas. It was proposed that one or several of the areas, which the Navy believes to be the most important, should be further investigated. Once any one problem has been definitely substantiated, any recommendations toward solution ought to be well worth the time and effort given it.

Two future reports on this project, Technical Report-Part IV-Recommendations for Selection Standards and Training for Mine Warfare Billets (Confidential), and Technical Report-Part V-Criterion Development for Certain Key Mine Warfare Billets (Classification undetermined), may throw some light on several phases of the administrative problems. The information currently available is presented below.

AREA I - PERSONNEL REQUIREMENTS

This section is a presentation of the opinions of the interviewees concerning the qualifications of personnel assigned to mine warfare billets. The suggestions advanced

seem to warrant further study and consideration.

4. Special Requirements of Personnel Aboard Small Ships

Since the mine forces are composed primarily of small ships, problems which are characteristic of small ships should be of particular interest. On small ships the performance and skills demanded of personnel are more critical than on other type ships.

When there is only one man of a particular rate aboard a ship, this man must be highly experienced. For example, graduate radiomen from Radio School Class A with no previous experience are not well enough trained to fill a billet on an AMS. Few are able to handle the job by themselves. Furthermore, aboard a small craft, there is no one who can train them in the technicalities of their rating. The opinion has been expressed that a radioman should have experience on another ship before being assigned to an AMS. This is true also of ET's, RD's, and SO's. If possible, only men with previous ship-board experience should be sent to small craft.

It was reported that radarmen, radiomen, yeomen, quartermasters, stewardsmen, and firemen all stand wheel watches, sonar watches, radar watches, radio watches, and navigational watches. Because of this interchange of personnel each man should be of high calibre to handle such versatility of duties.

Recently an AA (Airman Apprentice) fresh out of Retraining Command on the West Coast was ordered to MSB Div 1 in the Korean theatre. MSB Div 1 has no allowance for an AA. This would possibly indicate a policy that MSB duty is considered a fine place to send a misfit as punishment.

Because of the special requirements of small craft, it is felt that experienced men should be sent to these ships. Officers feel that no boot ensigns or enlisted personnel from boot camp should be sent to an AMS or an AM. These men feel that the ship has too many inexperienced personnel who can not perform their jobs adequately. After assignment personnel would be permitted to remain aboard for at least two years of sea duty. Small ships are seriously handicapped by high turnover.

It was suggested by some interviewees that an Ensign or Petty Officer should have at least one year of experience in a destroyer type before assignment to an AMS. With less than one year of such experience he is not considered well qualified.

B. Training Requirements of Personnel

Some of the interviewees commented on the training needed by men in various billets. These comments are presented here as being worthy of consideration and further study.

It is believed that at least one EM aboard an AMS, in addition to one or preferably two BM's, the commanding officer,

and one additional officer should be graduates of the Mine Warfare School. It would be desirable to have additional graduates on board to insure that the mission could be carried out in case of the loss of the other graduates. Other interviewees have said that all men who work on minesweeping details should be graduates of a Class C Mine Countermeasures Course.

Interviewees have repeatedly stated that Mine Sweeping Officers should be given the same training as enlisted men and should be graduates of the Mine Warfare School which the enlisted men attend. Also it has been suggested that all squadron and division commanders, commanding officers, and OOD's should be graduates of the Mine Warfare School.

It is suggested that an officer assigned to mining duties should have an engineering or electrical background, a course in mines, ability to read all technical publications, ability to supervise technical work, and enough training in production techniques so that he is able to set up an assembly line at an advance base.

Various suggestions have been advanced regarding the training needed by Minemen:

> All MN2's and above should go to Advance Mine School - that is, Class B School - and all Minemen should be given J-11 training. Minemen should hold a Class A

E. Minemen Aboard DM's

It has been suggested that DM's do not need Minemen aboard except when the ship is to lay mines. Therefore, Minemen should be assigned to the ship on TAD when mines are actually to be laid. Otherwise, Minemen should stay ashore and thus be able to maintain their skills. It has been suggested that when nomines are aboard a BM could maintain the mine handling equipment and a GM the depth charges, thus eliminating the need for Minemen. It has also been suggested that when the ship is laying mines it should have a MN1 or MNC aboard.

If Minemen are to be kept aboard they should be required to keep up their skill level. Presently DM's are not using Minemen as they should. They are now given work such as master-at-arms and picking up cigarette butts and receive no training. It is suggested that four mines, one of each type, be kept aboard for training purposes.

F. Division Commander

It has been said that the Division Commander is unnecessary in an AMS organization. It is believed that the senior AMS commanding officer can carry out the function of Division Commander.

Other interviewees have said that Division Commanders are needed in order to direct Captains when ships operate as

ticket before making MN1 or MNC ratings. It would be helpful if Minemen were taught how to requisition different types of gear. Before assignment to an advanced base Minemen should be well qualified in mine fundamentals and should have a basic background in electricity, soldering, welding, and basic electronics. Minemen need more training in mobile ordnance equipment such as trucks, cranes, and so forth.

C. EM Complement Aboard AMS

There was some concern shown that AMS's were undermanned with regard to EM's. Several interviewees felt that an AMS should have one EM and two strikers aboard rather than the present one EM assigned. Interviewees felt that efficiency would increase if all EM's assigned to AMS's were graduates of Mine Sweeping School.

D. Officer Complement of AMS

It was recommended that the AMS officer allowance should be a minimum of four officers. If there are less than four either the CO has to stand watch and thus is not able to perform his job adequately, or other officers have to double up and thus can not perform their own jobs efficiently.

a unit. There is no need for a Division Commander when the operation schedule is broken up as it is at the present time.

G. Age

Many interviewees agree that men over 35 are not fit for small craft duty. However, some say that placing the maximum age of 35 on the mine forces would make it very difficult to obtain Chief and First Class Petty Officers.

AREA II - SCHOOLS AND TRAINING

Presented here are comments about Mine Warfare School and training which were volunteered by the personnel interviewed. Personnel were not always in complete accord, but the comments seem to indicate that a review of the Mine Warfare training program would be profitable.

A. Minemen School

These are the comments that were made about the Minemen Schools at Yorktown.

1. Class A Minemen School should be longer so that the men can grasp the material. At present too much information is given in too short a time.

2. It is felt that too much theory and not enough practical material is taught in Class A School.

3. More emphasis should be placed on electrical and electronics training in Class A Minemen School.

4. The quota for Class B School should be enlarged to permit more men to obtain this training.

5. Minemen should be taught soldering at the school.

B. Training of Minemen

1. It was suggested by some personnel that Minemen be trained to specialize in three types of mines: surface laid mines, aerial laid mines, submarine laid mines. Others have said that Minemen should never specialize. This problem appears to need further study.

2. Civilians are performing jobs in depots which Minemen will be required to do in the field. Since civilians are doing these assembly jobs it is not possible for Minemen to keep up their skills in all parts of assembling and testing of mines. Commanders, therefore, rely on lectures to keep Minemen trained in the jobs they will be called on to do in the field. It is true that civilians are needed in some of the more delicate parts of mine assembly which are not expected of Minemen. For the part of the assembly that Minemen should do, however, it appears that Minemen should not be deprived of an excellent chance for training in those aspects of assembly which they will have to do at an advanced base.

3. It has been suggested that shipboard Minemen should receive more training in mine assembly and testing. There should

be more frequent rotation from ship to shore and vice-versa. Personnel assigned to DM's have reported that the training of Minemen aboard ship is nil and men are unable to keep up with modern mine warfare. Also, the more qualified men aboard ship are not given the opportunity to further their training in Mine Warfare School.

4. Some Minemen who evidently encountered obsolete mines thought that training should stress mines in service and future mines rather than obsolete mines and material. Only service mines should be issued for training purposes.

5. Personnel at mine depots have said that Mine Warfare School is not sufficient training for Minemen. Partly because of this situation and partly because Minemen cannot become fully skilled in all of their jobs (due to the broadness of the Mineman rate and the specialization of Minemen's work), the depots have instigated a training program which duplicates in many respects the training program of the Mine Warfare School. In many aspects training at the depot is more complete and comprehensive than at the school.

6. It has been reported that it is difficult for Minemen at the Mine Mechanism shops of the depot, working on an assembly line to become skilled in all phases of assembling and testing mines, since for the most part each Mineman is

given specialized work which results in his becoming skilled in narrow aspects of the job to the neglect of other parts of the whole job. As a result a Mineman transferred to another unit and not being assigned to the same specialized job would be at a loss. Although it may be more efficient at one depot to work on assembly line basis, this does not produce Minemen experienced in all phases of the job.

C. Mine Warfare School

It has been suggested by many interviewees that too much theory and not enough practical work is taught in the Mine Warfare School. They recommend that sea labs be used more and that smaller classes be held on sea labs.

Also it was recommended that the Mine Warfare School should be expanded to take care of the additional personnel who need to be trained.

Some men thought that there should be a period in the minesweeping course devoted to the gear on board an AM type ship. They say that this gear is not taught in the school.

AREA III - POLICY AND PROCEDURES

Many remarks were made concerning various aspects of mine force policies and procedures. The remarks presented here often only touch upon a problem and obviously are not

offered as a basis for administrative action. However, it is felt that they do suggest areas to which attention might be directed.

A. Paperwork

Many officers believe that the officers in an AMS spend too much time on paperwork. They say that it interferes with other duties. Proportionately an AMS has more paperwork than other types of ship considering their facilities and personnel.

One suggestion made was that a central office could be set up on the beach where ships could draw supplies by merely submitting a stub to a supply officer. With the stub it would be the supply officer's job to fill out the regular requisition form. This would put the paper work on the supply officer since it is primarily his job.

B. Uniform

This comment was made concerning the uniform of mine force personnel:

1. It was suggested that gloves and field shoes should be issued for work to men aboard small craft and that safety shoes should be issued to all Minemen.

C. Repair of Test Sets and Mechanisms

Some interviewees object to the fact that Minemen are

prohibited at the present time by Navy policy from repairing test sets. If the test sets become inoperative at an advance base, they are supposed to be sent to the Naval Gun Factory for repair. Theoretically there is a spare test set of each type at the advance base. These spares are not always available. Furthermore, both sets may be inoperative at the same time. If this happens the mines are not available for test and issue. It is suggested that complete repair instructions, wiring diagrams, and complete spares be furnished Minemen at advance bases to prevent holdups. Minemen sometimes attempt to repair test sets themselves and often cause additional damage to them.

Other interviewees have said that men who are qualified to repair mechanisms are not permitted to open them. The mechanisms themselves must be shipped to repair shops where civilians do the repair work. As a result, the Minemen do not have an opportunity to use the knowledge gained through training.

D. Placement and Relief of Officers

Some Division and Squadron Commanders believe that the command of an AMS should be given to regular U.S. Navy Officers so that young officers can get command quickly and get a chance to obtain combat experience.

It is believed that Commanding Officers of AMS's should be sent to Charleston or Long Beach before going to Korea, rather than the reverse.

Officers report that Commanding Officers and Executive Officers on AMS's are being relieved almost simultaneously. Occasionally, all four of the officers are relieved at about the same time. This causes problems one of the most important of which is sweeping at night when none of the officers have been in the combat area before.

Officers also complain that "Minesweeping Officer" as a billet is mostly a collateral duty. Too many other duties interfere for the officer to do an effective minesweeping job.

E. Operations

In discussing mine force operations, the following comments merit further study.

1. Some interviewees suggest that more emphasis be put on minesweeping rather than ASW and screening especially on DM's and DMS's.

2. Considerable emphasis is being placed on night sweeping in the combat area. It is claimed that training for night sweeping is contrary to Navy policy. Perhaps this policy should be examined.

3. It is said that mine warfare is not given the emphasis that it deserves on DM's. DM's operate with mines

about once a year. DM's are employed in destroyer type operations 90% of their time underway. Minemen aboard DM's have complained that they are not given the opportunity to do their own work, that they are always being taken off jobs to help BM's or GM's.

F. Advancement in Ratings Examinations

This seems to be an area in which considerable research would be needed to resolve the questions raised by interviewees. The following comments were obtained:

1. Should advancement in rating exams be oral rather than written for those people who do not handle writing easily?

2. Are fleet wide examinations fair to personnal in small ships who have limited chance for training? For example, an EM on an AMS operates DC equipment; when he goes up for EM2, EM1, or EMC most of the examination questions are on AC.

3. Several men suggested that the exams should center more on mines and materials in current use rather than obsolete mines and materials.

4. It was noted that rockets have been included in advancement in rating examination but that no training had been given in rockets.

5. Another suggestion is that advancement-in-rating

exams should cover only duties pertinent to the rate. For example, the MN exams should not include storekeeping duties.

6. It has been stated that closer liaison be established between the people who prepare the advancement examinations and the people who write the qualifications manual.

G. Manuals for Enlisted Men

It has been suggested that better distribution to enlisted personnel concerned of instruction and notices pertaining to equipment they work on would be desirable. There is no manual readily available to aid them in their work. Ships 9 is confidential and not available to most enlisted personnel.

H. Equipment for AMS's and AM's

1. Men aboard an AMS have complained that there is not enough spare gear on board for certain equipment. It has been suggested that the allowance list be investigated for possible revision.

2. It is suggested that it would be desirable to have a place on a minecraft base to procure spare minesweeping equipment.

AREA IV - MORALE

A. Living Conditions

The officers and men on AMS's and AM's have said that

living aboard is made especially unpleasant by these things:

1. Quarters are too crowded.

2. Quarters are damp; leaks in decks, bulkheads, and seams permit water to leak onto the bunks.

3. Ventilation is inadequate, especially in summer.

4. There is no place for recreation.

5. There is no ship's exchange on an AMS and not an adequate one on an AM.

6. Men on board AMS's going to sea cannot get pay or mail unless they are near a larger ship. It was reported that four requests for a disbursing officer for AMS's at the division level have been turned down.

7. Some AMS personnel have said that the quality of their food is poor and that refrigeration and frozen food space is inadequate.

It is realized that many of these conditions are inevitable aboard small ships. However, it was suggested that if the conditions cannot be alleviated directly the crews of small ships should have some compensation for their discomforts such as those provided submariners.

Some suggestions which were made by interviewees are presented here for consideration:

1. Methods for eliminating dampness and providing adequate ventilation should be investigated.

2. The possibility of better ships' exchange and

recreational facilities aboard should be considered.

3. Perhaps comfortable barracks and B.O.Q.'s could be provided when the ships are in port for reasonably long periods.

4. EM clubs, athletic, and other recreational facilities at the bases would improve morale. It should be noted here that from reports available the morale of personnel stationed at the "good" liberty ports in MINPAC seems much better than the morale of personnel at the poor liberty port of Charleston. This would indicate perhaps that conditions ashore have a decided influence on the morale of ships' crews.

5. It was suggested that one way to compensate for the inferior living conditions of small ships would be to provide a special food allowance such as the submarines have. Also, it was reported that it is impossible to cook on small craft when underway during even reasonably heavy weather. It was suggested that some easily prepared type of meal be provided.

B. Recognition

It was reported that there was considerable resentment that public relations for cruisers, battleships, and carriers is much greater than for mine forces. The men feel that the contribution and perils of the mine forces are un-

known to the public and that mine warfare is not considered important by CNO or BuPers. This leaves them feeling like outcasts from the regular Navy. Some officers feel that assignment to the mine forces is punishment. It has been repeatedly said that mine sweeping in combat is extremely hazardous and that there should be extra pay for such duty. Also, it is often suggested that Minemen at advance bases should receive extra pay.

One suggestion in this regard is that a distinguishing device would be desirable in an effort to improve esprit-de-corps. Further investigation in this area might reveal other ways to improve morale by securing greater recognition for the mine forces.

It should be remembered that the suggestions made in the foregoing section are those of individual naval personnel who were interviewed during the course of this project. They are not to be construed as the suggestions or recommendations of Psychological Research Associates, the Bureau of Naval Personnel, or of any official activity of the Department of the Navy.

APPENDIX E

REVISIONS TO THE OPERATIONAL FORM AND MANUAL

REVISIONS TO THE OPERATIONAL FORM AND MANUAL

As a result of the extensive experience which the interview teams had in using the Mine Warfare Personnel Analysis Billet Description and Specification Forms and the accompanying Manual, and as a result of the experiences acquired by the research staff in analyzing the data, many changes were made to improve them. These changes were made in consultation with several of the team leaders and are designed to eliminate the imperfections always present in new data collecting instruments.

The changes will be made in the order in which they appear in the Manual. The page and question numbers given will refer to the Manual. Corresponding revisions should be made in the form.

Introduction - Interview Hints

P. 11, par 2. This paragraph should precede No. (7):

"There is a difference, however, between bias and judgment. There will be many occasions where the interviewer and recorder will have to interpret the information which has been given them by the interviewees. The interviewees cannot be expected to give all information in the exact words which should be recorded. The exact wording is the responsibility

of the interviewer team. The team will have to decide, from the information available, the best way to record it."

Section II

P. 18, A1. Substitute "things (parts)" for "operations" in first line.

Delete: "An operation is an activity. It is easier for the interviewees to understand what is meant by the word operation than by the word activity."

P. 20, C 1, C 2. Delete entire P. 20. Section B, page 6 of the Form should be deleted since the information is more adequately obtained elsewhere in the interview.

P. 31, No. 10. After the title, "Interviewers", add: "It will probably take less time to".

Section III

Quest. A1. The categories provided should be deleted and the interviewees told to respond in minutes. This question should be rephrased to ask, "How long does this task take?" That is, how many minutes? This correction is necessary because it is not possible to provide additive categories unless the upper limit is known. That is, it would be necessary to know the maximum time any task could take and then divide this time into equal intervals. This would provide additive categories which would permit combining information

on tasks to obtain an answer for the activity. Since a realistic maximum cannot be set it is best to allow free response in terms of minutes.

Quest. A 2a. This question should be corrected to read "What rating does this task now?" Wherever the word "rate" occurs in relation to this question it should be replaced by the word "rating". This change was made in pencil by the teams.

Under Specifics add to statement a: "See table of Enlisted Rate and Rating Structure on following page." The table of Enlisted Rate and Rating Structure shown on the following page here should be added to the Manual.

Quest. A 2b. Under Specifics, statement c. should read: "BuPers Instruction 1210.4 gives list of officer designators. Statement d. then becomes: "This question should be given to officers only."

Quest. A 3b. A seventh category should be added for warrant officers.

Under Specifics, in statment a substitute "rank" for "pay grade".

Quest. A 4a. This question should be amended to read "What rating is best suited to do this task?" Substitute "rating" wherever "rate" appears in relation to this question.

Quest. A 4b. Under Specifics. statement c. should be:

ENLISTED RATE AND RATING STRUCTURE

GENERAL SERVICE, EMERGENCY SERVICE AND EXCLUSIVE EMERGENCY SERVICE

GENERAL SERVICE RATES & RATINGS	EMER. & EXCL. EMER. SERVICE RATES & RATINGS	DESCRIPTION
		DECK GROUP I
BM		Boatswain's Mate
	BMG	Boatswain's Mate G (Shipboard)
	BMB	Boatswain's Mate B (Construction Battalion)
	BMS	Boatswain's Mate S (Stevedore)
	BMK **	Boatswain's Mate K (Canvasman)
	BMR	Boatswain's Mate R (Rigger)
QM		Quartermaster
	QMQ	Quartermaster Q (Quartermaster)
	QMS	Quartermaster S (Signalman)
RD	RD	Radarman
SO		Sonarman
	SOG	Sonarman G (Sonarman)
	SOH	Sonarman H (Harbor Defense Man)
		ORDNANCE GROUP II
TM		Torpedoman's Mate
	TMT	Torpedoman's Mate T (Steam/Mechanical)
	TME	Torpedoman's Mate E (Special/Electric Drive)
	TMS **	Torpedoman's Mate S (Special)
GM		Gunner's Mate
	GMM	Gunner's Mate M (Mounts)
	GMT	Gunner's Mate T (Turrets)(Pay Gradss E-6, E-7 only)
	GMA	Gunner's Mats A (Armorers)
FT		Fire Control Tschnician
	FTA 1/	Fire Control Tschnician A (Automatic Directors)
	FTM 1/	Fire Control Technician M (Manually Controlled Directors)
	FTU 1/	Fire Control Technician U (Underwater)
	FTG 1/	Fire Control Technician G (Missile Guidance Systems)
FC **		Fire Controlman (Being comb. w/FT)
	FCS **	Fire Controlman S (Surface Weapons)
	FCU **	Fire Controlman U (Underwater Weapons)
GS 1/		Guided Missileman
MN	MN	Mineman
	ESX #	Specialist
	9600-09	Ordnance Projects Technician
	9620-29	Powderman
	9665-69	Ballistics Test Analyst
		ELECTRONICS GROUP III
ET		Electronics Technician
	ETN	Electronics Technician N (Communications)
	ETR	Electronics Technician R (Radar)
	ETS	Electronics Technician S (Sonar)
		PRECISION EQUIPMENT GROUP IV
IM		Instrumentman
	IMW	Instrumentman W (Watch & Clock Repairman)
	IMO	Instrumentman O (Office Machine Repairman)
	IMI	Instrumentman I (Instrument Repairman)
OM	OM	Opticalman
	ESX #	Specialist
	9685-89	Gage Specialist
	9690-99	Crystal Grinder
		ADMINISTRATIVE AND CLERICAL GROUP V
TE		Teleman
	TEL	Teleman L (Communications Clerk)
	TEP	Teleman P (Registered Publications Clerk)
	TET	Teleman T (Teletypist)
	TEM	Teleman M (Mailman)
RM		Radioman
	RMN **	Radioman N (Radioman)
	RMT **	Radioman T (Landline Telegrapher)
CT	CT	Communications Technician
YN		Yeoman
	YNT	Yeoman T (Typist)
	YNS	Yeoman S (Stenographer)
PN		Personnel Man
	PNI	Personnel Man I (Classification Interviewer)
	PNR **	Personnel Man R (Recruiter)
	PNT	Personnel Man T (Training Assistant)
	PNW **	Personnel Man W (Chaplain's Assistant)
	PNA	Personnel Man A (Personnel Records Clerk)
MA	MA	Machine Accountant
SK		Storekeeper
	SKG	Storekeeper G (General Storekeeper)
	SKT	Storekeeper T (Technical Storekeeper)
DK	DK	Disbursing Clerk
CS		Commissaryman
	CSG	Commissaryman G (Ship's Cook) {Pay Grade E-7 in
	CSB	Commissaryman B (Butcher) {General Service
	CSR	Commissaryman R (Baker) {only
SH	SH	Ship's Serviceman
JO	JO	Journalist
	PSE #	Physical Training Instructor
	ESI #	Instructor (Miscellaneous)
	ESF #	Fire Fighter
	ESR #	Transportation Man
	ESB # **	Master at Arms (Shore)
	ESS # **	Shore Patrolman
	ESW #	Welfare and Recreation Leader
	ESU #	Bocker (Motion Picture Service)
	ESC # 1/	Chaplain's Assistant
	ESX #	Specialist
	9670-74	Fingerprint Expert
	9700-15	Motion Picture Technician
	9720-29	Radio Broadcasting Technician

GENERAL SERVICE RATES & RATINGS	EMER. & EXCL. EMER. SERVICE RATES & RATINGS	DESCRIPTION
		ADMINISTRATIVE AND CLERICAL GROUP V (CONT)
	ESX #	Specialist (Cont'd)
	9740-44	Archivist
	9745-49	Librarian
	9755-59	Intelligence Specialist
	9783	Chart and Publications Man, Ashore
	9794	Cable Censor
	9800-89	Linguist
		MISCELLANEOUS GROUP VI
LI		Lithographer
	LIP	Lithographer P (Pressman)
	LIT	Lithographer T (Cameraman & Platemaker)
PI **	PI **	Printer (Being comb. w/LI)
DM		Draftsman
	DMS	Draftsman S (Structural)
	DME	Draftsman E (Electrical)
	DMI	Draftsman I (Illustrator)
	DML	Draftsman L (Lithographic)
	DMT	Draftsman T (Topographic)
	DMM	Draftsman M (Mechanical)
MU	MU	Musician
	ESP #	Photogrammetry Assistant
	ESX #	Specialist
	9630-54	Petroleum Production Man
	9655-59	Laborstory Technician, Miscellaneous
	9730-35	Telephone Switchboard Operator
	9760-69	Model Maker
	9780	Plastics Expert
	9785	Agriculture Worker
	9788	Artist
	9790	Fisherman
	9792	Pigeon Trainer
SN	SN	Seaman
SA	SA	Seaman Apprentice
SR	SR	Seaman Recruit
		ENGINEERING AND HULL GROUP VII
MM		Machinist's Mate
	MML	Machinist's Mate L (General Machinist's Mate)
	MMR	Machinist's Mate R (Refrigeration Mechanic)
	MMG	Machinist's Mate G (Gas Generating Mechanic)
EN		Engineman
	END	Engineman D (Diesel Engineman)
	ENG	Engineman G (Gasoline Engineman)
MR	MR	Machinery Repairman
BT		Boilerman
	BTG	Boilerman G (Shipboard Boilerman)
	BTR	Boilerman R (Boiler Repairman)
EM		Electrician's Mate
	EMP	Electrician's Mate P (Power & Light Electrician)
	EMS	Electrician's Mate S (Shop Electrician)
IC	IC	I. C. Electrician
ME		Metalsmith
	MEG	Metalsmith G (Shipboard Metalsmith)
	MES	Metalsmith S (Sheet Metal Worker)
	MEB	Metalsmith B (Blacksmith)
	MEW	Metalsmith W (Welder)
PP		Pipe Fitter
	PPG	Pipe Fitter G (Shipboard Pipe Fitter)
	PPP	Pipe Fitter P (Plumber)
	PPB	Pipe Fitter B (Coppersmith)
	PPS	Pipe Fitter S (Steam Fitter)
DC		Damage Controlman
	DCA 1/	Damage Controlman A (ABC Defenseman)
	DCG	Damage Controlman G (Shipboard Damage Controlman)
	DCW	Damage Controlman W (Carpenter's Mate)
	DCP **	Damage Controlman P (Painter)
PM	PM	Patternmaker
ML	ML	Molder
	ESM #	Underwater Mechanic
	ESK # **	Chemical Warfareman
FN	FN	Fireman
FA	FA	Fireman Apprentice
FR	FR	Fireman Recruit
		CONSTRUCTION GROUP VIII
SV	SV	Surveyor
CE		Construction Electrician's Mate
	CEG	Construction Electrician's Mate G (General Electrician)
	CEP	Construction Electrician's Mate P (Power Lineman)
	CEL	Construction Electrician's Mate L (Communications Lineman)
CD	CD	Driver
CM		Mechanic
	CMG	Mechanic G (Gasoline Engine Mechanic)
	CMD	Mechanic D (Diesel Engine Mechanic)
BU		Builder
	BUL	Builder L (Light Construction)
	BUH	Builder H (Heavy Construction)
SW		Steelworker
	SWS	Steelworker S (Structural Steelworker)
	SWR	Steelworker R (Construction Rigger)
UT	UT	Utilities Man

GENERAL SERVICE RATES & RATINGS	EMER. & EXCL. EMER. SERVICE RATES & RATINGS	DESCRIPTION
		CONSTRUCTION GROUP VIII (CONT)
	ESX # 9781	Specialist Excavation Foreman
CN	CN	Construction Man
CP	CP	Construction Apprentice
CR	CR	Construction Recruit
		AVIATION GROUP IX
AD		Aviation Machinist's Mate
	ADE	Aviation Machinist's Mate E (Engine Mechanic)
	ADF	Aviation Machinist's Mate F (Flight Engineer)
	ADP	Aviation Machinist's Mate P (Propeller Mechanic)
	ADG	Aviation Machinist's Mate G (Carburetor Mechanic)
AT		Aviation Electronics Technician
	ATA **	Aviation Electronics Technician A (Aircraft Equipment)
	ATG **	Aviation Electronics Technician G (Ground Equipment)
	ATO **	Aviation Electronics Technician O (Ordnance Equipment)
AL **	AL **	Aviation Electronics Man (Being comb. w/AT)
AO		Aviation Ordnanceman
	AOU	Aviation Ordnanceman U (Utility)
	AOT	Aviation Ordnanceman T (Turrets)
	AOP **	Aviation Ordnanceman P (Fire Controlman)
AQ 1/		Aviation Fire Control Technician
GF 1/		Aviation Guided Missileman
AC	AC	Air Controlman
AB		Aviation Boatswain's Mate
	ABA 1/	Aviation Boatswain's Mate A (Airship Rigger)
	ABU	Aviation Boatswain's Mate U (Utility)
	ABG	Aviation Boatswain's Mate G (Gasoline Handler)
AE		Aviation Electrician's Mate
	AEM	Aviation Electrician's Mate M (Electrician)
	AEI	Aviation Electrician's Mate I (Instrument Repairman)
AM		Aviation Structural Mechanic
	AMS	Aviation Structural Mechanic S (Structural Mechanic)
	AMH	Aviation Structural Mechanic H (Hydraulic Mechanic)
PR	PR	Parachute Rigger
AG	AG	Aerographer's Mate
TD		Tradesman
	TDR	Tradesman R (Repairman, Non-Aviation)
	TDI	Tradesman I (Instructor, Non-Aviation)
	TDV	Tradesman V (Repairman, Aviation)
	TDU	Tradesman U (Instructor, Aviation)
AK	AK	Aviation Storekeeper
PH		Photographer's Mate
	PHA	Photographer's Mate A (Aerial Cameraman)
	PHG	Photographer's Mate G (Cameraman)
	PHR	Photographer's Mate R (Camera Repairman)
	PHL	Photographer's Mate L (Laboratory Technician)
	PHM	Photographer's Mate M (Microfilm Photographer)
AF **	AF **	Aviation Photographer's Mate (Being comb. w/PH)
	EST # **	Transport Airman
	ESV #	Aviation Pilot
	ESA # **	Airship Rigger
AN	AN	Airman
AA	AA	Airman Apprentice
AR	AR	Airman Recruit
		MEDICAL GROUP X
HM	HM	Hospital Corpsman
HN	HN	Hospitalman
HA	HA	Hospital Apprentice
HR	HR	Hospital Recruit
		DENTAL GROUP XI
DT		Dental Technician
	DTG	Dental Technician G (General)
	DTP	Dental Technician P (Prosthetic)
	DTR	Dental Technician R (Repair)
DN	DN	Dentalman
DA	DA	Dental Apprentice
DR	DR	Dental Recruit
		STEWARD GROUP XII
SD		Steward
	SDG	Steward G (Cook) {Pay Grade E-7 in
	SDS	Steward S (Stateroom Steward) {General Service only
TN	TN	Stewardsman
TA	TA	Steward Apprentice
TR	TR	Steward Recruit
		SPECIAL TRANSITORY RATINGS
		OC - Officer Candidate
		NAVCAD - Naval Aviation Cadet

1/ To be activated.

# Denotes Exclusive Emergency Ratings.
** Ratings to be disestablished.

NOTE: Rating descriptions in parenthesis are not used when Emergency Service Ratings are written out.

NAVPERS

Prepared by

STRENGTH AND STATISTICS BRANCH (PERS-A14)

"BuPers Instruction 1210.4 gives list of officer designators." Statement d. then becomes: "This question should be given to officers only."

Quest. A 5b. A seventh category should be supplied for warrant officers.

Quest. A 6a. Wherever the word "rate" appears in this question the word "rating" should be substituted.

Under Idea, the following statement should be added: "A short briefing period and close supervision may be necessary."

Under Specifics, statement b. should be: "This question is designed to determine to what extent training on a similar but different job would help in doing this task. For example, we know that a pilot takes less time to learn to fly a new plane similar to one he has learned to fly already. Or a gunner's mate trained to fire one type of gun would probably learn how to fire a new but similar gun in less time than a man who has never fired before, since the general principles are the same". Statement c. then becomes "This question should be given to enlisted men only."

Quest. A 6b. The statement of the Idea should be supplemented as follows: "A short briefing period and close supervision may be necessary".

Under Specifics the following should be added as state-

ment c.: "This question is designed to determine to what extent training for other but similar jobs would be of help in doing this task. For example, we know that a pilot trained to fly one type of plane would probably learn to fly a new but similar type of plane in less time than a man who has never flown before, since the general principles are the same." Statement d. then becomes: "This question should be given to officers only".

Quest. A 7a. Under Specifics statement d. should be: "Put zero in column when there is no supervision".

Quest. A 7b. Under Details of Answers, in paragraph 1, the third line, add "lack experience" following "task themselves".

Also on this question it is thought desirable to underline the critical words in each category under Details of Answers. In each category, the words indicated should be underlined. In category 1: "must be present" and "The supervisor tells the men how to do the task, when they are doing something wrong and how to do it right." Category 2: "The supervisor may not always have to be present when the task is being done". Category 3: "He acts as an over-all observer from strictly the safety angle". Category 4: "rarely present", "may check", and "The men are fully trained and experienced to do the task themselves." Category 5: "no

supervisor present" and "The men doing the task are fully trained and experienced."

Quest. A 8. Under Details of Answers, paragraph 3, the word "close" should be deleted wherever it appears.

Quest. A 9. The designation of this question should be changed to A 9a. A new question (A 9b) will be added.

Quest. A 9b. This new question should read: "What manuals would be helpful to a man who has no experience on this job?"

Idea: The manuals which are associated with each of the tasks listed in Section II D. Obtain those manuals that the men used when they were new on the job, but may not be using any longer.

Specifics:

a. Include the name and number of the manual where possible.

b. This question should be given to both officers and enlisted men.

Quest. B 11. Category 4 should include "block and tackle, winch". Category 6 should be: "Electrical gauges - - - voltmeter, ohmeter, etc. Category 7 then becomes: "Electronic Gauges - - - oscilloscope, galvanometer, etc. Category 8 should be: "No tools are used."

Quest. B 12. Statement d. should be replaced with the following statement: "Don't attempt to answer for every

task if foul-ups do not occur or occur very rarely on some tasks."

Quest. C 13. Many interviewees found this question ambiguous and difficult to answer because several variables are involved in the answer. Consequently, this question will be replaced by C 13a and C 13b as outlined on the following pages.

C 13a (O/EM) TIME LOST FROM ERROR OR FOUL-UP

How much time would be lost as the result of error or foul-up in this task?

1. No loss; immediately corrected.
2. Little loss; easily corrected.
3. Substantial loss; difficult to correct.
4. Serious loss; very difficult to correct.

Idea: The seriousness in terms of time lost of a mistake or error in judgement in each of the tasks listed in Section IID. The responsibility of a man doing this task of preventing loss of time through carelessness or doing a poor job.

Specifics:

a. Consider the time which might be lost before the error could be corrected.

b. Consider whether the error would affect the work of only one man or of many.

c. This question should be given to both officers and enlisted men.

C 13b (O/EM) EQUIPMENT LOSS FROM ERROR OR FOUL-UP.

What is the effect of error or foul-ups on the loss of equipment in this task?

1. No loss
2. Small loss
3. Substantial loss.
4. Serious loss.
5. Extremely serious loss

Idea: The value of equipment that might be lost as a result of a mistake or error in judgment while performing each task listed in Section II D. The responsibility of a man doing the task of preventing waste or loss of gear through carelessness or doing a poor job.

Specifics:

a. Consider the gear which might be ruined before the error is found out and corrected.

b. Consider the value of the gear and the possibility of salvage.

c. Consider whether or not the man's error might be noticed and corrected by a supervisor or someone else before extensive damage is done.

d. Consider whether error in this task would lead other men to cause damage.

e. This question should be given to both officers and enlisted men.

Quest. C 14. Under Specifics, statement d. should be: "This question applies to danger to personnel rather than to equipment." Statement e. then becomes: "This question should be given to both officers and enlisted men."

Quest. C 15. This question involves two variables and is therefore difficult to answer. It should be replaced by three questions as 15a, 15b, and 15c below.

C 15a (O/EM) MINOR ACCIDENTS. What are the chances for minor accidents in this task?

1. Practically no chance.
2. Very little chance.
3. Some chance.
4. Considerable chance.

Idea: The probability of having accidents which result in minor injuries to personnel while doing each of the tasks listed in Section II D.

Specifics:

a. Consider only accidents which lead to minor injuries such as abrasions, cuts, and small burns.

b. Consider that the task is being performed under wartime operating conditions but under no enemy fire.

c. Do not include anything that happened under enemy fire or if hit by a mine.

d. This question should be given to both officers and enlisted men.

C 15b (O/EM) SERIOUS ACCIDENTS

What are the chances for serious accidents in this task?

1. Practically no chance.
2. Very little chance.
3. Some chance.
4. Considerable chance.

Idea: The probability of having accidents which result in serious injuries to personnel while doing each of the tasks listed in Section II D.

Specifics:

a. Consider only the accidents which lead to serious injuries such as serious cuts, bruises, muscle strains, or broken bones, or serious burns.

b. Consider that the task is being performed under wartime operating conditions but under no enemy fire.

c. Do not include things which happen under enemy fire or if hit by a mine.

d. This question should be given to both officers and enlisted men.

C 15c (O/EM) VERY SERIOUS ACCIDENTS

What are the chances for very serious accidents in this task?

1. Practically no chance
2. Very little chance
3. Some chance

4. Considerable chance.

Idea: The probability of having accidents which result in permanent disability or death to personnel while doing each of the tasks listed in Section IID.

Specifics:

a. Consider only the accidents which are likely to lead to permanent disability, or to death of personnel involved.

b. Consider that the task is being performed under wartime operating conditions but under no enemy fire.

c. Do not include things which happen under enemy fire or if hit by a mine.

d. This question should be given to both officers and enlisted men.

Quest. E 18a

The following section should be added:

Details of Answers:

1. 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, third and second class. The length of courses for Class A Schools will very from 9 to 44 weeks.

2. Class B Schools - These schools are designed to prepare enlisted personnel for the higher petty officer rates. The curricula include all technical qualifications for petty

officers, first class and chief petty officers. The length of courses for Class B Schools vary from 14 to 60 weeks.

3. Class C Schools - These schools are designed to train enlisted personnel in particular qualification or skill which does not cover the full requirements for a general service rating. The curricula for these schools are designed around the special qualification or skill which is desired.

4. 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 School, Harbor Defense School, Mine Warfare School, Salvage School, Explosive Ordnance Disposal School, Guided Missiles School, Advanced Undersea Weapons Schools, etc. In case functional training schools are named, they should be recorded on the record sheet by name.

Quest. E18b. The word "must" in this question should be replaced by the word "should".

Quest. F 19a and F 19b. Add category 7: "Put down zero where no training is needed".

Quest. F 20. Category 5 should be replaced with "on-the-job training".

Under Specifics, statement d should be "Sea lab is practice with instruction. It includes demonstration. On-the-job training does not include instruction."

Quest. F 21. Category 5 should be "on-the-job training". Under Specifics, statement d. should be: "Sea lab is practice with instruction. It includes demonstration. On-the-job training does not include instruction".

Quest. F 22. The question should be rephrased to read: "How hard is it to learn to do this task well?"

Under Specifics, statement a. should be: "Consider the man to be a non-trained man." Statement b. then becomes: "This question should be given to both officers and enlisted men".

Under Idea, this statement should be added: "Consider experience or training to be full time on the task alone".

Quest. G 23. In the question, where the specific kinds of vision possibly necessary for a task are suggested should be added: "depth perception".

Quest. L 28. The following examples should be added to Details of Answer:

1. (Walking, talking, clerical work)
2. (Chipping, painting, adjusting light gear)
3. (Lifting light stores, maintaining "O" type gear, etc.)
4. (Streaming and recovering gear on a AM or AMS, moving heavy stores)
5. (Laying dan buoys, recovering small boat gear.)

Section IV

Item IV G. Should read: "Billet title. Indicate what job the man has at the present time".

(Former Item 4G then becomes Item 4H, former 4J becomes 4I, etc.)

Item IV N. (Formerly IV M, Previous Duty Assignments) To the end of this item add: "Include all duty assignments from Jan. 1, 1948, and all mine warfare duty assignments before 1948.