

UNCLASSIFIED

AD NUMBER
AD016769
LIMITATION CHANGES
TO: Approved for public release; distribution is unlimited.
FROM: Distribution authorized to DoD only; Administrative/Operational Use; JUN 1953. Other requests shall be referred to Office of Naval Research, 875 North Randolph Street, Arlington, VA 22203. Pre-dates formal DoD distribution statements. Treat as DoD only.
AUTHORITY
ONR ltr dtd 13 Sep 1977

THIS PAGE IS UNCLASSIFIED

A.D. 16769

THE DEVELOPMENT OF QUALIFICATIONS STANDARDS
FOR
THE UTILIZATION OF CIVILIAN SKILLS IN THE NAVAL RESERVE

REPORT OF RESEARCH
CONDUCTED FOR THE BUREAU OF NAVAL PERSONNEL
DEPARTMENT OF THE NAVY
OFFICE OF NAVAL RESEARCH CONTRACT NONR-883(00)

MARTIN J. BYRNE
Principal Investigator

CALVERT L. WILLEY
Research Assistant

JOYCE M. WEIGLE

RUTH K. LUFF

June 1953

The Clifton Corporation
Washington, D. C.

CONTENTS

Acknowledgements	i
Summary	ii

Chapter

I. INTRODUCTION	1
II. RESEARCH OBJECTIVES	3
III. METHODOLOGY OUTLINED	4
IV. RESULTS OBTAINED	11
V. CONCLUSIONS AND RECOMMENDATIONS	14
Bibliography	16
Appendix	22

ACKNOWLEDGEMENTS

We wish to express our sincere appreciation to the many naval and civilian personnel who contributed their time and talents so generously in assisting the contractor's staff in the collection and evaluation of appropriate data for inclusion in each rating guide prepared during the period of this project.

In particular, we would like to thank Captain E. K. VanSwearingen, USN, Director, Personnel Analysis Division, Bureau of Naval Personnel and his successor, Captain L. Williamson, USN, and Mr. D. George Price, Head, Billet and Qualifications Research Branch, Bureau of Naval Personnel, for their overall interest and guidance in the planning of this project; Lt. J. E. Ingram, Enlisted Programs Section, Bureau of Naval Personnel, for his continuing interest and advice at every stage of the project.

For Mr. J. J. Hackett, Head, Classification Division, Personnel Research Field Activity, Washington, and the members of his staff, particularly Mr. S. F. Curling, Head, Occupational Relationships Section who served as the Scientific Liaison Officer for this project and Mr. R. Gray, Occupational Analyst, Occupational Relationships Section, special appreciation is reserved. They generously contributed the knowledge gained by their extensive experience in the field of enlisted naval personnel qualifications analysis and civilian occupational analysis to the many conferences which were conducted to clarify the problems encountered in the preparation of the various rating guides. They provided pertinent and informative publications from the division's occupational library and were always available to accompany the members of the contractor's staff in their data-gathering visits to various naval and civilian activities. Their excellent organization and administration of the rating guide program, of which this project is but a part, is to be commended.

The assistance of the Office of Naval Research, particularly Dr. D. D. Smith, Head, Personnel and Training Branch, Psychological Sciences Division, and Mr. R. F. Lynch, Contract Administrator, Southeastern Area, is also sincerely appreciated.

SUMMARY

The need for the establishment of standards for the enlistment of qualified civilians in the Naval Reserve in advanced pay grades in various emergency service and exclusive emergency service ratings was the basis for the initiation of this personnel research project.

An analysis of the enlisted rate and rating structure of the Navy revealed that it was possible to prepare rating guides in terms of civilian qualifications for approximately sixty percent (60%) of the ratings in which civilians could be utilized with a minimum of naval training in an expansion of the Naval Reserve.

The methodology followed in the preparation of each rating guide is outlined. The experience and skill requirements of an applicant for enlistment, the most appropriate occupational and recruitment sources for the rating under consideration, and other relevant data of assistance to the recruiter in the field, are included in each rating guide.

All of the rating guides required for the enlistment of personnel in the various essential ratings under the cognizance of the Bureau of Aeronautics, and the Bureau of Medicine and Surgery, as well as five rating guides for the draftsman ratings which are under the cognizance of the Bureau of Ships, the Bureau of Yards and Docks, the Hydrographic Office and the Executive Office of the Secretary, Department of the Navy, were prepared by the contractor's staff during the period the project was in effect.

Other data uncovered in the course of the research for this project which were considered to be of value in naval personnel planning programs are reported as conclusions and recommendations of the project.

Chapter I - INTRODUCTION

The present enlisted rate and rating structure of the United States Navy has been designed to serve both the peacetime needs and the wartime needs of the service. It was developed during the period of 1945-1947 and had as its framework the traditions of the Navy rating system and the experience gained in personnel utilization during World War II which were integrated with the advanced principles of personnel management developed by industry and government.

Three (3) types of ratings have been established in the current rating structure of the Navy:

- (a) General Service Rating - A job family which encompasses a group of jobs related on a basis of common aptitudes, skills and knowledges. This is the type of rating held by regular Navy personnel in peacetime.
- (b) Emergency Service Rating - A job family which represents a segment of a parent General Service Rating. This is the type of rating held by most members of the Naval Reserve and to which regular Navy personnel would be converted in wartime.
- (c) Exclusive Emergency Service Rating - A classification of specialized occupations activated in time of national emergency and under conditions of full mobilization. This is the type of rating designed to fit civilian personnel having specialized skills and knowledges into the wartime Navy with an absolute minimum of technical training.

The desire of the naval service to have detailed personnel qualification standards available which will facilitate the enlistment of qualified civilian personnel into the Naval Reserve in emergency service and exclusive emergency service ratings prompted the initiation of the project reported herein.

This project sought answers to the following specific questions, from among the many questions which can be formulated, as to the relationship between civilian job qualifications and naval rating qualifications:

Which emergency service and exclusive emergency service ratings can be filled from civilian sources?

What is the degree of convertibility of civilian skills to the skill content of the various naval ratings?

What is the equivalent pay grade level in various naval ratings for the appropriate skill levels in related civilian occupations?

What are the best civilian occupational sources for each naval rating?

What are the best civilian recruitment sources for each naval rating?

What task skills must be set forth in each rating guide to cover adequately the essential skills required in each pay grade of the naval rating for enlistment of the qualified civilian?

What is the equivalent rate level of skill and ability of an applicant who has participated in or completed a formal apprenticeship program?

What type and degree of civilian supervisory experience is required of an applicant for enlistment in the two highest pay grades?

What format should be developed to present the data uncovered in the most effective form to assist the recruiter in the field?

The effective utilization of the nation's available manpower will be required in the event of a total mobilization of our personnel resources. Those responsible for personnel planning and utilization in the Navy have initiated and developed many personnel instruments and studies, always with the overall personnel needs of the nation in mind. This project sets forth the procedures and provides the standards whereby specialized civilian skills can be fully utilized in the naval service and therefore is a contribution to the effective manpower utilization program of the nation.

Chapter II - RESEARCH OBJECTIVES

The overall objective of the rating guide program was the development of naval qualification standards for the enlistment of qualified civilians into the Naval Reserve in emergency service and exclusive emergency service ratings. The following areas under the overall objective of the rating guide program were to be investigated and were considered as specific objectives:

1. To establish, on the basis of the transferability of civilian skills, knowledge and experience, which emergency service and exclusive emergency service ratings can be filled from civilian sources.
2. To determine as a result of the analysis of civilian occupations, the pay grade or rate in each emergency service and exclusive emergency service rating in which civilians may be utilized, and if deemed appropriate, the degree to which additional specialized training, if any, is required.
3. To develop qualifications standards for each rating, by rate, to include industrial, business, agricultural and government sources of manpower, in order that selectee and nonselectee recruit populations may be fully utilized by the Navy, in the interest of shorter training time, lower costs, better morale and improved national readiness.
4. To prepare, in addition to the above technical materials, an outline which will serve as a guide for the training of classification interviewers, recruiters, and other personnel directly concerned with mobilization, in the proper understanding and effective use of the qualifications standards.

The objectives as outlined above are the overall objectives of the rating guide program as applied to the entire enlisted rating structure of the Navy and in the implementation of the program in the field. The contractor was limited under the terms of the project contract by the Bureau of Naval Personnel to those parts of the overall objective which his professional staff could accomplish during the period of the contract, 2 June 1952 - 30 June 1953.

The contractor was charged with the investigation of the following two (2) areas:

1. An analysis of the enlisted rating structure to determine the feasibility and methodology of preparing rating guides for the emergency service and exclusive emergency service ratings.
2. The preparation of rating guides for Group IX (Aviation) ratings, Group X (Medical) ratings and Group VI (Miscellaneous - Draftsman) ratings.

Chapter III - METHODOLOGY OUTLINED

The methods followed to achieve the objectives outlined in Chapter II as applied to the areas of investigation charged to this project are set forth in summary below:

A. **AN ANALYSIS OF THE ENLISTED RATING STRUCTURE TO DETERMINE THE FEASIBILITY OF PREPARING OCCUPATIONAL RATING GUIDES.** ¹

The method followed in the analysis of the enlisted rating structure and the relationship of the various naval ratings to possible counterpart civilian jobs is outlined in the following steps:

STEP I - The Establishment of Conversion Categories

Conversion categories were set up in reference to the degree of convertibility of civilian jobs to each emergency service rating and each exclusive emergency service rating of the enlisted rating structure of the Navy.

Four (4) categories were established to classify in varying degrees the relationship of the task requirements of each naval rating and the counterpart task requirements as found in comparable civilian jobs and occupations.

CATEGORY I : Naval ratings whose task requirements are very highly related (90-100%) to the task requirements of civilian jobs.

CATEGORY II : Naval ratings whose task requirements are highly related (75%) to the task requirements of civilian jobs.

CATEGORY III: Naval ratings whose task requirements are semi-related (50%) to the task requirements of one civilian occupation. The rating demands more major task skills, either naval or civilian, than are to be found in the most appropriate civilian occupation.

¹ A report of the general problems encountered in the preparation of naval qualification standards for the utilization of civilian skills in the naval service is reported in: Guiding Concepts for the Preparation of Occupational Requirements for Enrollment of Civilians in the Naval Reserve at Advanced Pay Grades. Bureau of Naval Personnel, Research Division, Billet and Qualifications Research Branch, October 1951.

CATEGORY IV : Naval ratings whose task requirements are less than semi-related (less than 50%) to the task requirements of civilian occupations. The rating demands more major task skills either naval or civilian than are to be found in the most appropriate civilian occupation.

STEP II - An Analysis of the Tasks of the Naval Rating

Each emergency service rating and exclusive emergency service rating was reviewed in light of the tasks required in the rating as set forth in the various official published manuals prepared in the area of rating qualifications. Naval qualifications analysts and cognizant bureaus were consulted to verify task requirements and clarify problem areas of the various naval ratings.

STEP III - An Analysis of the Tasks of Civilian Jobs

Each civilian job was reviewed in light of the tasks required in the job as set forth in various civilian occupational publications. Civilian jobs listed in available manuals setting forth the relationship between military and civilian jobs were critically evaluated as to task content. Civilian employers were consulted to verify the task requirements and clarify problem areas for the various related civilian jobs.

STEP IV - Categorization of the Naval Rating

As a result of following the procedures outlined in Step II and Step III each naval emergency service and exclusive emergency service rating was analyzed and evaluated for classification and placement in one of the four (4) categories established.

B. GUIDE PREPARATION FOR GROUP IX (AVIATION) RATINGS, GROUP X (MEDICAL) RATINGS, GROUP VI (MISCELLANEOUS - DRAFTSMAN) RATINGS

The method followed in the preparation of the rating guides for which the contractor was responsible are outlined in the following steps:

STEP I - An Analysis of Enlisted Naval Personnel Qualifications Publications

Enlisted naval personnel qualifications publications pertinent to the emergency service rating and exclusive emergency service rating under consideration for guide preparation were reviewed and evaluated to determine the aptitudes, skills and knowledges required for effective performance in the various rates of the rating. Included in this review and evaluation were the following major naval occupational sources: Manual of Qualifications for Advancement in Rating, NavPers 18068 (Revised); Manual of Navy Enlisted Classifications, NavPers 15105 (Revised); Emergency

Service Ratings, NavPers 15799A, (Revised); Tables of Occupational Relationships from Enlisted Navy Job Classifications to Dictionary of Occupational Titles; United States Navy Occupational Handbook; Rating Structure Review Board Reports.

In addition to the official major naval occupational publications outlining skills and knowledges required in the rates of the rating, job analysis schedules, job specifications, rating training manuals, shipboard and shore establishment organization structure charts and operations manuals were also reviewed for additional data in reference to the skill requirements and responsibilities of the personnel in the rating under study.

STEP II - An Analysis of Civilian Occupational Publications

Civilian occupational publications pertinent to the rating under study were reviewed and evaluated to determine the relationship between the demands of the civilian job and the requirements of the naval rating. Included in this review and evaluation were the following major civilian occupational sources: The Dictionary of Occupational Titles (Vol. I, II); Occupational Outlook Handbook (Bulletin 998); Civil Service Handbook of Occupational Groups and Series of Classes; Civil Service Position Classification Standards; Special Aids for Placing Naval Personnel in Civilian Jobs; Catalog of Military-Civilian Job Relationships.

In addition to the major civilian occupational publications outlining job qualifications, various other sources such as occupational monographs, job schedules, job specifications, job descriptions, occupational briefs, apprentice training schedules and courses, specialized schools and courses, organization charts and structures were studied. The numerous occupational manuals of the other branches of the armed services which set forth in detail the job requirements and responsibilities for the various pay grades in the respective services were also researched for information as to the job demands of their personnel structure contrasted with the naval personnel structure.

STEP III - Conferences with Naval Personnel Familiar with Rating Under Consideration

Conferences were held with personnel familiar with the duties of the naval rating being studied to clarify problem areas which arose from the data gathered in Step I and Step II. Qualifications analysts of the Bureau of Naval Personnel responsible for the preparation of naval qualifications, who had made on-the-site studies of the ratings, assisted the contractor's staff in the interpretation of the naval qualifications which are expressed in summary fashion in most cases. Representatives of the various bureaus having control of the rating under study pointed out in detail the areas of the rating which would present possible areas of difficulty in preparation of a guide. Personnel administration officers at naval activities utilizing enlisted personnel in the ratings being

analyzed indicated possible problems. Petty officers performing in the various rates of the rating were interviewed to learn the nature of the required skills and knowledges.

STEP IV - Conferences with Civilian Personnel Familiar with Qualifications of Civilian Jobs

Conferences were held with civilian personnel familiar with the duties of the civilian jobs which appeared to be related to the Navy rating under consideration for guide preparation as revealed from the data gathered in Step I and Step II. Qualification analysts of the Bureau of Naval Personnel who had made studies of civilian jobs as part of their exploratory work for the preparation of naval rating qualifications were interviewed. Visits were made to civilian establishments employing personnel in the jobs being studied. Foremen were interviewed and salient features of the jobs were obtained. Officials in trade associations indicated the problem areas and arranged for additional interviews with employees in the area to discuss on-the-job performance. Civilian employees who had previous experience in naval ratings during World War II and who were currently in a civilian job, which they selected as a result of the interest and skills which they developed in the service, were extremely helpful in providing invaluable data for the project.

STEP V - The data gathered in Steps I - IV were analyzed and evaluated, and a preliminary draft of the rating guide was prepared. The scope and contents of each section of the guide are summarily described. 1

a. Experience and Abilities Requirements

The experience section of the preliminary draft of the rating guide sets forth in as much detail as possible the supervisory experience requirements for eligibility for enlistment in Pay Grade 6 and Pay Grade 7. A detailed analysis of the supervisory duties and the numerous job titles currently used for apparently similar civilian jobs was required. An understanding of the relationships between the civilian and naval supervisory experiences had to be established for the preparation of this section.

A cross-section of task requirements for the various pay grades of a rating was set forth in the skills and abilities section of the rating

1 An example of the scope and contents of a final draft of a rating guide approved for inclusion in the Naval Reserve Recruiting Instructions Manual will be found in Appendix A.

guide. In addition to meeting the experience requirements for enlistment in an advanced pay grade an applicant must also possess certain skill and ability qualifications which are enumerated in the guide. These skill and ability qualifications are a representative group of duties which a civilian must be able to perform if he is to be considered for enlistment in a specific advanced pay grade. They are set forth as an aid to the recruiter in his capacity as a public relations representative of the Navy to furnish information as to the qualifications required for enlistment in various naval ratings as well as a preliminary screening device for evaluating the qualifications of an applicant in an initial interview.

Verification of an applicant's alleged qualifications will be substantiated by documentation from his present and former employers, his school records, his apprentice training program and personal references. In the case of an applicant who is to be considered for the two highest pay grades a personal appearance before a review board established for the purpose of this program will be required.

b. Occupational Sources

The industrial occupational sources listed in each guide were selected as being the best counterpart civilian jobs to the naval rating for which the guide was prepared. In several cases wherein a civilian job was highly technical but only partially a counterpart of the naval rating, but the civilian skill was essential to the naval rating, the limitations of enlistment in a specific pay grade were set forth in the Special Provisions of the guide. The industrial occupational sources are presented in terms of the Dictionary of Occupational Titles and appropriate code.

The governmental occupational sources listed in each guide report the civil service series in which potential enlistees for a rating might be employed.

In no case will a person who has training or experience in a job listed in the occupational sources be granted an advanced pay grade for

that reason alone. An applicant must fulfill all the requirements prescribed for each specific pay grade if he is to be considered for enlistment.

c. Recruitment Sources

The recruitment sources listed in each guide indicate the industrial, commercial, educational, governmental and professional fields wherein applicants with the required training and experience are most likely to be employed.

d. Special Provisions

This section of each guide lists any exceptions to the general policy established for the guide program and furnishes data as to special licenses and schooling, preferences for various ratings within an applicant's qualifications, quota restrictions, and any other pertinent information which will aid the recruiter in the preliminary evaluation of the qualifications of an applicant for enlistment.

STEP VI - Critique of Preliminary Guide by Technical Bureau

The completed preliminary guide was submitted to the liaison officer of the technical bureau which controlled the rating for which the guide was prepared. The liaison officer distributed the guide to the various sections of the technical bureau concerned with enlisted personnel qualifications for review and evaluation by the representatives of the section concerned.

STEP VII - Conference with Technical Bureau Representatives

Upon completion of the review and evaluation of the preliminary draft of the guide by the representatives of the technical bureau a conference was held with them to clarify the problem areas uncovered in their evaluation. Changes to the scope and content of the guide were noted for the preparation of the final edition of the guide.

STEP VIII - Preparation of Final Draft of Rating Guide

The changes agreed on as a result of the conference held with the representatives of the technical bureau were incorporated in the final draft of the rating guide prepared by the contractor.

STEP IX - Formal Approval of Final Draft of Rating Guide

The final draft of the rating guide was forwarded by the contractor to the Bureau of Naval Personnel for official submission to the technical bureaus controlling the rating under consideration to obtain their formal approval of the guide for inclusion in the Naval Reserve Recruiting Instructions.

Chapter IV - RESULTS OBTAINED

The results obtained in the course of this project study are reported in the two (2) following sections:

A. AN ANALYSIS OF THE ENLISTED RATING STRUCTURE TO DETERMINE THE FEASIBILITY OF PREPARING OCCUPATIONAL RATING GUIDES.

It was found upon analysis of the enlisted rating structure in terms of the feasibility of preparing rating guides for emergency service and exclusive emergency service ratings based on the convertibility of civilian jobs to the various naval ratings that it was possible to prepare guides for approximately sixty per cent (60%) of the ratings in effect at this time. 1

The ratings which did not readily lend themselves to the preparation of rating guides were those ratings whose task requirements were classified in Category III and Category IV. The task requirements in these two categories were not highly related to the task requirements of any one appropriate civilian occupation. A number of ratings in these categories were composed of task requirements which cut across two or more civilian occupations and several ratings were made up of tasks which are found almost exclusively in naval ratings and are therefore practically non-existent in the civilian occupational world. Other ratings were also eliminated from guide preparation due to the limitation of the civilian strength available for possible enlistment in the rating together with the limitation of recruitment sources. It was also subsequently discovered that the planned Naval Reserve strength for several ratings eliminated the immediate need for guides for these ratings. This was particularly so in the case of a number of the exclusive emergency service ratings.

Those ratings which were classified in Category I and Category II presented only minor problems for solution before a guide could be prepared for the ratings. It was found upon consultation with qualifications analysts and operating personnel performing in the rating that the extensiveness of the knowledge required in the rating was less than appeared to be required from an evaluation of the verbal description of the task as set forth in various personnel qualifications publications. It was possible in reference to most ratings in these two categories to prepare rating guides which would

1 The Enlisted Rate and Rating Structure Chart prepared by the Strength and Statistics Branch, Bureau of Naval Personnel which was currently in effect during the period of this report, 2 June 1952 - 30 June 1953, was used as the basis for the analysis of the rating data. The findings and recommendations of the Naval Rating Structure Review Board report of 20 June 1952 were not included in this analysis.

insure the enlistment of qualified civilian applicants as the task requirements of these ratings and the task requirements of counterpart civilian jobs are very similar.

It was estimated, after the elimination of a number of ratings from guide preparation for various valid reasons, that the guide program would require the preparation of guides for approximately one hundred (100) ratings of the one hundred seventy-three (173) existing ratings. These rating guides would be included, after formal approval by the cognizant bureaus controlling the rating, in the Naval Reserve Recruiting Instructions manual.

B. GUIDE PREPARATION FOR GROUP IX (AVIATION) RATINGS, GROUP X (MEDICAL) RATINGS, GROUP VI (MISCELLANEOUS - DRAFTSMAN) RATINGS

The following rating guides were prepared by the contractor's staff during the period of the contract project:

(a) Group IX (Aviation) Ratings

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)
ATA	Aviation Electronics Technician A (Aircraft Equipment)
AOU	Aviation Ordnanceman U (Utility)
AOT	Aviation Ordnanceman T (Turrets)
AC	Air Controlman
AEM	Aviation Electrician's Mate M (Electrician)
AEI	Aviation Electrician's Mate I (Instrument Repairman)
AMS	Aviation Structural Mechanic S (Structural Mechanic)
AMH	Aviation Structural Mechanic H (Hydraulic Mechanic)
PR	Parachute Rigger
AG	Aerographer's Mate
AK	Aviation Storekeeper
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)
PHA	Photographer's Mate A (Aerial Cameraman)

(b) Group X (Medical) Ratings

HM-OPC/OPT	Optical Technician
HM-LBT	Clinical Laboratory Technician
HM-XRT	X-Ray Technician
HM-GS	Hospital Corpsman, General Service
HM-OAM	Orthopedic Appliance Mechanic
HM-MRM	Medical Repair Mechanic

(c) Group VI (Miscellaneous) Ratings

DMS	Draftsman S (Structural)
DME	Draftsman E (Electrical)
DMI	Draftsman I (Illustrator)
DMT	Draftsman T (Topographic)
DMM	Draftsman M (Mechanical)

The rating guides prepared for the Bureau of Aeronautics and the Bureau of Medicine and Surgery included all of the ratings in Group IX (Aviation) ratings and Group X (Medical) ratings respectively for which guide preparation was judged necessary by the representatives of the two bureaus. The rating guides prepared for the Bureau of Ships, the Bureau of Yards and Docks, the Hydrographic Office and the Executive Office of the Secretary, Department of the Navy, included only the Draftsman ratings in Group VI (Miscellaneous) ratings and are only a part of the rating guides prepared for ratings within this rating group.

Chapter V - CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations formulated as a result of the information and data collected in the course of this project study were numerous. None of them is unknown to those who have been intimately concerned with the many problems that are continuously arising in connection with the recruitment, selection, classification, training, detailing and advancement of enlisted personnel. They are presented only in view of the fact that the results of this study again point out the interrelationship of the various areas concerned with effective personnel utilization.

1. There was unanimous agreement on the part of all naval personnel contacted in reference to this project as to the need for the rating guide program as an invaluable aid in effective recruitment of qualified civilians.
2. The rating guide program in operation will insure a standardization program for the enlistment in the naval service of qualified civilians and readily permit their integration with active duty personnel for effective performance. This integration will not weaken the organizational effectiveness of the naval activity and will help to prevent the morale problem which so often arises when there are essential differences in qualifications of personnel in the same rate.
3. An applicant enlisted under the provisions of the rating guide program should be only enlisted probationally in a specific pay grade until he has demonstrated that he is fully qualified for the specific pay grade assigned by effective performance in the rate.
4. Personnel enlisted under the provisions of this rating guide program in peacetime should receive indoctrination training in the military duties of their rating and rate by participation in special Naval Reserve training programs.
5. Personnel enlisted under the provisions of this rating guide program in wartime should receive indoctrination training in the military duties of their rating and rate in special schools and courses set up to meet the needs of the recruiting program.
6. A qualifications unit of the Bureau of Naval Personnel should provide continuing service to the rating guide program in order that the program may be maintained on a current basis, in light of any official changes to the enlisted rating structure or to the qualifications standards for advancement in rating.

7. The program in operation in the field should be evaluated periodically to insure that the recruiter utilizing the rating guides has the occupational information required in the performance of his duties.
8. Research should be conducted to evaluate personnel enlisted under the provisions of this program to determine the effectiveness of the program.
9. Research should be instituted for the purpose of determining whether any achievement tests currently available can be utilized for use at the recruitment source to assist in the selection of applicants for enlistment at the various pay grade levels.
10. Research should be instituted for the purpose of determining whether a battery of tests would be an aid in the selection of applicants for this program, particularly in the selection of personnel with the supervisory experience required for the two highest pay grades in each rating.
11. Continuing research should be conducted in the area of enlisted personnel qualifications and performance criteria established, where possible, for each pay grade in a rating.
12. The initiation of a program similar to the rating guide program setting forth qualifications standards for the procurement of warrant and commissioned officers in the Naval Reserve should be considered.
13. Every effort should be expended to assist all naval officers in obtaining an insight into the problems of enlisted personnel management and a working knowledge of the rating structure, career patterns, qualifications for advancement in rating, classification codes, classification procedures, complements and allowances, detailing procedures, personnel accountability, and training.

BIBLIOGRAPHY

- A Selected and Annotated Bibliography of Aviation for Guidance Counsellors. United States Department of Commerce, Civil Aeronautics Administration, Washington: U. S. Government Printing Office, 1950.
- A Selected and Annotated Bibliography of Recent Air Age Education Text-books. United States Department of Commerce, Civil Aeronautics Administration, Office of Aviation Development, Washington: U. S. Government Printing Office, Revised Edition, 1950.
- Air Force Specialties and Air Force Specialty Codes. AFR No. 35:400-409. Department of the Air Force, Washington, D. C., 1950.
- Airman Medical Career Field. AFL 35-490, Department of the Air Force, Washington, D. C., 1949.
- An Analysis of Job Evaluation Factors as Applied to Enlisted Naval Jobs. E. J. McCormick and W. E. North. Occupational Research Center, Division of Applied Psychology, Purdue University, Lafayette, Ind., 1951.
- An Educational Guide in Air Transportation. R. E. Hinkel and L. Baron. Kansas City: Brown-White-Lowell Press, 1944.
- An Exploratory Survey of Civilian Experience Related to Military Jobs. R. L. Thorndike and E. Hagen. Research Bulletin 52 - 20, June 1952. Headquarters, Human Resources Research Center, Air Training Command, Lackland Air Force Base, San Antonio, Texas.
- Appraising Vocational Fitness by Means of Psychological Tests. D. E. Super. New York: Harper and Bros., 1949.
- Armed Forces Enlisted Occupational Specialties and Comparable Civilian Occupations. Joint Study prepared by representatives of the United States Army, United States Navy, United States Marine Corps, and United States Coast Guard, Washington, D. C., 1947, Restricted.
- A Study of Convertibility of Civilian Critical Occupations to Navy General and Emergency Service Ratings, Enlisted and Officer Job Classifications, and Officer Qualifications Codes. NavPers 15852, Department of the Navy, Bureau of Naval Personnel, Washington, D. C., 1952.
- Aviation Bibliography and Course Outlines for Use by Private and Public Vocational and Technical Schools. United States Department of Commerce, Civil Aeronautics Administration, Office of Aviation Development. Washington: U. S. Government Printing Office, 1950.
- Career Fields, Enlisted Personnel. S. R. 615-25-20. Department of the Army, Washington, D. C., 1950.
- Catalog of Hospital Corps Schools and Courses. NavMed P-367. Bureau of Medicine and Surgery, Navy Department, Washington, D. C., 1951.

Catalog of Military-Civilian Job Relationships, Part I - Enlisted. Office of the Secretary of Defense, Personnel Policy Board, Military Occupational Classification Project, Washington, D. C., 1951.

Civil Air Regulations: published by the Civil Aeronautics Board, Civil Aeronautics Administration, Department of Commerce, Washington, D.C.

- Part 20 Pilot Certificates
- Part 21 Airline Transport Pilot Rating
- Part 22 Lighter-Than-Air Pilot Certificates
- Part 24 Mechanic and Repairman Certificates
- Part 25 Parachute Rigger Certificates
- Part 26 Air-Traffic Control-Tower Operator Certificates
- Part 27 Aircraft Dispatcher Certificates
- Part 29 Physical Standards for Airmen
- Part 33 Flight Radio Operator Certificates
- Part 34 Flight Navigator Certificates
- Part 35 Flight Engineer Certificates
- Part 50 Airman Agency Certificates
- Part 51 Ground Instructor Rating
- Part 52 Repair Station Certificates
- Part 53 Mechanic School Certificates
- Part 54 Parachute Loft Certificates and Ratings
- Part 60 Air Traffic Rules

Critical Requirements for Research Personnel. J. C. Flanagan et al. Pittsburgh: The American Institute for Research, 1949.

Curriculum for U. S. Naval School, Draftsman Class "A". U. S. Naval Schools, Construction, Construction Battalion Center, Port Hueneme, California, 1950, Restricted.

Curriculum for U. S. Naval School, Draftsman Class "B". U. S. Naval Schools, Construction, Construction Battalion Center, Port Hueneme, California, 1950, Restricted.

Dictionary of Occupational Titles, Volume I, Definitions of Titles. United States Department of Labor, Division of Occupational Analysis, United States Employment Service, Washington: U. S. Government Printing Office, Second Edition, 1949.

Dictionary of Occupational Titles, Volume II, Occupational Classification. United States Department of Labor, Division of Occupational Analysis, United States Employment Service, Washington: U. S. Government Printing Office, Second Edition, 1949.

Dictionary of Occupational Titles, Part IV, Entry Occupational Titles. War Manpower Commission, Bureau of Manpower Utilization, Division of Occupational Analysis, Washington: U. S. Government Printing Office, Revised Edition, 1944.

Emergency Service Ratings. NavPers 15799A. Department of the Navy, Bureau of Naval Personnel, Washington, D. C., 1951.

Employment Opportunities in Aviation Occupations, Part 2. United States Department of Labor, Bureau of Labor Statistics, Bulletin No. 837 - 2. Washington: U. S. Government Printing Office, 1946.

Exploring Aviation: A Vocational Guidance Course. United States Department of Commerce, Civil Aeronautics Administration, Office of Aviation Development. Washington: U. S. Government Printing Office, 1951.

Fact Book on Manpower. United States Department of Labor, Bureau of Labor Statistics, Washington, D. C., 1951.

General Course for Aviation Specialists. NavPers 10822. Department of the Navy, Bureau of Naval Personnel, Washington, D. C., 1948.

Guide Line Job Descriptions for Group I, II, III and IVa Trades and Occupations. Circular Letter SECP 412:s11, 28 Apr. 1945. Division of Shore Establishments and Civilian Personnel, Navy Department, Washington, D. C.

Guiding Concepts for the Preparation of Occupational Requirements for Enrollment of Civilians in the Naval Reserve at Advanced Pay Grades. Department of the Navy, Bureau of Naval Personnel, Research Division, Billet and Qualifications Branch, Washington, D. C., October 1951.

Handbook of Occupational Groups and Series of Classes Established Under the Federal Position-Classification Plan. United States Civil Service Commission, Personnel Classification Division. Washington: U. S. Government Printing Office, 1950.

Human Factors in Undersea Warfare. Committee on Undersea Warfare, National Research Council, Washington, D. C., 1949.

Job Descriptions and Organizational Analysis for Hospitals and Related Health Services. United States Department of Labor, United States Employment Service. Washington: U. S. Government Printing Office, 1952.

Manual of Apprenticeship Trade Schedules. United States Department of Labor, Bureau of Apprenticeship, Washington, D. C., 1949.

Manual of Navy Enlisted Classifications. NavPers 15105, Revised. Department of the Navy, Bureau of Naval Personnel, Washington, D. C., 1949.

Manual of Instructions for Naval Occupational Analysis. NavPers 15803. Department of the Navy, Bureau of Naval Personnel, Washington, D. C., 1949.

Manual of Qualifications for Advancement in Rating. NavPers 18068, Revised, Restricted. Department of the Navy, Bureau of Naval Personnel, Washington, D. C., 1952.

Military Occupational Specialties, Enlisted Personnel. SR 615-25-15. Department of the Army, Washington, D. C., 1950.

Navy Civilian Personnel Instructions, Instruction 250, Wage Administration. Department of the Navy, Office of Industrial Relations, Washington, D. C., 23 January 1951.

Occupation Analysis and Grading Study: Appendix A - Occupation Descriptions. Industrial Relations Department, Boston Naval Shipyard and the Area Wage and Classification Office, Boston, 1949.

Occupation Handbook, Group IV b. NavExos P-420. 1 June 1950. Department of the Navy, Office of Industrial Relations, Wage and Classification Division, Washington, D. C.

Occupational Counseling Techniques. W. A. Stead and C. L. Shartle. New York: American Book Co., 1940.

Occupational Descriptions: Occupational Analysis and Grading Study. Naval Air Station, San Diego, California, 1949.

Occupational Handbook of the United States Air Force. Headquarters, United States Air Force, The Pentagon, Washington, D. C., 1951.

Occupational Information - Its Development and Application. C. L. Shartle. New York: Prentice Hall, Inc., 1946.

Occupational Outlook Handbook. United States Department of Labor, Bureau of Labor Statistics, Bulletin 998. Washington: U. S. Government Printing Office, 1951.

Occupational Pamphlets: An Annotated Bibliography. G. Forrester. New York: H. W. Wilson Company, 1948.

Occupations: A Basic Course for Counselors. W. J. Greenleaf, Federal Security Agency, Office of Education. Occupational Information and Guidance Series No. 16, Vocational Division Bulletin No. 247. Washington: U. S. Government Printing Office, 1951.

Optometry: Professional, Economic and Legal Aspects. H. W. Hofstetter. St. Louis: C. V. Mosby Co., 1948.

Orthopedic Technician: Apprenticeship Standards for Prosthetists and Orthotists. The Advisory Committee on Educational Standards of The American Board for Certification of the Prosthetic and Orthopedic Appliances Industry, Incorporated, the Education Committee of the Orthopedic Appliance and Limb Manufacturers Association, and the Bureau of Apprenticeship, United States Department of Labor, Washington, D. C., 1952.

Personnel Selection: Test and Measurement Techniques. R. L. Thorndike. New York: John Wiley and Sons, Inc., 1949.

Post Training Performance of Aviation Machinists' Mates. J. H. Hill, E. P. Buckley and H. J. Older. Philadelphia: Institute for Research in Human Relations, Institute Report No. 5, 1952.

Priority Ratings of Air Force Enlisted Jobs. R. L. Thorndike. Research Bulletin 51 - 13, July 1951. Headquarters, Human Resources Research Center, Air Training Command, Lackland Air Force Base, San Antonio, Texas.

Proceedings of a Conference on the Selection and Classification of Enlisted Aviation Personnel. National Research Committee on Aviation Psychology Report No. 5. Division of Aviation Medicine, Bureau of Medicine and Surgery, United States Navy, Washington, D. C., 1949, Restricted.

Professional Aspects of Aviation Education: A Selected and Annotated Bibliography. United States Department of Commerce, Civil Aeronautics Administration, Office of Aviation Development. Washington: U. S. Government Printing Office, Revised Edition, 1950.

Qualification Standards Governing Noncompetitive Actions and Agency Recruiting. Civil Service Handbook X-118. United States Civil Service Commission, Washington, D. C., 1951.

Rating Structure Review Board Report. Department of the Navy, Bureau of Naval Personnel, Washington, D. C., 10 June 1949.

Rating Structure Review Board Report. Department of the Navy, Bureau of Naval Personnel, Washington, D. C., 20 June 1952.

Registered Apprentices in the United States, Occupational Distribution, June 1951. United States Department of Labor, Bureau of Apprenticeship, Washington, D. C., Technical Bulletin No. T-131, 1951.

Special Aids for Placing Naval Personnel in Civilian Jobs. War Manpower Commission, Bureau of Manpower Utilization, Division of Occupational Analysis. Washington: U. S. Government Printing Office, 1945.

Suggested Training Programs, Veterans Administration, Vocational Rehabilitation and Education Service, Richmond, Virginia, 1947.

Tables of Occupational Relationships, Part I. NavPers 15834, June 1951. Department of the Navy, Bureau of Naval Personnel, Washington, D. C.

The American Registry of X-Ray Technicians. American Registry of X-Ray Technicians, Minneapolis 6, Minnesota, 1952-53.

The National Apprentice Program. U. S. Department of Labor, Bureau of Apprenticeship. Washington: U. S. Government Printing Office, 1952.

The Profession of Medical Technology. Registry of Medical Technologists of The American Society of Clinical Pathologists, Muncie, Indiana, Fourth Edition, 1951.

The Selection and Classification of Enlisted Aviation Personnel, National Research Council Committee on Aviation Psychology Report No. 2. Division of Aviation Medicine, Bureau of Medicine and Surgery, United States Navy, Washington, D. C., 1949, Restricted.

United States Army Occupational Handbook. Office of the Adjutant General,
Department of the Army, Washington, D. C., 1952.

United States Navy Occupational Handbook. Department of the Navy,
Bureau of Navy Personnel, Washington, D. C., 1950.

United States Navy Training Courses. Department of the Navy, Bureau of
Navy Personnel, Washington, D. C.

NavPers	10301	Enlisted Men's Guide to Aviation Ratings.
NavPers	10302	Educational Officers' Guide to Aviation Ratings.
NavPers	10303A	Introduction to Aircraft.
NavPers	10312	Aircraft Radio Equipment.
NavPers	10313	Aircraft Communications.
NavPers	10314	Advanced Work in Aircraft Radio.
NavPers	10315	Aircraft Electrical Systems.
NavPers	10316	Advanced Work in Aircraft Electricity.
NavPers	10319	Aviation Electrician's Mate, Volume 1.
NavPers	10320	Aviation Electrician's Mate, Volume 2.
NavPers	10321	Aircraft Metals.
NavPers	10322A	Aircraft Welding.
NavPers	10323	Aircraft Metal Work.
NavPers	10329	Aircraft Structural Maintenance.
NavPers	10330	Aircraft Materials.
NavPers	10331	Airplane Structures.
NavPers	10332A	Aircraft Hydraulics.
NavPers	10333	Aircraft Instruments.
NavPers	10334A	Aircraft Engines.
NavPers	10335	Aircraft Fuel Systems.
NavPers	10336	Aircraft Propellers.
NavPers	10341	Aircraft Armament.
NavPers	10342	Aircraft Fire Control.
NavPers	10343	Aircraft Munitions.
NavPers	10344	Aircraft Turrets.
NavPers	10352	Aircraft Survival Equipment.
NavPers	10356	Parachute Rigger, Volume 1.
NavPers	10357	Parachute Rigger, Volume 2.
NavPers	10361A	Aerology, Volume 1.
NavPers	10362	Aerology, Volume 2.
NavPers	10371	Photography, Volume 1.
NavPers	10372	Photography, Volume 2.
NavPers	10382	Aviation Boatswain's Mate, Volume 1.
NavPers	10383	Aviation Boatswain's Mate, Volume 2.
NavPers	10394A	Aviation Supply.
NavPers	10395A	Flight Engineering.
NavPers	10396A	Aviation Storekeeper, Volume 1.
NavPers	10397	Aviation Storekeeper, Volume 2.
NavPers	10413	Chief Pharmacist's Mate.
NavPers	10415	Pharmacist's Mate 1.
NavPers	10417	Pharmacist's Mate 2.
NavPers	10419	Hospital Apprentice 1c and Pharmacist's Mate 3c.
NavPers	10632	Surveyor 3 and 2.
NavPers	10633	Surveyor 1 and C.

APPENDIX A

SAMPLE RATING GUIDE

OCCUPATIONAL REQUIREMENTS FOR
ENLISTMENT OF CIVILIANS IN THE NAVAL RESERVE
AT ADVANCED PAY GRADES AS
AVIATION STRUCTURAL MECHANICS S (AMS)

Aviation Structural Mechanics S (AMS)

Rating Summary: Perform shop and line maintenance in repairing, installing, and aligning airframe structures and aircraft surfaces; maintain mechanical components of ejection seats.

I. SOURCES:

A. OCCUPATIONAL SOURCES

Private Industry

Instructor, Sheet Metal	0-32.30
Sheet Metal Worker, Foreman	4-80.010
Sheet Metal Worker, Aircraft I	4-80.050
Sheet Metal Worker, Aircraft II	4-80.060
Sheet Metal Worker	4-88.622
Airplane Inspector	5-03.810
Sheet Metal Inspector I	5-03.820
Aircraft Mechanic	5-80.120
Airplane Rigger I	5-80.500
Sheet Metal Inspector II	6-78.676
Sheet Metal Worker Helper	6-94.201
Sheet Metal Worker Helper	6-94.231
Sheet Metal Assembler I	7-03.562
Aircraft Mechanic Helper	7-80.120
Sheet Metal Worker, Apprentice	7-97.045
Aircraft Mechanic, Apprentice	7-99.051

Civil Service

Metalsmith Helper, Aviation	Group II
Sheet Metal Worker, Helper	Group II
Aircraft Mechanic General	Group III
Metalsmith, Aviation	Group III
Sheet Metal Worker	Group III
Sheet Metal Worker, Foreman	Group IVa
Roofing Series	CPC-383
Sheet Metal Working Series	CPC-386

Note: Experience or training in any job listed above is not in itself adequate evidence for granting an advanced pay grade. Civilians must fulfill all requirements prescribed for each specific pay grade.

B. RECRUITMENT SOURCES

1. Civil Aeronautics Administration approved aircraft and aircraft engine overhaul and repair stations.
2. Limited-service aircraft and aircraft engine overhaul and repair stations.
3. Instructors in aircraft and aircraft engine mechanic schools.
4. Governmental agencies that employ civilians in aircraft and aircraft engine overhaul and repair duties.

5. Aircraft and aircraft engine overhaul and repair shops of the military services.
6. The aircraft manufacturing and aircraft transportation industry.

II. QUALIFICATIONS BY PAY GRADES

Pay Grade 7 (AMSCA)

Experience: Submission of evidence of three (3) years experience as a supervisor of aircraft mechanics. The supervisory experience of the applicant must have been in a capacity such as superintendent, foreman or assistant foreman wherein he spent the majority of his time supervising lead mechanics and mechanics. In addition, applicant must have had eight (8) years experience (including up to four (4) years training time) as a mechanic in any department or shop. Not less than five (5) years of the required eleven (11) years experience, including supervisory experience, shall have been devoted to shop and line maintenance and repair of aircraft structures and surfaces.

Abilities: Same as for Pay Grade 6 (AMS1)

Pay Grade 6 (AMS1)

Experience: Submission of evidence of one (1) year experience as a supervisor of aircraft mechanics. The supervisory experience of the applicant must have been in a capacity such as lead mechanic, assistant foreman or foreman wherein he spent the majority of his time supervising aircraft mechanics. In addition, applicant must have had six (6) years experience (including up to four (4) years of training time) as a mechanic in any department or shop. Not less than two (2) years of the required seven (7) years experience, including supervisory experience, shall have been devoted to shop and line maintenance and repair of aircraft structures and surfaces.

Abilities: In addition to the abilities prescribed for Pay Grade 5 (AMS2), the following are additional requirements for Pay Grade 6 (AMS1).

Must be able to:

1. Conduct on the job instruction for and supervise the training of personnel engaged in maintenance and repair of aircraft structures and surfaces.
2. Perform metal heat treating operations and hardness tests required in aircraft structural maintenance.
3. Perform arc welding on steel plates and tubes.

Pay Grade 5 (AMS2)

Experience: Submission of evidence of completion of a four (4) year or eight thousand (8,000) hour aircraft mechanic apprenticeship program, or four (4) years equivalent experience leading to the development of the abilities prescribed below. When an applicant has completed an apprenticeship of less than four (4) years, on-the-job training is required so that the combined apprenticeship and training time is equivalent to four (4) years.

Abilities: In addition to the abilities prescribed for Pay Grade 4 (AMS3) the following are additional requirements for Pay Grade 5 (AMS2).

Must be able to:

1. Remove, repair, replace and align aircraft structures, surfaces, control riggings, and fittings.
2. Silver-solder applicable metals and weld nonferrous metals.
3. Use aeronautical technical publications pertinent to the maintenance of aircraft structures and surfaces.

Pay Grade 4 (AMS3)

Experience: Submission of evidence of completion of two-thirds (2/3) of a four (4) year or eight thousand (8,000) hour aircraft mechanic apprenticeship program or equivalent experience.

Abilities: Must be able to:

1. Read and work from blueprints, schematic drawings, and working diagrams required in the maintenance of aircraft structures and surfaces.
2. Perform periodic checks and service aircraft surfaces, structures, and hydraulic, cabin pressurization, and air-conditioning systems.
3. Identify and use, as appropriate, aircraft metals, aviation hardware, tubing, hose and preservatives required in structural repair and maintenance.
4. Demonstrate proper use and maintenance of measuring instruments, hand and power tools required in shop and line maintenance of aircraft structures, including safety precautions to be observed in their utilization.
5. Set up oxyacetylene welding apparatus and perform welding, brazing, and cutting operations on ferrous metals.
6. Prepare aircraft surfaces for painting, including masking and doping techniques; must be experienced in the mixing of paints and dopes and their application by various spray guns and brushes.

7. Repair metal structures, including stressed skin and frames; maintain and repair nonmetallic aircraft surfaces including rubber, plastics, wood and fabrics.
8. Make wooden form blocks, jigs and templates for the manufacture or repair of aircraft structural parts.
9. Make required entries in maintenance and repair records and/or log books.

SPECIAL PROVISIONS

1. Civilians with extensive experience in aircraft structure and surface repair and limited experience in hydraulic maintenance and repair should be enrolled in the AMS rating rather than the AMH rating.
2. A civilian holding a valid CAA certificate with an "A" or airframe rating should be enrolled in the AMS rating rather than the AMH rating in accordance with established quotas.
3. Graduates of CAA approved aircraft mechanic schools who have completed the courses for the "A" or airframe rating, but who do not possess a CAA aircraft mechanic certificate, "A" or airframe rating, should be enrolled in the AMS rating rather than the AMH rating in accordance with established quotas.
4. Graduates of other than CAA approved aircraft mechanic schools, aircraft mechanic apprentices, and aircraft mechanic helpers should be evaluated in terms of their training and experience to determine their qualifications for enrollment in either the AMS or AMH rating in accordance with established quotas.