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SURFACE WARFARE OFFICER MANPOWER UTILIZATION: INTRODUCTION OF PERSON-JOB MATCHING ON THE ASSIGNMENT PROCESS

by

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Surface Warfare Officer Manpower Utilization:
Introduction of Person-Job Matching On
the Assignment Process

by

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ABSTRACT

This thesis introduces the concept of Simplified Person-Job Matching (SPJM) as a means of measuring the effectiveness of Surface Warfare Department Head Officer Distribution and Assignment process. Data base analysis of a cohort of officers attending the Surface Warfare Officer Department Head School, their career histories and prospective assignments was performed. Cohort Analysis indicate that: (1) on the average, the current distribution and assignment process is doing a marginally adequate job of matching personnel to available billets, (2) process improvement is recommended in that, 17 of the 135 officers had prospective assignments to billets that they held no prior experiences for, (3) SPJM analysis resulted in a 22% improvement for SPJM fit and resulted in no assignment of officer to billet without some related experience. Recommendations include: (1) implementation of consistent personnel policy in relation to assignment and distribution process, (2) provide budgetary funding for next generation Officer Assignment and Information System (OAIS) computer software, (3) incorporate computer program to ensure SPJM is accomplished, (4) utilize future software improvements to merge the somewhat adversarial roles of Assignment and Placement officers.

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I. INTRODUCTION

A. BACKGROUND

The future of the U.S. Navy lies in the way of a smaller and more technologically advanced fleet. The congressional cuts of the defense budget for fiscal year 1991 and outyears point to a period of austere conditions for personnel and limits on future equipment acquisitions.

The U.S. Navy will continue to be called on to support the policies of the government, including, but not limited to, sea control, power projection, drug interdiction, and intelligence gathering. With the projected downsized surface fleet, it is of the utmost importance to maintain a fleet of operational and effective ships. The overall efficiency and effectiveness of each ship's individual crew must be emphasized. The enlisted personnel of the U.S. Navy have long been properly screened and schooled to assume specific positions on board sea-going platforms. This is not the case of the Surface Warfare Officer (SWO). The SWO management policies concerning the detailing and assignment process of naval officers lags that of the enlisted community. An analysis of the Surface Officer detailing and assignment process is necessary.

B. SURFACE WARFARE OFFICER AS GENERALISTS

The SWO career path has historically been based on that of a generalists. A generalists, as defined in the American Heritage Dictionary (1989), is a person with a broad knowledge and skills in several fields. Thus, the existing Navy policy has been for junior officers to experience as many jobs and to learn as much as is possible in a short period of time. The ideal of the generalists has been emphasized so as to best enhance the potential for success and advancement in the SWO community. The generalists concept was supported, in part, by the nearly 600 ship Navy of the 1980's. The size of the fleet provided numerous platforms and billets from which a diverse SWO education could be obtained.

The ideal of a Surface Warfare Officer (SWO) generalist education was a functional one in the past. Yet, in light of the changing size, shape and structure of the Surface Navy it is time to readdress the generalist education of the Surface Warfare Officer.

The objective of this thesis is twofold. First, to identify any deficiencies in the Surface Warfare Officer assignment and distribution process, and secondly to address SWO management policies that may be used to increase the overall readiness of the surface navy.

In particular, this thesis will look at principles of job matching of surface department heads to billets. The goal is to increase overall shipboard readiness and performance. This

can, in part, be accomplished by proper manpower utilization. Emphasis is placed on better matching, placement and assignment of SWO department head personnel to sea-going department head billets.

C. THESIS OBJECTIVES

The objective of this thesis effort is to analyze the Surface Warfare Department Head billet assignment process. In particular the analysis of the criteria used to determine job matching of SWO personnel to job billets. An analysis of a typical department head class and their prospective billet assignments will be completed to determine if the principles of proper job matching are being adhered to.

D. THE RESEARCH QUESTION

The primary research question to be addressed in this thesis is: U.S. Navy Surface Warfare Officer Department Head Manpower Utilization: Are Personnel being properly matched to billet requirements by personal preference, personal qualifications and previous job experience?

Additional questions that will be addressed are:

- Are officer's personal preferences being weighed in the assignment process?
- How does the Officer assignment process affect overall job satisfaction?
- Is ship operation and inspection schedule weighed into job assignment?

- How can the selection and assignment process be utilized to increase job performance and officer satisfaction?

E. SCOPE, LIMITATIONS, AND ASSUMPTIONS

The scope of this thesis is limited to those billets classified by the surface warfare community manager as department head billets and to those active duty navy surface warfare officers selected for, or serving in, designated department head billets.

Current information on department head personnel in Surface Warfare Department Head school, Newport, Rhode Island, was obtained from PERS-21. The longitudinal data of these students, their career history, and their billet assignment was generated by Pers-21. This information will be assumed to be correct and current on these personnel.

Personal preferences of officers as to desired assignment could not be obtained and therefore a significant variable in the job matching equation is absent. Future work should endeavor to include personal preference with adherence to privacy act policy ensured.

Changes in personnel policy, that result from congressional decisions on the defense budget reduction, inject a degree of uncertainty in manpower utilization analysis. These changes, if any, will not be addressed during the period of this thesis.

F. INTRODUCTION TO RESEARCH AND METHODOLOGY

The primary research resources employed in developing this thesis were the data bases provided by Dr. W. Bowman of the United States Naval Academy. The *Navy Officer Retention, Separation, and Promotion Data Bases: Fiscal Years 1981-1990* data base is hard loaded into the Naval Postgraduate School's W.R. Church Computer Center mainframe system.

In addition to Dr. Bowman's data base, additional information was provided from the data bases at PERS-21 in Washington, D.C. This information included the prospective job assignments for a cohort of Surface Warfare Officers attending Surface Warfare Officer Department Head School. The prospective job assignment information is referred to as the department head job slate. The job slate was provided to PERS-21 by PERS-41. This job slate was merged with the historical records of the individual officers to enable analysis of the match of personnel to billets. More general information was additionally obtained from a variety of references which were used to complete this thesis.

G. DEFINITIONS AND ABBREVIATIONS

This thesis effort endeavored to translate Naval terminology into understandable civilian language. However, a number of acronyms and abbreviations do appear throughout this work. These will be clearly identified at first appearance in the text.

E. ORGANIZATION OF STUDY

This thesis is broken primarily into two parts. The first part is an introduction to the principle of job matching and its relevance to efficiency in the Navy. This introduction is accomplished by an in-depth literature review offered in Chapter II.

The second part of this thesis will analyze the assignment of a typical class of Department Head students based on the principles of job matching. Concentration will be on relevance of personnel qualifications, or experience, when matched to the requisites of a specific department head billet.

Chapter II of this thesis provided a detailed literature review. In this review attention was given to introductory information for which the emphasis of this thesis is based. The remainder of this literature review concentrates on the specific aspects of the Surface Officer detailer and assignment process.

Chapter III provides the description of the key personnel and their roles in the detailer and assignment process. An outline of the tasks ascribed to each of these individuals in the assignment process is provided.

Chapter IV introduces the background for which this study of job matching for Surface Warfare Officers department heads was undertaken. Additionally, an introduction to the proposed criteria for a successful job match will be provided. The relevance of the previous job experience and technical

qualifications matched against the skills necessary to properly fill a prospective billet will be addressed.

Chapter V illustrates a case analysis of a class of Officers attending the Surface Warfare Officer Department Head School located at Newport, Rhode Island. This chapter will analyze the work history of the individual officers, their previous ship and job assignments and match these against the billets available. A comparison between the 'theoretical best fit' and the actual placement will be provided.

Chapter VI, the final chapter, provides some conclusions and recommendations to increase the effectiveness of the assignment process and thus increase the overall effectiveness of the surface navy. Additionally, recommendations are provided for future research efforts related to the scope of this thesis.

II. LITERATURE REVIEW

A. THEORETICAL BACKGROUND RESEARCH

It is necessary to introduce theoretical background research to properly develop this thesis. The key concepts of job matching, manpower utilization, job satisfaction, and newcomer theory will be introduced. The remainder of this literature review chapter will concentrate on specific aspects of the Surface Warfare Officer Detailer and Assignment process, opinions and results from previous papers.

Job matching is the proper placement of personnel to specific jobs. Proper assignment should be based on the specific requirements of the job/billet (job description) matched with the qualifications and experience of the person. The principles of job matching reside in two current managerial areas of literature: Human Resource Management and Manpower Utilization.

1. Human Resource Management

The principle of making the most of our human resources is neither new or parochial. The goal of any business is to maximize output and minimize costs. This goal is not simply one for profit making business. The government, in particular the Department of Defense, is facing a decreasing budget. The need for reductions of equipment and

personnel are now foremost in the minds of the planners and programmers of Navy policy.

With reductions looming for the future of Navy manpower, is it not best to optimize the utility of each military member? In an article by Giblin and Ornati a technical definition of optimization is given:

> Optimization is defined as the condition in which a set of interdependent goal-related relationships, each peculiar in its component parts to a specific organization, are simultaneously satisfied to the highest possible degree without unacceptably lessening the satisfaction of other significant goals. (Giblin & Ornati, 1976)

Thus the goal for the Navy in optimizing its manpower would be to assign personnel to billets that they were best qualified for. The optimization of the utility of manpower resources is known as the principle of human resource utilization. Schafritz (1980) provides a definition of human resource utilization as:

> the selection, development, and placement of manpower within and economic or organizational system in order to use these resources in the most efficient manner.

2. Introduction to Job Matching

It has long been believed that proper job matching results in higher job satisfaction. Locke (1976) describes job satisfaction as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences."

The principle of job matching has come a long way from the days of the strongest man being assigned to that job which entails the hardest physical labor. The world no longer manually feeds coal to the stoves of steam plants. Job matching is now a multi-faceted look at the characteristics of a particular job and placing an individual who has the right experience, personality, education, gender, race, religion or attitude necessary to properly fill that job.

B. RELATION OF JOB MATCHING TO JOB SATISFACTION

Proper job matching contributes to overall job satisfaction. Work by Jovanovic (1979), describes the job matching as that:

> for each worker a non degenerate distribution of productivities exists across different jobs. The same is true for employer-workers differ in their productivities in a given task that the employer needs to have performed. The problem is one of optimally assigning workers to jobs.

The conclusions drawn by Jovanovic determined that improper job matching contributes significantly to turnover of personnel. That an improper job match will increase the dissatisfaction and drive personnel to seek a better job match elsewhere. The model used to determine Jovanovic's conclusions utilized a wide series of variables which were modeled to determine a job match-turnover equation. The model constructed in this research generalizes straightforwardly to incorporate

the permanent differences in a worker's characteristics such as level of school, ability, race, sex, and so on.

C. RELATION OF JOB SATISFACTION TO JOB PERFORMANCE

Srivastva et al (1975) conducted an in-depth study of the correlation of job satisfaction and productivity. The conclusions determined that there does exist a positive effect on performance by increased satisfaction. Although his analysis recommends that organizations concentrate more on the long range policy commitments than to continued changes in jobs to increase performance, his positive correlation of performance to satisfaction is important.

As Srivastva et al, determined, one can intuitively expect that higher job satisfaction would lead to higher level of performance. There has been a great deal of research on the cause and effects of job satisfaction to job performance.

A review of many job satisfaction-performance studies by Iaffaldano and Muchinsky (1985) revealed that the best estimate of the true correlation between the two concepts, controlling for intervening variables and statistical errors, is .17. Even with this low correlation, the result is a positive influence on job performance by increased job satisfaction. A continuing debate exists on whether job satisfaction increases performance or if the opposite, high job performance increases job satisfaction is true. Iaffaldano and Muchinsky's research favors satisfaction-

performance side of the debate. The result of their research would imply that it would be beneficial for the Navy to seek methods for which to increase job satisfaction.

Numerous studies on job satisfaction and the influence of job design, or redesign, and the measuring of the task attributes of the job can be found in an abundance of literature. Research conducted by Turner and Lawrence (1965), Hackman and Lawler (1971), Umstot, Bell and Mitchell (1976) and particularly Hackman and Oldham (1976) concentrated efforts on the study of identifying task attributes and the need for job design. These important research efforts are outside the scope of this thesis but should be considered as appropriate methods for approaching and changing attributes of a job to enhance job satisfaction.

D. NAVY EFFORTS IN JOB MATCHING

Human resource utilization is enhanced by proper job matching. Job matching is already emphasized at the enlisted entry or recruiting level of the Navy. The enlisted community takes great strides at screening applicants and placing them in jobs for which they are best suited. Specific works on the screening process, selection and assignment of enlisted personnel have been published by numerous sources.

In a Department of Defense Publication, Manpower for Military Occupations, Eitelberg (1988), devotes a chapter on the Military Selection and Assignment Process. His research is

in response to a 1976 Defense Manpower Commission which sought to bring about "significant improvements in DOD's (Department of Defense) ability to enlist and classify individuals in jobs for which they are ultimately suited."

Lockman & Lurie (1980) developed a model for the Center for Naval Analysis. This model is called SCREEN, Success Chances of Recruits Entering the Navy. Their emphasis was on the analysis of qualification testing and probability of successful completion of a first tour enlistment. This effort does not emphasize particular assignment to billets, but only overall success.

The Navy developed a model named CLASP (for Classification and Assignment within PRIDE-PRIDE being the acronym for Personalized Recruitment for Immediate and Delayed Enlistment). Eitelberg (1988) describes CLASP as being a policy-capturing model, in that the system is able to integrate certain Navy policies or goals under an optimization procedure. Kroeker and Rafacz (1983) designed CLASP to capture set policies, this system:

> incorporates Navy policy as well as data on the applicants' abilities and preferences to achieve (1) maximum training school success, (2) optimal matching of aptitude level to job complexity, (3) optimal matching of applicant preferences and Navy requirements, (4) orderly fill rates within all Navy jobs(ratings), and (5) balanced minority fill rates within all ratings.

The tour lengths of a SWO department head varies from ship and billet assignment. The average SWO department head tour

length remains between 18 and 30 months. It is in the best interest of the Navy to increase the efficiency of these officers during these short tours. One theory believes that by properly placing personnel into a familiar job or environment one will decrease newcomer anxiety and increase job performance.

E. INTRODUCTION TO NEWCOMER THEORY

In addition to the job satisfaction-job performance correlation, one should also consider the theory of newcomer expectations. This theory entertains that there exists a period of adjustment to one's environment which inhibits or slows down the initial productive output of an individual. "Reality Shock" is the phrase that Hughes (1958) uses to characterize what newcomers experience when entering unfamiliar organizational settings. Additional works on the Newcomer theory, or that of organizational socialization, has been done by Becker and Strauss (1956); Merton (1957); Schein (1962), (1968); Feldman (1976); Van Maanen (1976).

In Louis (1980) a model of newcomer experience is developed. She breaks down entry experiences to three distinct differences which the newcomer must face. The first of these differences is change. Change is defined as the differences between old and new settings. The next experience is contrast. Contrast is the individuals formation of noted differences between old and new environments. The third feature of entry

experience is surprise, which represents a difference between what one anticipated and what is subsequently experienced in the new setting.

In a paper by Ford and Jones (1983), the authors developed a simple four period development of a job life. These steps walk through the following four periods:

> Period I: Anxiety. The new employee sees noting but overwhelming complex job that leaves him or her with a feeling of panic and total incompetence.
>
> Period II: Competence Building. As learning catches up with the formal job description, the employee begins to see the light at the end of the tunnel. While not all facets of the job are mastered, the employee feels increasingly competent about his/her ability, and the feeling of panic is replaced by the excitement of a challenge that can be mastered.
>
> Period III: Confidence Building. The employee feels increasingly confident about job performance, becoming satisfied with himself as he repeatedly demonstrates competence to himself and his supervisor.
>
> Period IV: Boredom. The person becomes so competent and confident that the job becomes routine, monotonous-boring. He feels that it's time to move to other challenges and that his talent should be used at a higher level of task variety.

Ford and Jones' model is applicable to the assignment of SWO Department Head's. It would be best to minimize the first stage (Anxiety) of this model and maximize the third state (Confidence Building). Proper job matching of officers to billets based on experience , qualifications and personal preference, would accomplish these goals. Thus, proper job matching would increase the overall effectiveness of the

officer during the short term for which he/she will hold the job.

The best way to minimize anxiety would be assign Officers to platforms,and or jobs, that they are readily familiar with. This would also decrease the Newcomer expectancy to reality conflict. The purposed overall result of matching qualified personnel to appropriate billets would have these two concepts in mind.

F. PREVIOUS RESEARCH IN OFFICER ASSIGNMENT PROCESS

The Surface Warfare Officer Assignment Process has been a topic in several research endeavors and several recent surveys.

Bruce, Russell and Morrison (1991) conducted a detailed analysis of the Post-resignation Survey. This survey asks for responses concerned with the comparison of civilian work experience as compared with previous military work experience. The authors efforts were primarily concerned with retention analysis of Aviation Warfare Officers (AWOs). Their analysis noted that AWOs that resigned evaluated five facets of a naval career unfavorably to their civilian career experience: (a) amount of paper work, (b) crisis management, (c) detailers, (d) work hours, and (e) sea duty. For the most part, these noted negative aspects are the accepted ways of naval life. To change these negative aspects would require major organizational changes and changes in the methods of operation

employed by the Navy. The one aspect that can be readily addressed for change is that of the negative impressions of detailers.

Wilcove (1988) identified that the assignment process as a serious problem. He notes that specific problems existed for various warfare communities. Aviation Warfare Officers (AWO) were primarily concerned with the lack of consideration for their individual preferences. It appeared to those surveyed that AWO detailers disregarded or ignored the personal preferences in the detailing process. In the Surface Community, Surface Warfare Officers perceived a lack of integrity on the part of their detailers. The information for these perceptions was derived from a questionnaire. The surface Warfare community had some 2,735 Surface Warfare officers respond to this questionnaire.

The top three career problems identified by Wilcove's questionnaire were (1) management, (2) assignment process, and (3) promotions policies, procedures, and opportunities. These issues are all directly related to the selection and assignment policies of the Surface Warfare Community.

Several striking quotes are noted from the Wilcove (1988) paper. The following are responses from Navy lieutenant commanders concerning assignment policies and procedures:

- A naval officer's best detailer is himself. Don't expect to be given: Get it yourself.

- The bureaucracy and inefficiency in the detailing process will never cease to amaze me.

- All too often one is left feeling he is simply a number, a warm body to fill a void. No real consideration seems to be given to career development.

The negative attitudes toward the assignment process and the detailers on the whole should carry the weight necessary to influence change in this system. The desire for career specialization has long been debated in the Surface Warfare Community. Milch (1988) properly identified the Surface Community as generalists. Milch emphasized that in the "SWO community, members of which are especially expected to be jacks of all trades". Assignment and selection for the specialized communities, (i.e., Aviation, Intelligence, Staff, etc.) is far simpler than that of the Surface navy. These specialized warfare communities ensure that a pilot qualified for an F-14 Tomcat jet plane will not be assigned to fly a SH-60 LAMPS helicopter. This specialization reduces the complexity of the assignment process by placing set qualification on the Officer needed to fill a specific billet.

In the surface navy, assignment is not that simple. There is a strong historical belief that a ship is simply that, a ship. In Gilbert (1989) a brief description of the what skills the SWO is expected to become proficient at is addressed. Gilbert writes that "the SWO is expected to master naval engineering, weapon systems, communications, repair damage

control and administration". In addition to Gilbet's analysis SWOs must also learn the proper seamanship and navigation skills necessary to operate a warship.

Gilbert (1989) continues on to address the topic of career specialization. He proposed three specialization career tracks. These three specialization proposals are broadly broken into the following:

- Department Specialization (Operations, Engineering, Combat Systems)
- Warfare Area (Amphibious; Combat Logistics; Mine Warfare vs Combatant Warfare)
- Above/Below decks (Operational track vs Engineering or Material Specialist)

Gilbert's recommendations were supported by survey results given to SWOs attending Naval Post Graduate School. One survey result, that nearly 80% of the students surveyed believed themselves to be specialized in a departmental area, lead in part, to the formation of this thesis. Some of Gilbert's survey data will be presented as supporting documentation for this thesis.

The Air Force is also interested in proper job matching of its officer corps. They refer to projects and computer models developed to improve placement as Officer Person-Job Matching or PJM. Smith (1990) evaluates the Air Force efforts to Improved Officer Assessment, Selection, Placement, and

Promotion. The Air Force firmly believes that a more flexible, multidimensional, and comprehensive optimum match of personnel to jobs that technology would enable will result in more effective force manning and (unit) composition. Several computer systems (i.e., PROMIS and PACE for enlisted ranks, WPSS for officers) which serve in the assessment and assignment of the enlisted Air Force personnel are available. Research into whether these programs could be used for officer assignment in other services, in particular the Navy, should be addressed in future thesis efforts.

Russel (1982) designed an interactive computer model, which simplifies the Assignment and Placement Officers tasks in bookkeeping and administrative processes necessary in the detailing process. Russel's experience as an assignment officer from 1977 to 1980 displayed to him the inefficiencies that existed in the assignment process. His work, in part, led to the incorporation of the OAIS (Officer Assignment Information System) and the ODIS (On-Line Distribution AD HOC information System) computer systems. These two systems automated the necessary administration for, and information retrieval pertaining to available officers and billets necessary in the assignment process.

Russel's work did not provide the personnel involved in the assignment process with information concerning who is the best available officer for any particular billet. Although specific constraints could be queried, thus limiting the

search to fewer officers, no specific best fit can be ascertained. Additional work on these two programs involved in the assignment process could incorporate personal job experience and qualifications and match these to the requisite job descriptions to offer potential best fit for job matching.

Future research efforts should consider incorporating the principals used by the Air Force assignment models into the existing computer systems used in the officer assignment process of the Navy.

This literature review has provided a broad background of several key principles necessary to develop this thesis. The concepts of job matching, Newcomer theory, organizational socialization, and job satisfaction were addressed. Additionally, research on job design or redesign and the possible influence on job satisfaction was briefly introduced. More specific research on SWO career specialization (Gilbert, 1989) and on the officer placement and assignment process (Smith, 1990; Milch, 1988; Russel, 1982) has also been addressed. This thesis is based on this background and these research efforts.

III. THE ASSIGNMENT PERSONNEL & PROCESS

Chapter III will provide a look into the assignment process. An introduction of the Personnel Command/Distribution Department, its divisional breakdown, and those divisions responsibilities is offered. The key personnel in the assignment process will be introduced. The interplay of these personnel throughout the assignment process will be explained. Additionally, a brief introduction to the computer systems employed in the assignment process will be provided.

A. NAVY PERSONNEL COMMAND/DISTRIBUTION DEPARTMENT

Within the Navy Personnel Command/Distribution Department (NMPC-4 now PERS-4), there are four separate divisions that are responsible for the assignment and distribution of Navy officer personnel.

The four divisions responsible, their old and new names, and their distribution responsibilities are outlined in Table 1.

TABLE 1

Division Name: Old	NEW	Responsible For Distribution of:
• NMPC-41	PERS-41	Surface warfare officer and general unrestricted line officer personnel.
• NMPC-42	PERS-42	Submarine/nuclear-trained warfare officer personnel.
• NMPC-43	PERS-43	Aviation warfare officer personnel.
• NMPC-44	PERS-44	Restricted line and staff officer corps personnel.

** Note: information for this section obtained in part from the *U.S. Department of Energy's guide to the Navy Military Personnel Distribution System, Contract No.DE-AC05-760R0003.*

In addition to the four divisions listed above, two additional divisions provide distribution process support. NMPC-46 (PERS-46) and NMPC-47 (PERS-47) provides fiscal management and budgeting support, and implementation and distribution of management information systems for direct support of the distribution process respectively.

The principle effort of this thesis is to concentrate on the assignment of Surface Warfare Officers (SWO's). With this in mind, the following descriptions will apply to key

personnel involved in the assignment process from PERS-41 only.

Three critical personnel are influential in the Surface Warfare Officer assignment process. The three critical officers in the assignment process are the assignment officer, the placement officer and the officer being assigned.

B. THE ASSIGNMENT OFFICER

The assignment officers, better known as detailers, are tasked to assign Navy officers to available officer billets best suited to their professional skills and personal preference.

In addition to this primary function, the assignment officer also has several other critical responsibilities. These responsibilities are defined to include managing personnel information and divisional budgets, evaluating and responding to communications from officers, offering career counseling, and providing general information regarding personal and professional development.

The assignment officer's job should be focused on representing the interests of the Navy officer being assigned. The flip side to the assignment officer is the placement officer.

C. THE PLACEMENT OFFICER

The placement officer is responsible for maintaining authorized manning levels by placing available Navy officers into available billets. The placement officer is the advocate for navy commands. He responds to communication from the various navy commands regarding billet fill and billet status. He tracks the rotation dates for billets and request general information relevant to the status of a command's needs.

The placement officer is primarily interested in representing the needs of the Navy. He attempts to provide officers to commands that would attain peak operational efficiency and effectiveness in a minimal amount of time.

The placement and assignment officers share the responsibility to ensure that high levels of motivation, dedication, and professional expertise required by the navy, are consistently maintained by "placement of the right person in the right job at the right time."

D. THE OFFICER BEING ASSIGNED

The officers working at the Personnel command are not fully responsible for the career of each Navy officer. It is of the utmost importance that the officer being assigned take responsibility for relaying critical pieces of information to his detailer.

The first of this information is the officer's personal preferences. These preferences are submitted on a Officer's

Preference and Personal Information Card, NAVPERS Form 1301/1 REV 10-83. This input provides the detailer with the officer's preference to desired location for assignment, preferred billet, and preferred ship.

In addition to personal preferences, the officer being assigned is responsible to ensure that the personal information the detailer has available is current and accurate. Information as to qualifications, completed Navy school's and previous jobs held should be verified. By so doing, the officer provides the assignment officer with the most up-to-date information on the officer. This allows the assignment process to consider the officer qualifications and thus, to make an appropriate match of officer to billet.

E. THE ASSIGNMENT/DISTRIBUTION PROCESS

The officer distribution process is designed to ensure that the needs of the Navy for highly qualified and motivated personnel is met by the assignment of officers appropriate to their professional development and personal objectives. This goal can only be achieved through careful coordination of assignment and placement officers responsibilities.

The following paragraphs will track the interaction of the assignment officer, placement officer and officer being assigned through the steps of the officer assignment process. This assignment process description does not detail the

administrative requirements or documents necessary in assignment.

The first step in the assignment process is that an officer becomes available for future assignment. This is done when the placement officer is notified by a command that an acceptable relief officer has been identified and approved. The released officer usually contacts his assignment officer at this point to emphasize his personal preferences and career goals, both of which should weigh in the assignment process.

The placement officer will notify the assignment officer of specific billets which are available for fill. The availability of these billets are based on the manning needs of the commands for which the placement officer is responsible.

The assignment officer then matches an available officer for reassignment to a specific available billet. This match decision is based on several criteria. This criteria includes professional status, the officer's career developmental needs and the personal desires of the officer being assigned and matches this information with the needs of the billet requirements.

The assignment officer proposes, and if necessary will defend, the officer billet match to the placement officer. The placement officer decides whether to accept or reject the assignment officer's recommendation based on his assessment of

the suitability of the match between the officer's experience and qualifications and the billet requirements.

If the assignment officer's proposal is rejected the process returns to make another officer to billet match. If the recommendation is accepted, the placement officer will construct a required enroute training track. This training track is offered if time permits and if the training is necessary for the prospective billet requisites.

Upon completion of the assignment process, the placement officer will then make the incumbent officer available for reassignment.

A graphical representation of this process is reproduced from the ***Navy Military Distribution System, Officer Distribution Overview, Self Study Guide*** as Appendix 1.

The Distribution Process Study Guide (Ref. Dept of Energy) specifically details the distribution process outcomes to be such:

> That the professional needs and personal desires of each Navy officer are met to the fullest extent possible with each new assignment, and that successive assignments build on one another to maximize the officer's career potential fully over time.
>
> That command activities are maintained at authorized manning levels, with each activity's billets filled by the best qualified personnel available.

It should be noted that two critical concepts should be highlighted in the distribution process' proscribed outcomes:

"successive assignments which build on one another," and "billets filled by best qualified personnel." These two critical concepts inherently point to job matching as a specific basis for assignment.

Chapter IV will properly introduce the job matching methodology used to determine whether the current assignment process is producing assignments which adhere to those proscribed outcomes detailed in the ***Distribution Process Study Guide***.

IV. PROPOSED JOB MATCHING CRITERIA

Chapter IV will discuss a brief background as to the purpose of this research. It will further endeavor to introduce the criteria proposed for an making an appropriate job match. This criteria will include simplified descriptions of the department head job characteristics and requirements. These requirements will be matched against Navy Officer Billet Codes (NOBC) and Additional Qualification Data (AQD). Abbreviated tables offering simplified descriptions of the NOBCs and AQDs is provided. Additionally, the methodology which will be used to analyze the job match of this data set's cohort of students to their prospective billet assignments will also be discussed.

A. BACKGROUND

Many officers have seen the failure of specific officers in the roles for which they are assigned. Some consider the failure of a ship's department head to be the most devastating to a ship.

The failure of a ship's department head often results in the ship's failure to fulfill some operational commitment. Thus the failure of a single person to properly organize and

operate a department on a ship may have a direct impact on the lives of numerous navy personnel.

The department head is an upper-middle management officer who is responsible for the day to day operations of a specific organization of a ship. The department head Officer's role is always multi-faceted in nature. This job generically requires an inordinate amount of organizational and managerial talent, good technical writing skills, and the ability to communicate. Additionally, the need for technical knowledge of the millions of dollars of equipment placed under his/her supervision is extremely important for a department head to be successful.

The failure of any one department on a vessel can greatly effect the ship's operational capabilities. The typical navy ship is divided into four distinct departments. These departments are Supply, Operations, Weapons or Combat Systems, and Engineering.

For the purposes of this thesis the Supply department head will not be considered. The reasoning behind this exclusion is that supply department head officers must come from the supply corps of the navy. These officers are specifically trained in the skills required to successfully fulfill this position.

B. GENERIC JOB DESCRIPTIONS

The following descriptive paragraphs will endeavor to capture the typical job description of a department head for -

each of the applicable departments. These descriptions will be generic in nature. The duties and responsibilities of positions on navy ships varies from fleet to fleet (Atlantic vs Pacific), squadron to squadron, base to base, and all the way down to specific ships of the same ship type. It would be take an enormous effort to catalog the actual responsibilities and collateral duties of each individual department head illet. Again , this thesis will concentrate only on generic job descriptions.

1. Operations Department Head

The operations officer afloat is responsible for the coordination of the ship's operations, training, and tactical planning. He/she organizes the operations department and legates responsibilities for the communications, combat information center (CIC), navigation and deck operations. Is expected to confer with the commanding officer and other department heads in the preparations of the ship's operations and training schedules. Is required to conduct briefings on tactical situations. Will direct underwater, surface and air searches and electronic countermeasures. Evaluate and disseminate information, advising the command on required tactics and ships movements and controlling airborne aircraft through CIC officer. Shall supervise electronic repair to equipment under his/her cognizance.

The operations department consist of those divisions previously mentioned in the job description. They are communications, CIC, deck, navigation, and intelligence and/or electronic warfare divisions.

In addition to the organization and divisional responsibilities the operations officer is also the secret materials control officer. The operations officer deals with an inordinate amount of message traffic, most of which requires timely message responses.

2. Combat Systems/Weapons Department Head

The Combat Systems or Weapons officer is responsible for the direction of the combat systems or weapons department. Shall advise the commanding officer on all combat systems and weapons capabilities and problems. Oversees the operation and operations maintenance of all weapon and combat system control matters. Coordinates the conduct of shipboard combat systems test and evaluation matters. Supervises the preparation of charts, maps and grid systems necessary for proper placement of delivered weapons. Supervises the ordering, reporting, care, handling, and stowage of explosives.

The combat systems department is comprised of the gunnery, anti-submarine, air-defense, electronics maintenance, and systems test divisions.

The weapons or combat system officer is most likely assigned special weapons control officer. This duty requires

strict attention to detail and rigidly inspected on a periodical basis. Additionally the duties of weapons handling officer requires in detail message traffic that requires experience to properly master.

2. **Engineering Department Head**

The Chief Engineer Officer administers the ship's engineering department. Directs the operations and maintenance of the propulsion and auxiliary machinery and electric power equipment. Superintends engineroom, boiler rooms, carpentry shop, electrical and other engineering spaces. Directs maintenance if small boat machinery, control of damage, repair of hull appurtenances and repairs not specifically assigned to other departments. Directs the procurement and use of fuel, lubricants, spare parts and other equipage. Directs the preparations of required engineering records and reports.

The engineering department usually consists of the following divisions: Main propulsion, boilers, auxiliaries, electrical, damage control and repair.

The engineering officer faces a structured inspection cycle that test operations of the engine plant and all auxiliaries as well as testing of the engineering operations personnel necessary to run the plant. Additionally, all required records and reports are closely scrutinized. Prior experience in an associated division job or experience in the

operational running of the plant can be considered critical for a successful chief engineer.

C. JOB MATCHING CRITERIA

The matching criteria will be based on the generic job descriptions, matched to the experience and qualifications of the officers assigned. The pertinent data necessary for this match was provided from PERS-21. This data offered individual career histories or a group of student officers attending the Surface Warfare Officer Department Head School. This information included the Navy Officer Billet Codes (NOBC) and Additional Qualification Data (AQD) obtained by each officer and their prospected billet assignment.

The alpha-numeric systems used to annotate this information is detailed in ***NAVPERS 15839D, Manual of Navy Officer Manpower and Personnel Classification, Volume 1.***

1. Navy Officer Billet Code

The NOBC is a four number string that is used to identify specific billets previously held by the officer. The following is breakdown of the NOBC categories. For the fields primarily outside the realm of this thesis a broad outline is provided. A more detailed outline is provided for the naval operations section. The NOBC outline is as follows:

TABLE 2

Navy Officer Billet Codes

TITLE	NOBC RANGE
Sciences & Services	2000-2999
Personnel Field	3000-3999
Facilities Engineering	4000-4999
Electrical Engineering	5000-5999
Weapons Engineering	6000-6999
Naval Engineering	7000-7999
Aviation Field	8000-8999
Naval Operations	9000-9999
Staff-Fleet Commands	9000-9099
Shipboard Operations/Weapons	9200-9299
Shipboard Engineering	9300-9399
Shore Operations	9400-9499
Intelligence Group Operations	9500-9599
Automated Data Processing Group	9600-9699
Cryptological Group	9800-9899
General Naval Operations	9900-9999

In addition to the NOBC there are also relevant Additional Qualification Data (AQD) codes that should be outlined.

2. Additional Qualification Data

These codes are a three variable, alpha-numeric string used to properly identify an officer's technical qualifications or prior experience in a specific job. Table 3 provides a partial listing of AQDs. This table will concentrate on those AQDs that may directly influence the job matching criteria. Table 3 is a breakdown of these significant codes:

TABLE 3

Additional Qualification Codes

AQD CODE	SIMPLE DEFINITION OF QUALIFICATION
BA1-BA5	Anti-Submarine warfare Qualification/Operations
BE1	Anti-Air warfare
BF1	Anti-Air Technical Expert
BJ1	Electronic Warfare
BK1	Electronic Warfare Technical expert
BN1	Mine Warfare Basic
BN3	Mine Warfare Tactics
BV1-BV6	Amphibious Operations
CA1-CA3	Division Officer Experience
CB3-CB6	Department Head Experience
KA6	Aegis Missile Operations Experience
KA7	Point Defense Experience
LA8	Supply Surface Warfare Officer
LA9	Surface Warfare Officer
LB1	Officer of the Deck Independent Steaming
LB2	Officer of the Deck Fleet Steaming
LC1-LC4	Engineer Officer of the Watch
LM1-LM3	Command Qualification (1=LT 2=LCDR 3=CDR+ Command)
LD9	Weapons Control Experience
LF6-LF7	Tactical Action Officer Qualifications

D. SIMPLIFIED PERSON-JOB MATCH

1. Simplified Person-Job Match Defined

The simplified version of the job match can be defined as having a minimum exposure to the prospective field of assignment. Assuming that this is correct, we can apply the Air Force terminology of Person-Job Match or PJM, defined in Smith (1990). This paper utilized a revised definition of the PJM.

The Simplified Person-Job Match or SPJM, can be defined as that person-job match that offers an officer who has had exposure to his/her prospective job assignment. Qualified exposure is met if previous jobs held (recorded by NOBC), or qualifications to display basic knowledge or skill functions (recorded in AQDs) necessary for the prospective assignment have been documented. If these qualifications are met the officer is properly qualified in terms of SPJM for assignment to that proscribed billet.

2. SPJM Application to SWO Career Path

The use of the SPJM is in line with current Surface Warfare career path policy. The ideal of a generalists education as a junior officer is incorporated as part of the SPJM. The optimum career track for a junior officer is to experience a job in each of the three departments or attained qualifications applicable to all three departments. If more

junior officers experienced this broad background assignment to future jobs would be far easier.

3. SPJM and Prediction of Anxiety

The SPJM would assume that an officer with minimum of experience or exposure to his prospective field of assignment is likely to experience less newcomer anxiety over his/her upcoming assignment. As detailed in the Newcomer Theory section of the Literature Review of this thesis (Hughes, 1958; Becker and Strauss, 1956; Merton, 1957; Schein, 1962, 1968; Feldman, 1976; Van Maanen, 1976; Louis, 1980; Ford and Jones, 1988) anxiety or newcomer experience greatly influences initial productivity. By minimizing the anxiety level of expectation one can expect a higher individual learning curve for the job, and thus can expect greater productivity from that officer.

The application of the Ford and Jones (1988) model of four steps of a job life can be appropriately adopted here.

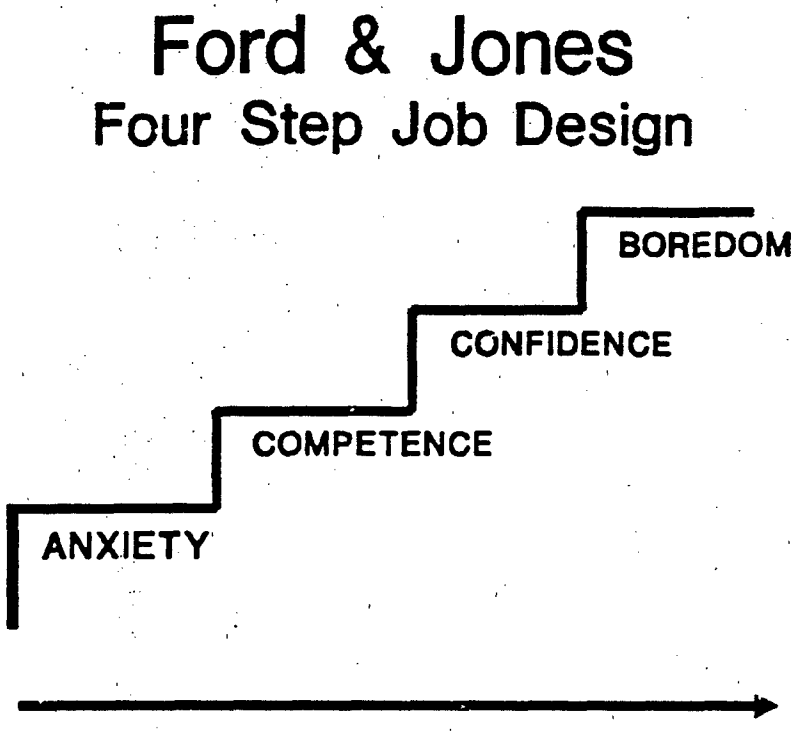


Figure 1

If the assignment process can directly decrease an officer's anxiety of assignment, the process of competence building will commence sooner and thus the officer would sooner reach the step of confidence building. If this train of thought can be assumed correct, the result would be a more productive officer during the short period for which a department head is assigned.

Chapter V will present the proposed simple mathematical formula used to test the outcome of this proposed job match. An anxiety level variable will be a resultant of

this formula. The summation of these resultant anxiety tabulations will apply an overall score to the proposed job match provided for analysis.

V. PRESENTATION OF DATA

Chapter V will provide the results of previous research which contributed directly to the formulation of this thesis. The overall analysis of this data set's cohort in respect to Simplified Person-Job Matching (SPJM) and the findings resultant from this analysis are provided. The overall SPJM match will be presented with respect to the anxiety level associated with the assignment. The mathematical formula and a presentation on this formula's application is offered.

Chapter V will additionally offer the authors theoretical best fit of Simplified Person-Job Match. This Revised Simplified Person-Job Match (RSPJM) fit will adhere to the constraints of number of billets available in each department field. This analysis will attempt to improve the average SPJM fit for this data set. A detailed comparison of the two analysis will be offered.

A. THE FORMULA

The formula utilized to determine the effectiveness of the current assignment systems is simplistic in nature. The first step was to determine a method to normalize the entire cohort. This is necessary due to the fact that each individual officer experienced a different career path enroute to department head

school. The number of previous jobs held varied from one to three. The number of jobs previously held is documented in NOBC fields 1-3 (NOBC1, NOBC2, NOBC3). Thus the denominator of this equation was determined by counting the 135 officers previous jobs and dividing by 135 to determine average NOBC (ANOBC). The ANOBC was determined to be 2.57. Thus, the officers in this cohort held an average of 2.57 jobs prior to arrival at department head school.

The numerator of this equation is the summation of prior NOBCs and AQDs that can be related to the field of the perspective assignment. One AQD is exempted from these observations. The AQD for Surface Warfare Officer qualification (LA9) is required for all students and is therefore common of all students. It is for this reason that it is not considered for formula consideration. For the purpose of the presentation of the formula, related NOBCs and AQDs are represented as RNOBC and RAQD. RNOBC is defined as a previous job experience that is related to the officer's prospective department head billlet assignment. Additionally, a RAQD is assigned if a previous AQD directly contributes to the requirements for the prospective billet assignment.

The resultant of this equation is the Simplified Person-Job Match value (SPJM). Therefore, the equation can be presented as such:

$$(RNOBCs + RAQDs)/ANOBC = SPJM$$

This equation provides a numerical simplified person-job match value. When these values are summed for the entire cohort, a determination as to the overall efficiency of the current assignment process can be obtained. The individual values of this equation varied from zero (0) fit to a fit of 1.945.

The range of the SPJM values can be directly associated with the number of related job experiences or technical qualifications that contribute to the prospective field of assignment. This association is accomplished by simply multiplying the SPJM value by the denominator of the SPJM equation. The range of related experience varied from no prior experience (SPJM = 0) to 5 related job experiences or technical qualifications (SPJM = 1.945). This concept is extremely important in that the higher the SPJM value the more experienced in the prospective field of assignment that officer is.

B. FORMULA IMPLEMENTATION-EXAMPLES

To illustrate the actual calculations for the entire cohort, several example records are provided to demonstrate the implementation of the formula. The following are five examples of the formula implementation. Representation of the extremes, a high anxiety (no experience) or zero SPJM example, as well as a low anxiety (field specialist) or high SPJM examples are provided.

Simplified Person-Job Matching Case Examples

STUDENT A

NOBC1	NOBC2	NOBC3	PAQD	AQD2	AQD3	P.Assign	SPJM
3215	9308	-	LA9	LB2	-	WEPS/CBS	0

Where 3215 = Academic Instructor (General)
9308 = Damage Control Officer
LA9 = Surface Warfare Officer
LB2 = Officer of the Deck Fleet

Formula (0 RNOBCs + 0 RAQDs)/ 2.57 = 0

STUDENT B

NOBC1	NOBC2	NOBC3	PAQD	AQD2	AQD3	P.Assign	SPJM
9370	9308	9582	LA9	-	-	DCA/ENG1	0.778

Where 9370 = Engineering Officer 1200 psi Steam Plant (*)
9308 = Damage Control Officer(*)
9582 = Communications Officer
LA9 = Surface Warfare Officer

asterisk (*) signifies Related NOBC or AQD

Formula (2 RNOBCs + 0 RAQDs)/ 2.57 = .778

STUDENT C

NOBC1	NOBC2	NOBC3	PAQD	AQD2	AQD3	P.Assign	SPJM
3251	9337	9308	LA9	LB2	LC4	ENG	1.167

Where 3251 = Academic Instructor (General)
9337 = Engineering Officer Gas Turbine Plant (*)
9308 = Damage Control Officer (*)
LA9 = Surface Warfare Officer
LB2 = Officer of the Deck Fleet
LC3 = Engineer Officer of the Watch (Gas Turbine) (*)

Formula (2 RNOBCs + 1 RAQDs)/ 2.57 = 1.167

STUDENT D

NOBC1	NOBC2	NOBC3	PAQD	AQD2	AQD3	P.Assign	SPJM
9305	9308	9353	LA9	LC4	BA1	ENG	1.556

Where 9305 = Boiler Division Officer (*)
9308 = Damage Control Officer (*)
9353 = Electrical Officer (*)
LA9 = Surface Warfare Officer
LC4 = Engineer Officer of the Watch (General) (*)

Formula (3 RNOBCs + 1 RAQDs)/ 2.57 = 1.556

STUDENT E

NOBC1	NOBC2	NOBC3	PAQD	AQD2	AQD3	P.Assign	SPJM
9217	9217	9282	LA9	LF7	LB2	OPS	1.945

Where 9217 = Combat Information Center Officer (*)
9217 = Combat Information Center Officer (*)
9282 = Electronic Warfare Officer (*)
LA9 = Surface Warfare Officer
LF7 = Tactical Action Officer (*)
LB2 = Officer of the Deck (Fleet) (*)

Formula (3 RNOBCs + 2 RAQDs)/ 2.57 = 1.945

These five examples offer the spectrum of SPJM fit that exists in this data set. The wide variety of Navy Officer Billet codes complicates the matching of NOBCs to the Prospective assignments. Where possible the NAVPERS 15839D, Manual of Navy Officer Manpower and Personnel Classification, Volume 1, definition of particular NOBCs is interpreted to best match of the three departmental fields. For those NOBCs which could not be directly matched to the prospective assignment a null value is assigned.

The cumulative analysis of the 135 officers incorporated in this data set, is provided as Appendix 2. Appendix 2 will

display all NOBCs and AQDs for each officer in the data set as well as their prospective assignment, Simplified Person-Job match value, theoretical best fit job assignment and theoretical match SPJM value.

C. FINDINGS OF SPJM ANALYSIS

Table 4 offers the overall numerical findings of the Simplified Person-Job Match as well as the results of the Revised Simplified Person-Job Match. Discussions on the findings will follow the presentation of the analysis.

TABLE 4

Presentation of SPJM/RSPJM Data Analysis

Sum of SPJM Values	108.5	Sum of RSPJM Values	132.3
Average SPJM Value	.8041	Average RSPJM Value	.9800
Variance of SPJM	.2089	Variance of RSPJM	.1050
	#/%		#/%
Number of Officers with SPJM = 0	17/13	Number of Officers with RSPJM = 0	0/0
Number of Officers with SPJM = .389	27/20	Number of Officers with RSPJM = .389	15/12
Number of Officers with SPJM = .778	35/26	Number of Officers with RSPJM = .778	49/36
Number of Officers with SPJM = 1.167	42/31	Number of Officers with RSPJM = 1.167	57/42
Number of Officers with SPJM > 1.200	14/10	Number of Officers with RSPJM > 1.200	14/10

D. DISCUSSION ON FINDINGS

This thesis has endeavored to place a negative attitude toward the Surface Warfare Officer Assignment process. Prior personal experience and hearsay has led to a negative impression of the overall assignment process. This statement is supported by previous research efforts of Howell (1980), Estabrooks (1981), Wilcove (1986) and more recently Gilbert (1989). Prior to discussion of the findings of this thesis, it is appropriate to reflect on previous related research projects.

1. Previous Research Efforts Findings

Howell's efforts utilized OPNAV 1910 (7-80)(TEST) form, the Officer Separation Questionnaire, to analyze why mid-grade officer's separate from military service. His 1980 research indicated that lack of ability to sufficiently plan and control career was significant in contributing to mid-grade officers separating from service. Howell's analysis incorporated 133 Surface Warfare Officers. Of these officer nearly sixty percent considered this to be of importance or better as a contributing factor for separation.

In Estabrooks' (1981) research, a much more positive light is shined upon the assignment or detailing process. His efforts used complicated statistical analysis and included the influence of specific variables on career intentions. His conclusions were that over half (68.8 percent) of all Navy

Surface Warfare Officers were satisfied with the detailing process. Estabrooks' approach left satisfaction with the detailing and assignment process as a variable in a complicated formula used to determine career intentions. The influence of his numerous other variables may have influenced his findings.

In Wilcove (1986), an effort was made to determine problems of three unrestricted line communities in officer career development. This Navy Personnel Research and Development Center (NPRDC) efforts utilized some 2,735 responses to a questionnaire concerning Surface Warfare career problems. From these questionnaires it was determined that reassignment and the detailing process was the second most frequent area of negative comment. More specifically Wilcove noted that the detailing system was dated and not an effective way to manage officer assignment.

The research efforts of Estabrooks, Howell and Wilcove contributed to this thesis effort in the conflicting analysis of the assignment process that they offered. This thesis does not offer a survey to weigh the actual satisfaction with the assignment process but rather offers more of means by which to measure the system's effectiveness.

Gilbert's research approached the satisfaction with the detailing process in a different manner. His analysis offered several suggestions to change the assignment system. These suggestions were evaluated by interpretation of a

prepared survey. Gilbert's analysis specifically found, through the use of a survey, that the majority of Surface Warfare Officers, nearly 80 percent, considered themselves to be specialized by departmental area. His survey of 153 Surface Warfare Officers offered the following results:

TABLE 5

Gilbert' Perceived Specialization by Department

Area	Frequency	Percent
combat systems/ weapons specialist	42	27.5
deck specialist	2	1.3
engineer	46	30.1
operations specialist	31	20.3
strictly a generalist	32	20.9
totals	153	100.0

Gilbert's research continued on the specialization ideal for junior officers and the perceived influences and effects that specialization would have on shipboard readiness.

Gilbert's contributions to this research effort are in his analysis of the Surface Warfare Officer's perceptions. If SWOs are truly perceiving themselves as specialists, it would be best to capture this perception and enhance overall officer

satisfaction. One method to enhance this perception would be to change the long standing policy of the generalist training track of junior officers. This change would be hard fought against the traditionalist Surface Navy. This thesis suggest that the Simplified Person-Job Matching captures the SWO's specialist perception, yet does not change current policy.

It is with these three research efforts and their conflicting results that inspired this simplistic approach to best fitting officer personnel to needs of the Navy.

2. Findings of Simplified Person-Job Match

The Simplified Person-Job Match adheres to current Navy policy for SWO career development. The principles of a generalist junior officer career is maintained. The research of Gilbert in specialization in SWO career path is also in line with the SPJM. The more specialized a junior officer is the higher the SPJM value. It is thus that an officer who has a specialist career path and is assigned to that specialty as a department head will have an extremely low anxiety when assuming his new billet.

The overall results of this analysis have indicated that the current detailer and assignment process is doing a marginally adequate job of matching personnel to jobs.

The resultant Average SPJM value of 0.8039 can be translated to an average number of related jobs (RNOBCs) or qualifications (RAQDs) by simply multiplying by the

denominator of the SPJM formula, the ANOBC (2.57). The result is that, on average, an officer of this data set had an average of 2.06 related experiences in his/her prospective field of assignment. When the variance (0.2089) of the SPJM analysis is considered, the range of related experience was between 1.5 and 2.6.

It would thus appear, that the current assignment process is doing an adequate job of Person-Job Matching. This thesis would contest that statement. **By highlighting the fact that 17 officers had a SPJM value of 0 in this analysis, the indication of assignment process adequacy can be seriously questioned.** These seventeen officers are being assigned to positions that they have no previous experience for. The assignment process, described in chapter III, outlines a system for which there is supposed to be a built in screen to prevent such assignment. Even if personal preference is weighed in, these seventeen officers are not properly matched to jobs based on their experience and qualifications. In this cohort, the goal of placing the right person in the right job at the right time is not being adhered to.

If the Ford & Jones four step job model is applied to the 17 zero fit SPJM officers, one could establish that their overall productivity would be sufficiently degraded. The period of anxiety that these officers can expect to experience would delay development in the confidence and competence building sections of this model. Overall productivity of these

crucial members of the shipboard organization would be impaired by this mismatch of person-job.

3. Findings of Revised Simplified Person-Job Match

By simple analysis of the personnel in this cohort, a much better placement of the officers could have been accomplished. By adhering to the constraints of filling the desired billets (57 Engineer. 52 Operations, 26 Combat Systems), an improvement over the currents process can be produced.

Through proper assessment of this cohort of officers career histories and appropriate placement one can drive the overall SPJM value to 0.98. This is a twenty-two percent improvement over the current system. This assessment also reduced the variation of the SPJM to 0.105. This is nearly a fifty percent reduction in the variation. Thus in the revised Simplified Person-Job Match, the average officer would have had between 2.25 and 2.79 related jobs or qualifications for their prospective assignments.

In addition to the increase in the SPJM value and the reduction of the SPJM variance, the previous high anxiety cases (those with a zero fit) have been eliminated. In this evaluation there are no officers being assigned to a position without some previous experience or qualifications relevant to their assignment. This improvement alone would significantly

lower the anxiety experienced by the average officer upon arrival at his prospective assignment.

In addition to the removal of all zero (0) SPJM fits, the revised version greatly reduced the number of low fits (SPJM = 0.389) from 27 officers to 15 officers, and increased the number of good fits (SPJM >= 1.167) from 56 to 71. The officers with SPJM = 0.389 had the minimum exposure to their prospective assignments. These officers averaged only one related job (RNOBC) or qualification (RAQD) in the prospective field of assignment.

E. BENEFITS OF SIMPLIFIED PERSON-JOB MATCHING

Several logical benefits extend from the Simplified Person-Job Matching. The first of these benefits is the cost savings that can be accrued by assigning officers with experience to department head billets. These savings can come from several sources:

- reduction of pipeline training costs
- reduction of costs associated with department head failure
- enhanced department head productivity
- increased ship wide effectiveness
- potential to provide a more meaningful work experience

The quantitative determination of the actual training cost savings could be a follow on research project. An example of this savings can found in the reduction of officers assigned

to engineer billets without the Engineer Officer of the Watch qualification (EOOW). This cohort had 26 officers being assigned to engineering billets without this qualification. An estimation of the cost of this school can be obtained from SWOSCOLCOM Newport, RI. The Revised Person-Job Match reduced the number of prospective engineers without EOOW qualifications (AQDs LC1-LC4) from 26 to 17.

The determination of the cost of failure of a department head and the associated impact on operational commitments would also warrant an additional follow on research endeavor. The failure of some inspection attributed to a department head officer could directly impact the entire crew of a ship as well as the crews of other vessels if operational commitments could not be met.

The enhanced productivity of a department head could also contribute more than just a monetary savings. The assignment of an officer with previous experience would provide a level of confidence from the crew as well as the shipboard command structure. This confidence could enhance the departments productivity and directly reflect on the overall shipboard readiness. These benefits would be hard to quantify yet are definitely worth future indepth research.

By proper job matching the navy potentially provides the officer with a more meaningful work experience. If officers are continually more satisfied with their job assignments the overall job satisfactions of individual officers would

increase. In the long run this increased satisfaction would potentially reduce officer turnover, and result in a more professional and career minded core of officers.

F. ASSIGNMENT PROCESS CONSTRAINTS

This thesis effort has noted that the current assignment process offers marginally adequate job matching results. The actual effectiveness of the detailers and placement officers can be said to be limited by the system itself. In particular two aspects were noted as specific constraints to the current system. These constraints were from two specific points, policy constraints and technological constraints.

1. Policy Constraints

The current policy under which the detailers operate emphasizes the importance of the personal preference of the officers. This policy is in part a result of the negative image that has been perceived by Surface Warfare officers concerning the assignment process. Personnel working in this assignment system have portrayed a set of policy guidelines that are fluid in nature. In particular, one officer referred to the fluidity of assignment policy as "flavor of the day" in nature.

The importance of personal preference in the assignment of officers can not be under emphasized. An officer's preference could contribute to his motivation, productivity and performance. The preference for ship type,

geographical location, and or preferred job may be extremely important to that officer for a variety of reasons (i.e., convenience, family, home, monetary). Yet, these personal preference should not be the blinding influence for irresponsible assignment of officers. The benefits of this policy do not outweigh the consequences of a potential department head failure.

In addition to the policy constraints placed on the assignment system, there exists a technological constraints.

2. Technological Constraints

The technological constraints exist in the limitations of the Officer Assignment Information System (OAIS) and On line Distribution Ad Hoc Information System (ODIS) computer systems. These computer systems, currently employed by the assignment and placement officers, are time consuming, cumbersome and inefficient.

These two computer systems were originally designed to help automate the administrative details and increase the efficiency of the assignment process. The availability of critical information necessary in proper job assignment (ie. written fitrep data, ships operational schedule) is not available through the system and requires time consuming manual labor to attain.

The technological constraint has, in part, been addressed. PERS-472E, Head of Distribution Information has

been tasked with revamping the OAIS system. The new OAIS would be a data base management system that would incorporate numerous sources for better manipulation of the necessary information to make competent personnel assignment. The new system would attempt to incorporate the necessary navy data on billet availability, geographical location, ship type, and rotation date of incumbent officers and match this with officers qualifications, experiences and personal preferences.

This much needed project is currently shelved due to lack of budgetary funding. It is of the utmost importance that this system be funded for improvement of the assignment process.

A computer program using the principles of the Simplified Person-Job Matching could easily be designed and implemented into this new OAIS program. It is highly recommended that this program design be undertaken by a student attending the Naval Postgraduate School. Efforts in this area should seek advise on technical issues and potential travel support from the Bureau of Naval Personnel, Office of Distribution Information (PERS-472E).

Chapter VI will offer the summary and conclusions of this research effort.

VI. SUMMARY AND CONCLUSIONS

Chapter VI will cover a summary of this thesis, the approach methodology, results and conclusions determined from the research. Additionally, Chapter VI will provide recommendations for future work in related topics to the Simplified Person-Job Match established in this thesis.

A. SUMMARY

The objective of this thesis was to determine if the Surface Warfare Officer Department Head Assignment process is properly matching personnel to prospective jobs. This thesis provided a means of making such a determination by the introduction of the Simplified Person-Job Match (SPJM). The SPJM is a simplistic mathematical formula used to determine the fit of an officer to his prospective billet. The formula weighs in an office's experiences, ascertained by individual officer's listed Navy Officer Billet Codes (NOBCs), and his/her technical or skill qualifications, determined by Additional Qualification Data (AQDs), and matches that against a job description of prospective billet.

The initial SPJM analysis of the cohort of 135 officer students attending Surface Warfare Officer Department Head School, Newport, RI, indicated that the current assignment

process provides a marginally adequate Simplified Person-Job Match. The overall results indicated that an average officer of the cohort was being assigned to a prospective billet having had slightly more than two related job experiences or qualifications.

These SPJM results were higher than expected, yet improvement to the system is called for. The reductions of Navy manpower and equipment, as a response to a constricting military budgets, necessitates the optimum utilization of officer manpower. One method to enhance overall officer utilization is to properly match officers to prospective jobs.

B. CONCLUSIONS AND RECOMMENDATIONS

Room for improvement to the current assignment process does exist. This thesis has illustrated that by a simple SPJM analysis of the officer cohort, a 22% increase in the SPJM fit could be obtained. This 22% increase results in the average officer in the cohort having had slightly more than 2.5 related job experiences or qualifications. This increase was accomplished adhering to the needs of the navy to fill a specific number of billets in each departmental area.

In addition to the 22% increase of the overall fit, this simple analysis successfully eliminated the 17 Simplified Person-Job Match fits that were equal to the sum of zero. This elimination of officers having had no previous exposure to the

perspective field of assignment could result in a significant savings in training dollars.

During the research of this thesis, it was observed that the current officer assignment process had several limitations. These noted limitations should be marked for improvement. These improvements can be isolated to three specific areas.

1. **Assignment Policy Recommendation**

The first area for which the Surface Warfare Officer Department Head assignment process can be improved lies in the fluidity of current assignment policy.

The 'flavor of the day' policies dictated to the detailers caused confusions as to the actual goals of the detailing and assignment process. The emphasis on needs of the Navy or that of satisfaction of the officer seemed to polarize the policy shifts. It is strongly recommended that the Navy adopt a policy which is consistent with properly matching personnel to jobs. The officer's experience, qualifications and personal preference should all weigh in the department head assignment decision. But, under no circumstances should an officer with no experience or qualifications for a specific billet be assigned there. This practice is simply not economical or practical in nature. The consequences of such a mismatched assignment to an operational unit could be significant.

2. Technological Improvement Recommendation

The second area for improvement is in the technological aids used in the assignment process. The current computer systems (OAIS and ODIS) used in the assignment process are inadequate for the demands of detailer today. The computer system needs to provide the detailer with critical information concerning billet description, location, qualification requirements, and prospective vacancy dates. The ability to match this data with specific qualified officer's files would greatly aid in proper assignment.

The ability to ascertain the prospective ships employment schedule would also significantly enhance the detailers ability to properly match officers to jobs. The influence of the future ship employment schedule is critical in determining the necessary level of exposure the prospective officer would need to properly fill the billet. Ships operational schedule greatly effects the time available to 'learn' the duties and responsibilities of a specific job. The fact is that operational schedules are not currently weighed in the determination of assignment. This practice needs to be changed immediately.

Work the on the next generation Officer Assignment and Information System (OAIS) was recently shelved due to budgetary constraints. A new priority needs to be placed on this important project. The improvement efforts were being based on a compiled and detailed list of complaints and noted

inefficiencies of the current system. This compiled list was provided to Bureau of Naval Personnel, Office of Distribution Information, PERS-472E, for implementation.

In addition to the recommendation for further improvement efforts to the computer systems used in the assignment process, it is highly recommended that a software program be designed to incorporate the principles of specific job matching. This programming could be undertaken as a thesis project at the Naval Postgraduate School. Coordination on this effort could be directed through PERS-472E.

3. Assignment Process Recommendation

The third area of problem lie in the process itself. The almost adversarial interaction of the assignment and placement officers needs to be eliminated. The incorporation of the next generation OAIS computer system should allow the merging of these two somewhat adversarial jobs. The assignment process is currently built on a bid and barter match system that is cumbersome and ineffective. The incorporation of the next generation OAIS would allow a single individual to properly weigh the needs of the navy and the desires of the officer to determine a proper job match. This decision would be aided by outputs generated by the computer in meeting the requirements of a specific job matching algorithm.

C. FUTURE RESEARCH RECOMMENDATIONS

Through the research of this thesis, several logical recommendations for future research efforts have resulted. These resultant recommendations and their potential benefits are listed as follows:

- Conduct a financial analysis of the cost savings that can be obtained by Simplified Person-Job Matching. Using data from this analysis, determine the cost savings from reduced officer training costs.
- Develop computer software, for incorporation to the next generation Officer Assignment Information System (OAIS), that provides a job matching algorithm for use in the assignment process. A software system that incorporates the officer information and that of the needs of the navy would contribute to more efficient officer management methods. This proposed system may result in a direct personnel savings by reducing the number of those involved in the assignment process.
- Conduct a survey of Surface Warfare Officers perceptions of the Assignment system at the department head level. Determine which factors in the assignment process that are perceived to be unsatisfactory, and propose specific recommendations for assignment process improvements.
- Conduct an analysis on the influence of personal preferences on the assignment match. Recommend individual interviews with assignment and placement officers to determine the weight given to an officer's personal preference in the determination of assignment. Specifically, research is needed in determining the scope of the conflict between officer's personal preference and the needs of the Navy, and how best to satisfy both.

- Research the specific factors effecting newcomer anxiety, and determine how best to minimize the effects of these factors. These factors should include, but not limited to, the influence of previous ship type, prospective job type, marital and family status, personal preference, educational experience, geographical location, and ships operational schedule. This analysis could provide recommendations on how the assignment process could be used to reduce officer's anxiety for perspective assignment and increase officer performance.

- Initiate a survey to attempt to determine the actual duration of the anxiety period as defined by Ford and Jones. Based on this analysis a recommendation as to proper turnover or relieving period for officers could be determined. Additionally, recommendations on desired tour lengths to maximize productivity and satisfaction of sea going officers could be drawn.

- Conduct an indepth study of Surface Warfare Officers that failed to complete a tour as a Department Head on a surface ship. This analysis should concentrate on officers career history (NOBCs and AQDs) prior to assignment to a department head position. This historical analysis would enable a determination as to whether officer failure could be contributed in part to the assignment process. Data for this research would require career history and information pertaining to cause for separation from department head position.

This thesis effort has offered detailed literature review which provided a theoretical background necessary to establish a simplified method to measure the effectiveness of the officer assignment and distribution process. The introduction of the Simplified Person-Job Match or SPJM was offered as a method for which to measure the Navy Military Personnel Distribution System's goal of placing the 'right person in the right job at the right time.' The conclusions drawn from this research was that the current system is providing an adequate person-job match, yet the need for improvement does exist.

Recommended improvements to the assignment process' policy implementation, inadequate technological, and the existing adversarial process were provided.

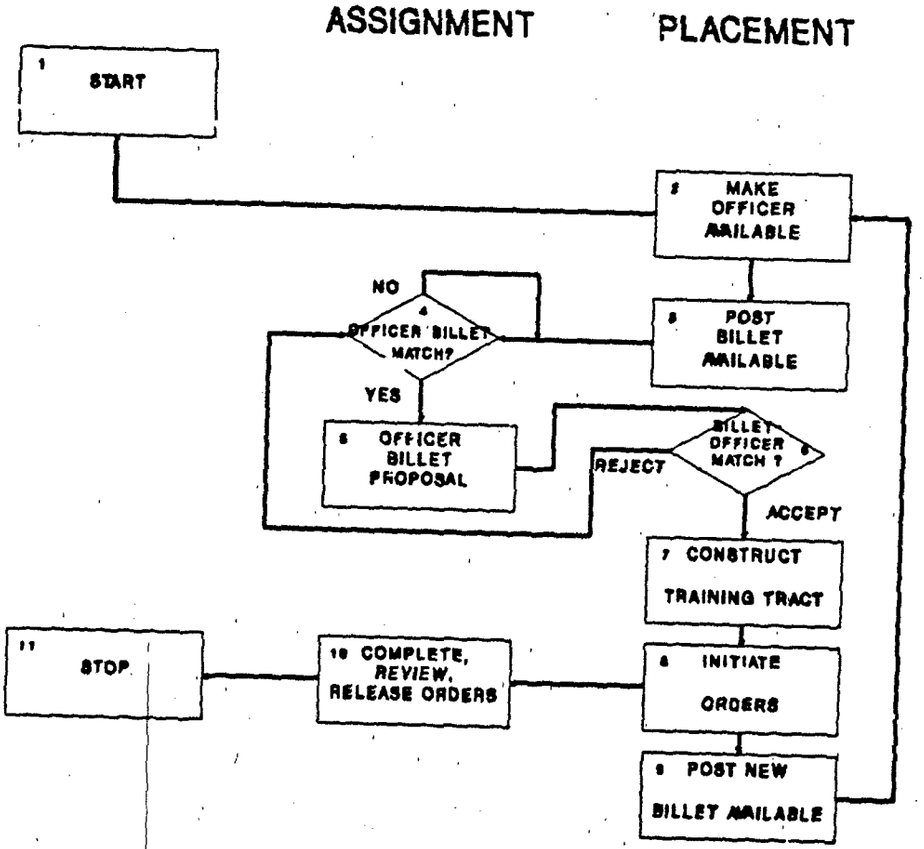
The stated opinions, observations and recommendations offered in this research are strictly those of the author, and should not be attached or assigned to any other individual, branch, or department in the Navy.

APPENDIX A

Graphical Representation of the Officer Distribution Process

The following is structural representation of the officer distribution process, this diagram is reproduced from the Navy Military Distribution System: Officer Distribution Self-Study Guide (Ref. Department of Energy, 1985).

OFFICER DISTRIBUTION PROCESS



APPENDIX B

Simplified Person-Job Match Computations

The following tables are the analysis of the cohort of 135 students attending the Surface Warfare Officer Department Head School, Newport, Rhode Island. This information was obtained from the Bureau of Naval Personnel, Officer Plans and Career Management Branch, PERS-213, on 10 October 1991.

SIMPLIFIED PERSON TO JOB MATCH DATA FILE

OBS	NOBC 1	NOBC 2	NOBC 3	PAQD	AQD 2	AQD 3	PROSP Assgn	SPJM	REC Ass	SPJM REV
1	9370	9308	9582	LA9	-	-	D/ENG	0.778	ENG	0.778
2	3251	9337	9308	LA9	LB2	LC3	ENG	1.167	ENG	1.167
3	9364	3215	9308	LA9	LC3	LC4	X/OPS	0.389	ENG	1.167
4	9247	-	-	LA9	LB2	-	OPS	0.389	CBS	0.389
5	3290	9341	9335	LA9	LB2	LC1	ENG	1.167	ENG	1.167
6	9284	9242	9242	LA9	MP0	BE1	CBS	0.389	CBS	0.389
7	9217	9247	-	LA9	LC3	LF7	W/CBS	1.167	CBS	1.167
8	9247	9226	9341	LA9	MP0	BA1	F/OPS	0.389	ENG	0.389
9	9264	9255	-	LA9	LB2	-	ENG	0	OPS	1.167

10	9065	9076	9206	LA9	LB2	-	CBS	0.778	CBS	0.778
11	9284	9246	9217	LA9	MP0	LB2	F/OPS	1.167	OPS	1.167
12	9421	9242	-	LA9	CE3	CA2	X/OPS	1.167	OPS	1.167
13	2181	9284	9302	LA9	LB2	-	OPS	0	ENG	0.778
14	9341	9252	9242	LA9	MP0	LB2	ENG	0.389	CBS	0.389
15	9284	9284	9242	LA9	MP0	LC4	OPS	1.167	OPS	1.167
16	2605	9308	9238	LA9	LB2	-	OPS	0.778	OPS	0.778
17	3020	9337	9306	LA9	LC4	LB2	ENG	0.778	ENG	0.778
18	9206	9284	9353	LA9	MP0	LB2	CBS	0.778	CBS	0.778
19	3251	9308	-	LA9	LB2	-	CBS	0	ENG	0.389
20	9305	9206	-	LA9	MP0	LC1	W/CBS	0.389	ENG	0.778
21	3298	9283	9284	LA9	-	-	OPS	0.778	OPS	0.778
22	3290	3283	9341	LA9	CA3	CB4	F/OPS	0.778	CBS	0.778
23	9364	9308	9242	LA9	-	-	ENG	0.778	ENG	0.778
24	9274	9341	9065	LA9	LF6	LC1	X/OPS	1.167	OPS	1.167
25	3270	9337	9348	LA9	LB2	LC3	ENG	1.167	ENG	1.167
26	9238	9220	9348	LA9	LD9	LB2	ENG	0.389	ENG	0.389
27	9308	9384	9305	LA9	LB2	-	ENG	1.167	ENG	1.167
28	9337	9348	9242	LA9	LC4	LB2	ENG	1.167	ENG	1.167

29	3290	9605	9305	LA9	MP0	LC4	F/OPS	0.778	ENG	0.778
30	9284	9308	-	LA9	LB2	-	ENG	0.389	OPS	0.778
31	9353	9252	9250	LA9	MP0	LC4	CBS	0.778	CBS	0.778
32	9305	9308	9353	-	LC4	BA1	ENG	1.556	ENG	1.556
33	9336	-	-	LC2	LA9	LB2	ENG	0.778	ENG	0.778
34	9242	-	-	LA9	LB2	-	OPS	0.778	OPS	0.778
35	9341	9242	9242	LA9	MP0	LB2	F/OPS	1.167	OPS	1.167
36	9274	9242	9282	LA9	LB2	-	OPS	1.167	OPS	1.167
37	3270	9252	9250	LA9	LC4	LB2	CBS	1.556	CBS	1.556
38	9364	9308	9341	LA9	MP0	LC3	ENG	1.556	ENG	1.556
39	9217	9308	9306	LA9	LB2	LC4	ENG	1.167	ENG	1.167
40	3270	9302	9252	LA9	MP0	LC1	ENG	0.778	ENG	0.778
41	3126	9217	9242	LA9	BE1	LF7	CBS	1.167	CBS	1.167
42	3020	9242	9242	LA9	LB2	-	OPS	1.167	OPS	1.167
43	9364	9283	2605	LA9	MP0	-	W/CBS	0	ENG	0.778
44	9274	9384	9308	LA9	LB2	-	ENG	0.778	ENG	0.778
45	3290	9353	-	LA9	LB2	-	ENG	0.389	ENG	0.389
46	9217	-	-	LA9	MP0	LB2	OPS	0.778	OPS	0.778
47	9342	9242	9283	LA9	MP0	LC4	ENG	1.167	ENG	1.167

48	3242	9284	9247	LA9	CA3	LB2	W/CBS	1.167	CBS	1.167
49	9063	9253	9242	LA9	LB2	-	ENG	0.389	ENG	0.389
50	9565	-	-	LA9	LB2	-	OPS	0.778	OPS	0.778
51	9582	9237	-	LB2	MP0	BA1	CBS	1.167	CBS	1.167
52	3270	9308	9337	LA9	LC3	LB2	ENG	1.167	ENG	1.167
53	3020	9247	9206	LA9	LC2	LC4	CBS	0.778	CBS	0.778
54	9274	9216	-	LA9	LB2	-	ENG	0	OPS	1.167
55	3270	9217	9305	LA9	LB2	LC4	ENG	0.778	ENG	0.778
56	9341	-	-	LA9	LB2	LC4	ENG	0.778	ENG	0.778
57	3215	9337	9217	LA9	LC3	-	OPS	0.389	ENG	0.778
58	9206	-	-	LA9	MP0	LC3	CBS	0.389	CBS	0.389
59	9082	9242	-	LA9	LB2	-	CBS	0	OPS	1.167
60	7285	9342	5996	LA9	LC4	LB2	ENG	1.556	ENG	1.556
61	9404	9284	2615	LA9	LB2	-	F/OPS	1.556	OPS	1.556
62	3270	9305	9284	LA9	LC4	LB2	CBS	0	OPS	1.167
63	9308	9255	9216	LA9	LB2	LF7	OPS	1.167	OPS	1.167
64	9680	9336	9216	LA9	LC2	LB2	ENG	0.778	ENG	0.778
65	2775	9308	9305	LA9	LC4	LB2	ENG	1.167	ENG	1.167
66	9302	9237	-	LA9	MP0	LB2	CBS	0.389	CBS	0.389

67	9085	9217	9308	LA9	MP0	LB2	ENG	0.389	OPS	1.167
68	3020	9225	-	LA9	LB2	III	OPS	1.167	OPS	1.167
69	9467	9232	-	LA9	LB2	-	OPS	0.778	OPS	0.778
70	9217	9216	-	LA9	MP0	LC3	CBS	0	OPS	0.778
71	3251	9582	9284	LA9	LB2	-	OPS	1.556	OPS	1.556
72	2715	9306	9274	LA9	CA3	LB2	ENG	0.389	OPS	1.167
73	3215	9242	-	LA9	LC2	LB1	OPS	1.167	OPS	1.167
74	9274	9348	9242	LA9	LB2	-	W/CBS	0	OPS	1.167
75	3290	9255	9238	LA9	CB3	LB2	OPS	0.778	CBS	0.778
76	9308	9216	9284	LA9	LB2	LC4	OPS	1.167	OPS	1.167
77	9063	9342	9395	LA9	LC4	-	ENG	1.167	ENG	1.167
78	3290	3215	9341	LA9	LC1	LB2	ENG	0.778	ENG	0.778
79	9293	9206	9283	LA9	MP0	BA1	F/OPS	0	CBS	0.778
80	9342	9282	-	LA9	MP0	LC4	ENG	0.778	ENG	0.778
81	9255	9242	9342	LA9	LB2	LC4	P/OPS	1.167	OPS	1.167
82	9305	3284	9216	LA9	CA3	BA1	ENG	0.389	OPS	1.167
83	9059	9217	9216	LA9	-	-	OPS	0.778	OPS	0.778
84	3270	9247	9238	LA9	LF7	LC2	F/OPS	0.778	CBS	1.167
85	9384	9305	9283	LA9	MP0	LB2	W/CBS	0	ENG	1.167

86	9341	9302	9353	-	LC4	-	ENG	1.556	ENG	1.556
87	9217	9217	9282	LA9	LF7	LB2	OPS	1.945	OPS	1.945
88	9284	9342	9306	LA9	MP0	LC4	OPS	0.389	ENG	1.167
89	3290	9206	-	LA9	CA3	LB2	CBS	0.778	CBS	0.778
90	9085	9252	9242	LA9	LB2	LC4	F/OPS	0.778	OPS	0.778
91	9362	9216	9336	LA9	LA8	LB2	ENG	0.778	ENG	0.778
92	7140	9275	9217	LA9	MP0	LF6	ENG	0.389	OPS	1.167
93	9242	8197	8176	LA9	MP0	LC3	ENG	0.778	ENG	0.778
94	9745	9254	9242	LA9	LB2	-	ENG	0	CBS	0.778
95	3250	9284	9238	LA9	BA1	LB2	OPS	0.778	OPS	0.778
96	9337	9353	9582	LA9	MP0	LC3	ENG	1.556	ENG	1.556
97	3270	9640	9306	LA9	LB2	LC4	ENG	0.778	ENG	0.778
98	3270	9261	9242	LA9	LF6	LB2	ENG	0	CBS	0.778
99	9069	9217	9308	LA9	BN1	LF7	OPS	1.167	OPS	1.167
100	3020	9341	9372	LA9	LC4	LB2	ENG	1.167	ENG	1.167
101	2170	2170	9353	LA9	BL1	MP0	ENG	1.167	ENG	1.167
102	3020	9216	8644	LA9	LB2	-	ENG	0	OPS	1.167
103	9283	9220	-	LA9	MP0	LB2	ENG	0	CBS	0.778
104	9284	9341	9680	LA9	LB2	-	OPS	1.167	OPS	1.167

105	2181	9342	9226	LA9	LF6	LC4	OPS	1.167	OPS	1.167
106	9600	9640	9308	LA9	LB2	LC3	OPS	1.167	OPS	1.167
107	9582	9353	-	LA9	LC4	MP0	OPS	0.389	ENG	0.778
108	9242	9582	9305	LA9	LB2	LC1	ENG	0.778	ENG	0.778
109	9021	9217	9308	LA9	MP0	LF7	OPS	1.167	OPS	1.167
110	3270	9266	9363	LA9	BN1	LB2	OPS	1.167	OPS	1.167
111	9255	9341	9342	LA9	LC4	LB2	ENG	1.167	ENG	1.167
112	3215	3290	9065	LA9	LB2	-	OPS	1.167	OPS	1.167
113	9073	9363	9282	LA9	LB2	-	ENG	0.389	CBS	0.778
114	3020	9341	9335	LA9	CB3	LC4	ENG	1.556	ENG	1.556
115	9353	9242	-	LA9	MP0	LC4	OPS	0.389	ENG	0.778
116	9306	9242	-	LA9	DA4	DG7	F/OPS	1.167	OPS	1.167
117	3250	9284	9252	LA9	LB2	-	OPS	1.167	OPS	1.167
118	9590	9686	-	LA9	MP0	LB2	CBS	0.389	CBS	0.389
119	9216	9335	-	-	MP0	LC4	CPS	0.389	ENG	0.778
120	9217	9283	-	LA9	MP0	LB2	OPS	0.778	OPS	0.778
121	9308	9302	-	LA9	MP0	LB2	ENG	0.778	ENG	0.778
122	9074	9075	9342	LA9	LB2	LC4	ENG	1.167	ENG	1.167
123	9206	-	-	LA9	MP0	LB2	CBS	0.778	CBS	0.778

124	9086	9086	9308	LA9	LB2	-	OPS	1.167	OPS	1.167
125	3421	9283	9252	LA9	LF7	LB2	OPS	1.167	OPS	1.167
126	9421	9302	9284	LA9	CE4	LB2	OPS	1.556	OPS	1.556
127	9735	9284	9306	LA9	MP0	LF6	ENG	0.389	OPS	1.167
128	7984	9308	7930	LA9	-	-	ENG	1.167	ENG	1.167
129	7676	7676	9337	LA9	LC3	LB1	ENG	1.556	ENG	1.556
130	9274	9242	9021	LA9	LF7	LC2	CBS	0.389	CBS	0.389
131	9284	9206	-	LA9	LB2	-	OPS	0.778	CBS	0.389
132	9342	-	-	LA9	LB1	-	ENG	0.389	ENG	0.389
133	9308	9302	9242	LA9	LC3	LF7	F/OPS	0	ENG	1.556
134	9275	3242	9308	LA9	LC3	LB2	ENG	1.167	ENG	1.167
135	3270	9353	9238	LA9	LB2	-	ENG	0.389	CBS	0.389
							SUM OF ANXIETY VALUES	108.5		132.3
							AVERAGE OF ANXIETY VALUES	0.803		0.980
							VARIANCE OF ANXIETY VALUES	0.208		0.105

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