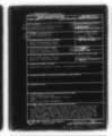
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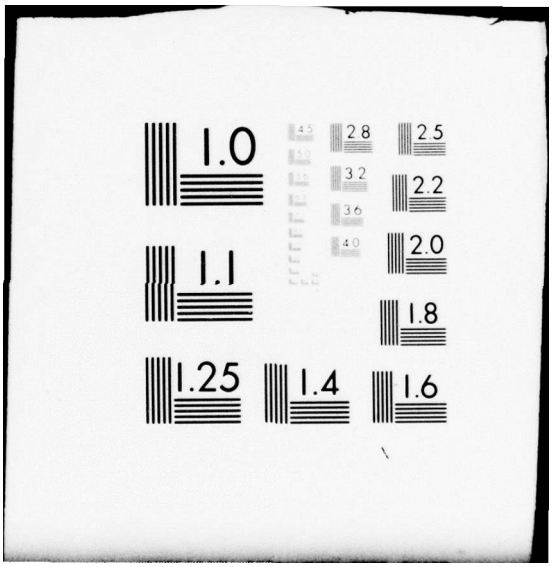
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OF SELECTED ARMY PROMOTION BOARD RESULTS

by

Gerald Lee Jenkins

March 1979

Thesis Advisor: Paul R. Milch

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This thesis presents a review of recent Army officer professional development and an analysis of selected promotion board results. The review consists of descriptions of the Officer Personnel Management System (OPMS) and the pre-OPMS system, a comparison of the two systems, and the reasons for the changeover to OPMS. From this review the following question is developed: Is OPMS meeting its stated goals

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through promotions? To answer this question two Lieutenant Colonel promotion lists are selected for analysis. The analysis consists of a contingency table analysis and individual tests for the difference of proportions for each specialty listed as over or under aligned at the time of the convening of the promotion board. The analysis shows that promotion under OPMS is not alleviating specialty alignment problems for the lists analyzed. To remedy this specialty alignment problem, a two step course of action of providing guidance to promotion boards is recommended.

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An Analysis of Selected Army Promotion Board Results

by

Gerald Lee Jenkins
Captain, United States Army
B.S., University of Wyoming, 1969

Submitted in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN OPERATIONS RESEARCH

from the

NAVAL POSTGRADUATE SCHOOL

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ABSTRACT

This thesis presents a review of recent Army officer professional development and an analysis of selected promotion board results. The review consists of descriptions of the Officer Personnel Management System (OPMS) and the pre-OPMS system, a comparison of the two systems, and the reasons for the changeover to OPMS. From this review the following question is developed: Is OPMS meeting its stated goals through promotions? To answer this question two Lieutenant Colonel promotion lists are selected for analysis. The analysis consists of a contingency table analysis and individual tests for the difference of proportions for each specialty listed as over or under aligned at the time of the convening of the promotion board. The analysis shows that promotion under OPMS is not alleviating specialty alignment problems for the lists analyzed. To remedy this specialty alignment problem, a two step course of action of providing guidance to promotion boards is recommended.

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I. INTRODUCTION

Because of the vital role the officer corps plays in a modern army, the U.S. Army Officer Corps must be developed to meet requirements in the present environment of rapid technological change, increasing specialization, changing attitudes toward job satisfaction, leadership, discipline, and ever changing quantitative requirements. This thesis intends to provide insight into the management of the officer corps by tracing the recent history of officer professional development and by an analysis of selected promotion board results.

Chapter II discusses, in four parts, the recent history of officer professional development within the U.S. Army. The first part of this chapter discusses the development system prior to the present Officer Personnel Management System (OPMS) which was put into effect in 1974. The second part of the chapter discusses the rationale for and the evolution of OPMS. The third part discusses OPMS as it now exists. The final portion of the chapter compares and contrasts the pre-OPMS and OPMS officer professional development.

Chapter III develops the problem to be analyzed in the remainder of the thesis. Additionally, the methodology of addressing the problem is presented.

An analysis of selected promotion board results is presented in Chapter IV.

The conclusions resulting from the analysis are summarized in Chapter V. Additionally, recommendations for guidance to be given to future promotion boards is presented.

A list of OPMS specialties in numerical order is provided in Appendix A. A list of OPMS specialties in alphabetical order is provided in Appendix B. Appendix C contains a cross tabulation by specialties of the raw data results of the promotion boards used for the statistical analysis presented in Chapter IV. Appendices D and E present intermediate tabular results also used in Chapter IV. The final results of the analysis are contained in Chapter IV.

II. RECENT ARMY OFFICER PROFESSIONAL DEVELOPMENT

In 1970, the Chief of Staff of the Army directed the Deputy Chief of Staff for Personnel to improve Army professionalism in several areas. One important area where improvement was required was the policy of officer career management. To determine how this improvement might be accomplished, the Deputy Chief of Staff for Personnel formed a study group. The study group developed a plan for the improvement of officer career management which is known as the Officer Personnel Management System (OPMS). This plan was approved for implementation by the Chief of Staff in 1972.

A considerable amount of time, energy, and money was expended in the study and implementation of OPMS. Therefore, the Army should insure that this system is meeting its goals. It is shown in this thesis that a review of promotion board results is one way of measuring the ability of OPMS to meet its goal.

This thesis presents an analysis of selected promotion board results with respect to OPMS. In order to provide foundation and meaning to this analysis, the specific group of officers which is managed under OPMS must be specifically identified. The management system in effect prior to the implementation of OPMS will be outlined, the reasons for the conversion to the OPMS management discussed, the present OPMS outlined, and the pre-OPMS and post-OPMS methods of officer professional development compared.

The Army Officer Corps is a diverse group of individuals with varied skills. As such, the corps may be partitioned into several categories: officers of the Judge Advocate General's Corps, the Chaplains, officers managed by the Army Medical Department, and officers with Army Promotion List (APL) status. For this thesis only those officers with APL status are being considered. Officers with APL status may be characterized as those belonging to the following branches: Adjutant General's Corps, Air Defense Artillery, Armor, Chemical Corps, Corps of Engineers, Field Artillery, Finance Corps, Infantry, Military Intelligence, Military Police Corps, Ordnance Corps, Quartermaster Corps, Signal Corps, and Transportation Corps. Officers assigned to the following branches are not managed by OPMS and hence will not be considered in this thesis: Army Medical Specialist Corps, Army Nurse Corps, Dental Corps, Medical Corps, Medical Services Corps, Veterinary Corps, Chaplains, and Judge Advocate General's Corps.

For those officers with APL status, professional development is made up of five basic elements: planned and progressive rotation of duties, professional education system, officer evaluation system, promotion system, and individual participation in professional development. Both the pre-OPMS and the OPMS methods of officer personnel development are discussed with respect to these basic elements.

A. OFFICER PROFESSIONAL DEVELOPMENT PRIOR TO THE ESTABLISHMENT OF THE OFFICER PERSONNEL MANAGEMENT SYSTEM

Department of the Army Pamphlet 600-3, Career Planning for Army Commissioned Officers, dated 30 June 1967, contains the doctrine under which officers were developed prior to the implementation of OPMS. The objectives of officer professional development under this system were:

1) To develop officers in the right numbers and with the right skills to satisfy Army requirements, taking advantage of the abilities, aptitudes, training, and interests of the individual officer.

2) To assign officers according to the Army's needs and the individual's competence and desires.

To accomplish these objectives a generalist philosophy was pursued.

The officer was commissioned in a basic branch upon entry to the officer corps. In the basic military development period (0-8 years) the officer was to become well-grounded in the basic skills of his basic branch. Therefore, his assignments were in the branch material area. During the intermediate professional development period (9-15 years) the officer developed an advanced proficiency in his branch skills. Additionally, during this period the officer was introduced to assignments outside of his branch. Thus, assignments during this period were predominantly branch material with some assignments in the joint staff, general staff, and/or branch immaterial area. During the advanced contribution and development period (16-23 years) the officer would have assignments in both the branch material and branch

immaterial areas. During the final major professional contribution period (24-30 years) the officer was assigned in those areas where he could most contribute to the Army. At this time in his career, the officer served as commander of large tactical, logistical, and strategic forces, and in high staff positions. This overall career assignment pattern is shown in Figure 1.

The educational system element of the pre-OPMS development system may be broken down into two parts: military education and civilian education. The military education consisted of the officer's basic course, the branch advanced course, the Command and General Staff College, the Armed Forces Staff College, the senior service colleges, and technical training schools. All newly commissioned officers attended an approximately 9-week long officer's basic course upon commissioning. As soon as practical after promotion to captain, officers attended the branch advanced course which lasted approximately one academic year. All officers who remained on active duty attended both the basic course and the advanced course. Attendance at higher level schools was determined by Department of Army selection. Officers with between 8 and 16 years of service were considered for selection for attendance at either the Armed Forces Staff College (AFSC) or Command and General Staff College (CGSC). Officers selected for CGSC attended for a full academic year while officers selected for AFSC attended for 5 months. The senior service colleges were the capstone of the system.

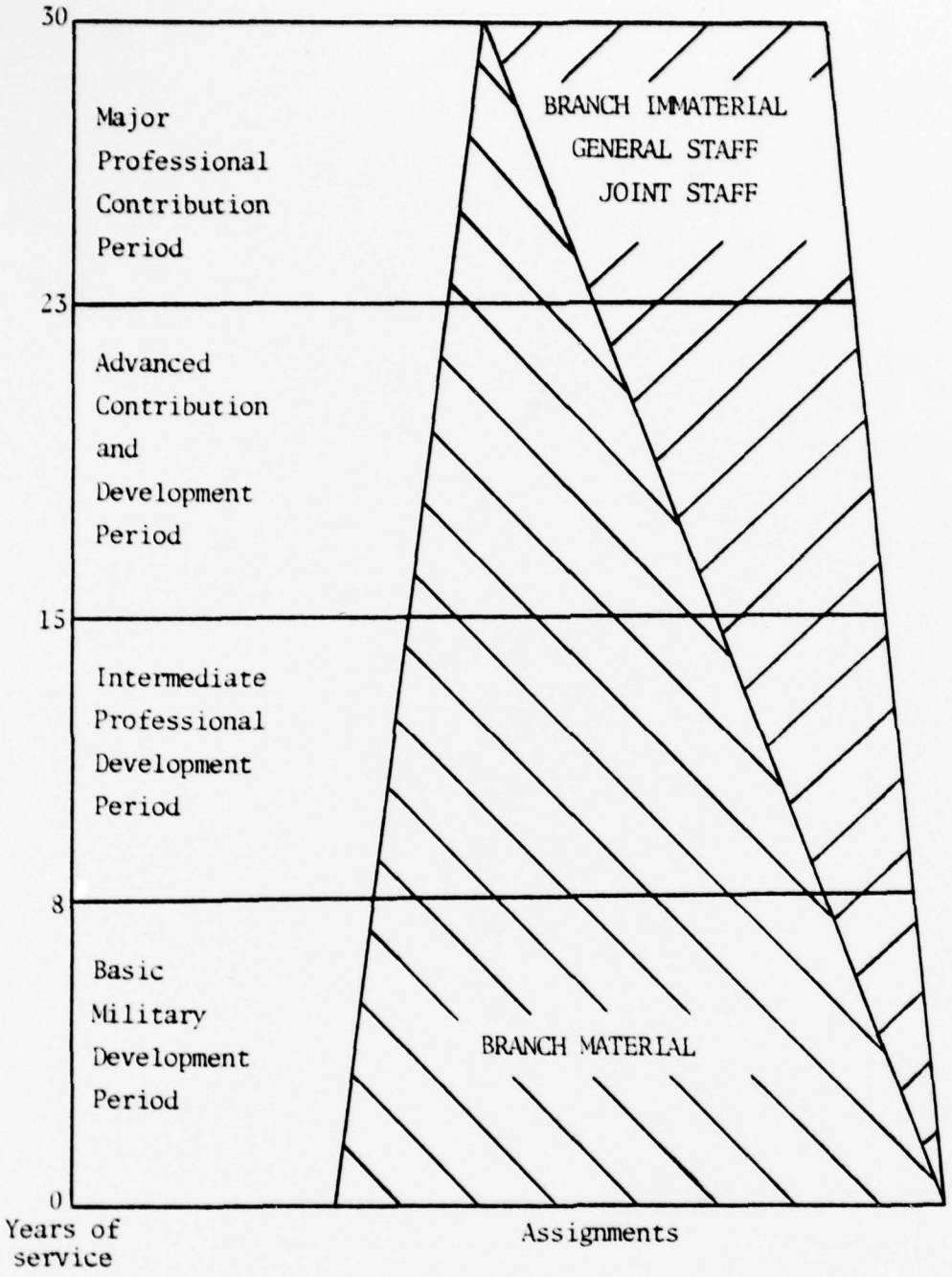


Figure 1. Pre-OPMS Assignment Pattern [4]

Selection for attendance was by Department of Army (DA) selection board. Senior lieutenant colonels and colonels were generally considered for attendance which was for one academic year.

The basic and advanced courses were designed to provide academic schooling for the officer in the skills of his basic branch. The higher levels of schooling provided the officer with a broadened perspective of the Army and with the management skills required in his future assignments.

In addition to the military education discussed to this point, the Army had a system of technical training. This system involved short periods of training in specific skills which would be required in the officer's assignments. Generally, this technical training was concentrated in the basic military development period (0-8 years) and the intermediate professional development period (9-15 years). In the technical training aspect of the educational system, a generalist philosophy prevailed in the schooling of officers in technical areas.

The second part of the military education system was civilian education. This program allowed for completion of baccalaureate degrees, and for limited selection of officers for education leading to master's and doctoral degrees in fields of study where the Army had valid requirements for an officer with this advanced education. Officers selected for education leading to advanced degrees were required to serve in an assignment which was validated as requiring an officer with this level of education.

The third element of the overall officer professional development to be discussed is the officer efficiency report system. The efficiency report was the most important periodic contribution to the officer's record. Efficiency reports were used as a basis for assignments, promotions, selection for schooling, elimination from the service, and similar personnel actions. The report was to contain a comprehensive, objective appraisal of the officer's abilities and capabilities. The objectivity of the reports during the pre-OPMS period was clouded due to inflation of the numerical portion of the report.

A fourth element of the officer professional development system was individual participation in professional development. The individual had a degree of control of his professional development by keeping an up-to-date preference statement on file in his record. This statement was considered in selecting that officer's future assignments and schooling. Additionally, the officer could influence his career by periodic visits to his career branch in the Military Personnel Center (MILPERCEN) in Washington, D.C. to review his official record and for counseling by MILPERCEN representatives. He could also influence his career by periodic self-assessment of his progress and taking or requesting appropriate action.

The final element of the officer professional development system to be discussed from the perspective of the pre-OPMS development system is the promotion system. The promotion

system was designed to move an officer through a career considering statutory limitations and requirements, grade authorizations, opportunity for advancement, equity of consideration, and the age and length of service of the officer at time of promotion. Throughout the pre-OPMS period (and in the present OPMS period) an "up-or-out" policy prevailed. That is, an officer was either promoted to the next higher grade or eventually forced out of the service.

The promotion system is key to the overall officer professional development system. Future progressive assignments and selection for schooling, both military and civilian, depend upon selection for promotion, as does consideration for jobs of increased responsibility. In fact, non-selection for promotion may cause an officer to be forced out of commissioned service. The results of promotion boards are published, and are the only readily available indicator of officer progression through professional development. Therefore, the promotion system may be used as a barometer for measuring an officer professional development system's ability to meet its stated objectives. During this period generalists were developed and generalists were promoted.

B. TRANSITION TO THE OFFICER PERSONNEL MANAGEMENT SYSTEM

When, in 1970, the Chief of Staff, Army, called for an improvement in the policy and mechanics of officer career development, the improvement was deemed necessary for several reasons: technological change, specialization, social change,

and changes in Army quantitative requirements. These reasons were significant contributors to the end of the generalist philosophy of officer personnel development.

Technological change had a profound effect on the Army's structure. The tactical units were receiving new and sophisticated weapons. The computer had become the key tool in personnel, finance, and logistics. These technological changes required increased specialization of both the officer and enlisted corps. The complexity of Army jobs was ever increasing. This complexity required greater lengths of time to master the knowledge and to become competent in such jobs.

Social change was also a reason for needed improvement in officer professional development. In the pre-OPMS generalist era, a "ticket-punching" mentality had developed. In "ticket-punching" an officer pursued those varied assignments which were felt to insure continued promotion to the grade of colonel, regardless of whether the assignments were personally satisfying. A different perceived set of assignments existed for each branch. A typical set for the combat arms included company commander, battalion operations officer, battalion executive officer, attendance at CGSC, staff officer at the Department of the Army (DA) level in operations, force development, or personnel, and battalion commander. Command of companies and battalions was key to success in "ticket-punching" in the combat arms. However, with the decreased size of the Army after the Viet Nam War, the chance for command was ever decreasing. Officers who did not command

wanted some assurance that they too would have a reasonable chance for promotion. Those officers who had begun to specialize also wanted assurance that their specialization had not decreased their chances of promotion. Some officers wanted a chance to exit this race for "ticket-punching" jobs in order to gain assignments in other areas in which they had both skills and interest. These changing attitudes called for an end of the generalist philosophy and its "ticket-punching" outgrowth.

Finally, the Army was in a period of changing quantitative requirements. With the Viet Nam draw-down underway, the Army found that it had too many officers in some professional areas and too few in others. A professional development system which could better react to changes in the Army's quantitative requirements would be a welcome improvement.

C. OFFICER PROFESSIONAL DEVELOPMENT AFTER THE ESTABLISHMENT OF THE OFFICER PERSONNEL MANAGEMENT SYSTEM

Department of the Army Pamphlet 600-3, Officer Professional Development and Utilization dated 1 September 1977 contains the doctrine by which officer development is now directed. The system presented in this pamphlet is known as the Officer Personnel Management System (OPMS). The system is the direct result of the Deputy Chief of Staff for Personnel's study group which was formed pursuant to the Army Chief of Staff's directive to study the policy of officer career management. The objectives of this system are:

1) To develop officers in the right numbers and with the right skills to satisfy Army requirements, taking maximum advantage of the abilities, aptitudes, training, and interests of the individual officer.

2) To assign officers according to the Army's needs and the individual's competence and desires.

3) To improve the motivation, professionalism, and professional satisfaction of the officer corps through a disciplined dual specialty professional development system.

These objectives are precisely the same as the objectives of the pre-OPMS system with the addition of the third objective, that is, the disciplined dual specialty professional development system. To accomplish these objectives a specialist philosophy is now pursued.

The overall philosophy of planned and progressive assignments under OPMS development is to develop the officer into a specialist in two areas. Listings of the various specialties are provided alphabetically in Appendix A and numerically in Appendix B. Under OPMS there are five phases of professional development which relate to military grade. In the Lieutenant phase, the officer is commissioned in a branch and receives a primary specialty which is closely related to his basic branch. In this phase the officer develops skills in his primary specialty through schooling and assignments in that specialty. In the Captain phase, the officer continues to develop his primary specialty and begins to develop an alternate specialty. Prior to the completion of the eighth year of commissioned service, an alternate specialty is designated for each officer. In the Major and Lieutenant

Colonel phases, the officer is developed and serves in assignments in both his primary and alternate specialties. In the Colonel phase, the officer is assigned to positions of high responsibility in either the primary or alternate specialty. This overall career assignment pattern is shown in Figure 2.

At this point it is important to note that primary and alternate specialties are so named because of the order of their designation. Once both specialties have been designated, neither primary nor alternate dominates, rather the two are co-equals.

The education system element of the OPMS officer development system is practically the same as in the pre-OPMS system. The hierarchical progression of basic course, advanced course, Command and General Staff College (CGSC)/Armed Forces Staff College (AFSC), and senior services colleges remains the same. Within this system the basic course provides training in the primary specialty. The advanced courses, CGSC/AFSC, and the senior services colleges provide opportunities for both primary and alternate specialty education. Additionally, technical training as discussed in section A of this chapter provides for additional specialty education. The only difference between the educational systems is that under the pre-OPMS system the thrust was to develop a generalist whereas under OPMS the thrust of technical training is to support the officer's two specialties. The civilian education portion of the education remains basically the

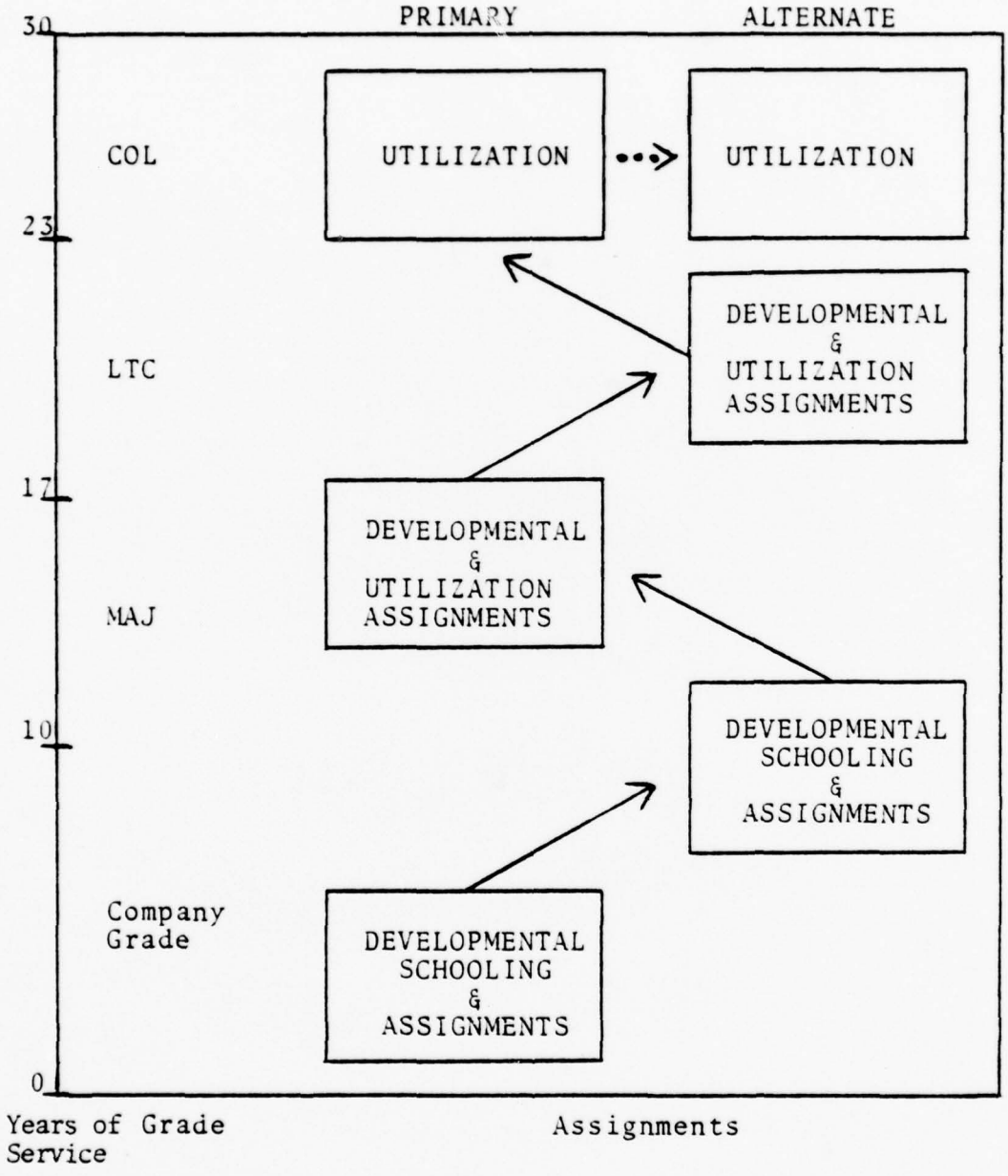


Figure 2. OPMS Assignment Pattern [5].

same as in the pre-OPMS days. Here again the thrust of civilian education has changed to support the dual specialty philosophy.

The efficiency report system serves the same purpose under OPMS as it did under pre-OPMS officer development. Although the format of the report has gone through several changes in the recent past, the efficiency report still is designed to represent a periodic, comprehensive, objective appraisal of the officer's abilities and capabilities. The inflation that was evident in the pre-OPMS era has carried over into present times. This inflation has greatly detracted from the usefulness of the efficiency report system.

As in the pre-OPMS officer professional development system, the individual plays a very active role in his own professional development. This role remains basically the same as under pre-OPMS through the use of the preference statements, periodic visits to the Military Personnel Center to review his official record and to benefit from MILPERCEN counseling, and by periodic self-assessment.

In the changeover from the pre-OPMS to OPMS officer professional development, the promotion system has been carried over basically intact. The "up-or-out" policy is still followed. Adjustments have been made to the composition of promotion boards in order to insure that the promotion board may give a fair appraisal to each officer's record under the dual specialty system. As discussed in the pre-OPMS case, the promotion board results may be used as a barometer

to measure the existing system's ability to meet its stated goals.

D. COMPARISON OF OFFICER PROFESSIONAL DEVELOPMENT BEFORE AND AFTER THE ESTABLISHMENT OF THE OFFICER PERSONNEL MANAGEMENT SYSTEM

From the foregoing discussion it is easy to see that the mechanics of the pre-OPMS and OPMS methods of officer career development are readily comparable. The main difference between the two systems is their philosophy. In the pre-OPMS system the objective was to develop generalists; whereas, in the OPMS system the objective is to develop specialists.

Both systems have the same five elements: planned and progressive rotation of duties, professional education system, officer evaluation system, promotion system, and individual participation in professional development. Both systems have essentially the same goal, which simply stated is to provide the appropriate number of officers with the right skills at the right time to meet the Army's requirements while considering the individual's desires. The professional education system, promotion system, and individual participation in professional development serve essentially the same function under both OPMS and pre-OPMS officer development systems.

The two systems do differ in their treatment of planned and progressive rotation of duties. For the first eight years of commissioned service, the two systems are very closely aligned. In the pre-OPMS system, basic branch skills

are developed. Roughly speaking, basic branch skills are the same as primary specialty skills. However, after the eighth year, the two systems diverge. Under the pre-OPMS system an individual officer is developed into a generalist and during his senior years (24-30 years of service) serves as a generalist. However, under the OPMS system the officer is developed to be a specialist in two different areas. In this system the officer serves in his senior years in either of his two specialties.

III. PROBLEM DEFINITION AND METHODOLOGY

In the preceding chapter the recent history of officer personnel development prior to and after the institution of the Officer Personnel Management System (OPMS) was discussed. The rationale for conversion to OPMS was also discussed and a comparison of the pre-OPMS and OPMS methods of officer development was presented. In the first part of this chapter the problem that is the main subject of analysis of this thesis is developed. The methodology for addressing that problem is given in the second part of this chapter.

In the preceding chapter the goal of OPMS was stated. Basically, the goal is to develop the right number of officers with the right skills and at the right time to meet Army requirements through the use of a disciplined dual specialty system. Also, one of the reasons for converting to OPMS was the need to have a system that could adapt to changing Army requirements. One may conclude from the foregoing that the pre-OPMS method of officer professional development did not do an adequate job of meeting its goal. The goal of the pre-OPMS system, as previously presented, was essentially the same as the OPMS goal except a generalist philosophy prevailed rather than the present specialist philosophy.

Now, if the pre-OPMS system did not do an adequate job of developing the right number of officers with the right skills and at the right time, what assurance is there that

the present OPMS method of officer development is doing the job any better? This is the question which the remainder of this thesis addresses.

As discussed in Chapter II, the OPMS method of officer professional development is multi-faceted. In order to fully answer the question of whether OPMS is doing a better job of officer development than the pre-OPMS method, one would have to analyze each of the five elements of the system. Since many of the elements enter into the overall impact of OPMS in subtle ways, it would be a difficult task to quantify the impact of each of these elements. However, the promotion system of OPMS is easily quantified by promotion board results. Also, the promotion system to a degree reflects the success of the other four elements of OPMS. There may be other ways for OPMS to meet its goal, but the promotion system is the strongest and most evident means to that end. Therefore, the problem analysis presented in this thesis will be restricted to analyzing the question of whether OPMS is doing a better job through an analysis of the promotion system.

To answer this question, this thesis analyzes the results of the two most recent Lieutenant Colonel promotion boards. These two promotion boards results were selected for analysis because at this point in time, the ability of OPMS to meet its stated goal will be most evident here. As shown in the last chapter, the officer does not begin to develop his second specialty until after his eighth year of commissioned service.

Therefore, analysis of Lieutenant or Captain promotion boards would offer no information on the impact of OPMS. At present, officers are considered for promotion to Major in their tenth year of commissioned service. Therefore, for these officers the impact of the dual specialty feature of OPMS has had very little time in which to take effect. To analyze the results of boards considering officers for promotion to Major would shed little light on the question as to whether OPMS was meeting its goal. That leaves Lieutenant Colonel and Colonel promotion board results as possible candidates for analysis. Colonel promotion board results were ruled out for the following reason. OPMS implementation began in 1972 and was completed in 1974. Therefore, officers who have recently been considered for promotion to Colonel served for most of their careers under the pre-OPMS system and for these officers it was rather late in their careers for OPMS to have much effect.

By the process of elimination, Lieutenant Colonel promotion board results were selected. However, there is more rationale for selecting Lieutenant Colonel board results than just this process of elimination. Under OPMS, during the Major phase and the Lieutenant Colonel phase the officer is to continue to develop his primary specialty and to develop fully his alternate specialty. Therefore, the effects of OPMS should be evident in the results of promotion to Lieutenant Colonel. Additionally, OPMS was implemented early enough in the careers of those officers considered for

promotion to Lieutenant Colonel so that they could begin to develop an alternate specialty while they were in the grade of Major.

Having established that analysis of the results of Lieutenant Colonel promotion boards should reveal the impact (if any) of OPMS, the two most recent boards (1977 and 1978) were selected. Since OPMS implementation began in 1972 and was concluded in 1974, the two boards allowed for between three and six years for officer development to take place under this system. Analysis of the results of earlier boards would be less likely to reveal the impact (if any) of OPMS.

The results of promotion boards may be (and usually are) partitioned into three categories: promotion from the secondary zone, from the primary zone (previously considered), and from the primary zone (first time considered). Officers selected from the secondary zone are usually one to two years junior in time in grade to those officers in the primary zone (first time considered). Promotions from the secondary zone usually account for approximately five percent of the total number of officers selected for promotion. Officers in the primary zone (previously considered) are senior in time in grade to those officers in the primary zone (first time considered). Promotions from the primary zone (previously considered) usually account for approximately ten percent of the total number of officers selected for promotion. Because of special criteria used for selection for promotion of officers in the secondary zone and because of problems of

accurately identifying (in the data base used) those officers who were considered for promotion from the primary zone (previously considered), only the promotion board results for those officers in the primary zone (first time considered) are analyzed. In addition, the bulk of officers (approximately 85 percent) who are promoted by a given board come from the primary zone (first time considered). Therefore, promotions from this category represent "typical results."

Having addressed the question of why Lieutenant Colonel promotion board results were selected for analysis, the question of the perspective from which the results of the boards are to be viewed must be addressed. This thesis analyzes the results of the two most recent Lieutenant Colonel promotion boards with respect to those specialties which are either over or under aligned. An under aligned specialty by grade is one for which the Army has more requirements than it has officers possessing that specialty in the given grade. Conversely, an over aligned specialty is one for which the Army has fewer requirements than it has officers possessing that specialty. Those specialties which are not classified as either over or under aligned are referred to as balanced specialties. Periodically, the Army's Military Personnel Center publishes a list, by grade, of those specialties which are either under or over aligned.

"Requirements" referred to here are not the actual requirements but rather an estimate of the numbers of officers needed to support the specialty given the number of required positions.

This estimate is derived by multiplying the required number of positions by a constant (usually in the interval from two to three). The Army needs this estimated number of officers to fill the required number of positions with officers having the given specialty and also allow these officers to serve in positions which require their alternate specialty and to spend time for schooling necessary to their education.

An example may be illustrative here. Suppose the Army had actual requirements for 156 officers in the grade of Lieutenant Colonel with finance skills (OPMS specialty 44). In addition, suppose that the Army had 164 Lieutenant Colonels with the finance specialty. At the outset it may appear that the Army has enough officers to fill requirements, but some of these officers may be in school or serving in their other specialty.

Suppose the constant in this case is 2.5. The use of this constant reflects a policy which allows 40% of officers with the finance specialty to be assigned to a job requiring a finance specialty. Additionally, 40% of officers with a finance specialty are assigned to jobs in their alternate specialties. Finally, this policy allows for a 20% overhead for schooling of these officers. These numbers are illustrative only. Actual multipliers used vary from specialty to specialty. Thus, for this example, the real requirement for Lieutenant Colonels with finance specialty is 390. Hence this specialty may be designated as under aligned, since only 164 such officers are available.

The Army is a closed hierarchical system. That means that with the exception of appointments in the grade of Second Lieutenant all other grades are filled by promotion from the next lower grade. Within a system of this type, every year there are officers moving into the grade in question by promotion into the grade. Also, in that same year there are officers moving out of the grade in question by leaving the system or by being promoted to the next higher grade.

If the Army is under strength in a given skill at a given grade, there are only three sources from which the deficit of officers with that skill can be made up. First, officers from the next lower grade with the required skill can be promoted in sufficient numbers to make up the deficit. Secondly, officers at the given grade who possess the required skill but do not have that skill designated as one of their specialties may request to have one of their designated specialties replaced by the specialty which is under aligned. Finally, the Army could stop promoting officers with the under aligned specialty out of this grade, reducing the deficit from the top. While the last method is an alternative, it is not viable in our present system and will not be considered.

An analogous argument follows for over aligned specialties. The Army can reduce the overage at a given grade by promoting fewer of the officers from the next lower grade with the over aligned specialty. A reduction will occur because in that same year officers with the over aligned specialty are moving

out of the system or being promoted to the next higher grade. Also, the Army can induce officers having the over aligned specialty to request to change their over aligned specialty to a balanced or under aligned specialty for which they have the skill. Finally, the Army could promote more of these officers with the over aligned specialty to the next higher grade, thereby reducing the overage from the top. This final method, again, is not a viable alternative and will not be considered.

If OPMS is to meet its stated goal of producing the right number of officers at the right time with the right skills through a disciplined dual specialty system, then the system must have a means of correcting over or under aligned specialties. The promotion system provides one such means. If officers having under aligned specialties are promoted at rates higher than average, then the deficit of officers with this specialty will be made up in two ways. First, the higher promotion rate alone will partially fill the deficit. Secondly, specialties which have promotion rates that are higher than average will attract officers. This attraction will lead to requests from officers that one of their specialties (particularly one having a lower than average promotion rate) be changed to a specialty with high promotion rate (i.e., an under aligned specialty).

A similar argument follows for over aligned specialties. If officers having over aligned specialties are promoted at rates lower than the average, then the surplus of officers

will be reduced in two ways also. First, the lower promotion rate alone will partially reduce the surplus since officers are constantly moving out of this specialty in this grade either by leaving the service or by promotion. Secondly, specialties which have promotion rates lower than average will not be attractive to officers. This repulsion will lead to requests from officers to have their over aligned specialty changed to a specialty with a high promotion rate (i.e., an under aligned specialty).

From the above argument the problem to be addressed by the analysis in the next chapter may be more fully stated. That is, if OPMS is meeting its goal as evidenced by the results of the last two Lieutenant Colonel boards, one should expect a larger than average proportion of officers having under aligned specialties to be selected for promotion. Conversely, one should also expect a smaller than average proportion of officers having over aligned specialties to be selected for promotion.

At this point, two potential criticisms of the analysis contained in this thesis should be addressed. First, one may say that it is still too soon in OPMS officer professional development to conduct an analysis of this type. This argument may have some merit but it lacks insight into the way things become institutionalized in an organization such as the Army. It is better, in this case, to do an analysis of this type too soon than too late. If the analysis points out some shortcomings with the system before the method of

operating under the new system becomes institutionalized, it is relatively easy to make corrections. However, if the method becomes ingrained it is quite difficult to make any corrections.

Secondly, one may say that a multitude of other factors besides just the two specialties are considered when an individual officer is selected (or not selected) for promotion. A review of the guidance given to the promotion boards gives a majority of these other criteria. Guidance to promotion boards specifies that the "best qualified" method of selection as prescribed in AR 624-100, Army Promotion System, is to be used. However, before an officer can be "best qualified" he must be considered "fully qualified." In order for an officer to be "fully qualified" the selection board members satisfy themselves that the officer is qualified professionally, morally, has demonstrated integrity, and is capable of performing the duties expected of an officer with his qualifications in the next higher grade. [8] From the group of officers considered "fully qualified," the board is to select the requisite number, a number which is also supplied in the guidance to the board. These officers must be the best of the "fully qualified" officers. Guidance to the boards specifies that promotion is to be based on potential to perform in the next higher grade rather than as an award for past performance.

The guidance to the boards also points out various other factors to be considered, the importance of efficiency reports, and a description of the Officer Personnel Management

System (OPMS). The description of OPMS emphasizes the need for an officer to develop two specialties. Also, the transition from a generalist to a specialist philosophy is discussed. Specifically, in the OPMS section of the guidance it is stated that if an officer is among the best in his field and meets the high standards of selection, he should be selected. [8] Also, it is stated that all assignments are considered to be important assignments. Additionally, the 1978 board was supplied with a list of under aligned specialties.

Now the board's problem is how to determine the "best qualified" officers from the "fully qualified" officers. The guidance given to the board is sufficient to enable the board to determine whether or not an officer is fully qualified; however, the guidance is not particularly helpful in determining who from that group is "best qualified."

In the final analysis it is the needs of the Army that must prevail. [5] If the Army is short or over strength in officers in a certain specialty, those officers should receive special consideration for promotion. If officers in these shortage specialties have selection rates which are average or below average, the shortage will remain and may even be exacerbated. Also, if a given shortage specialty has selection rates which remain below average year after year, younger officers will shun this specialty for fear of non-selection for promotion. Similarly, if officers with over strength specialties are promoted at or above the average selection

rate, the problem will remain. This problem may also be compounded if selection rates for officers in these over-strength specialties continue at above average rates. In this case, younger officers will seek this over aligned specialty in order to increase their chances of promotion, thereby further increasing the overage in that specialty.

To summarize, the problem that has been developed may be stated by claiming that if OPMS is to accomplish its task, one would expect to observe a higher than average promotion rate for officers having under aligned specialties and a lower than average promotion rate for officers having over aligned specialties. To address this problem the following methodology was used. First, a data base for each promotion board was established. A cross tabulation by each existing pair of OPMS specialties was then prepared for both those officers considered and selected for promotion. This cross tabulated data was then aggregated into classes based on the alignment of each specialty. A contingency table analysis was then performed on this data. Finally, a statistical test was made of the difference between proportions for selected specialties. The specialties selected were those designated as either over or under aligned at the time of the convening of the promotion board. The proportion promoted from each of those over or under aligned specialties was compared to the proportion promoted from all other specialties.

The data base for each list was established from an extract of the automated personnel history files maintained

at the Defense Manpower Data Center (MARDAC) in Monterey, California. MARDAC maintains these personnel history files on a quarterly basis. These personnel history files are extracts of the Army's Military Personnel Center's (MILPERCEN) automated personnel records at a given point in time. Therefore, it is possible to obtain an accurate picture of the Army's personnel situation at any given time in the recent past by selecting and reviewing the personnel history file dated in the given quarter for which a review is desired. To establish the data bases for this analysis, those history files which were dated in the quarter of the convening of the promotion boards were selected. A program was prepared which extracted from these selected personnel history files the records of all OPMS managed Majors who were in the primary zone (first time considered) as announced for the board. This extract was printed alphabetically and compared to hard copy listings of officers considered and selected provided in the published promotion board results. A second program was prepared to cross tabulate the edited data by primary and alternate specialties.

The cross tabulated data was then partitioned into classes. The classes consisted of one each for the specialties that were over or under aligned and a final class which was made up of all the other balanced specialties. A contingency table analysis was then performed on these classes of the data. For a detailed description of contingency table analysis see reference 6, pages 451-454. The hypothesis being tested by

this statistical tool is that the probability of being selected for promotion is independent of the classes of specialty alignment.

If the contingency table analysis showed that the probability of promotion was not independent of the classes of specialty alignment, then additional testing would be required, since the contingency table analysis does not isolate those classes which have a higher or lower promotion probability. Therefore, tests for difference of pairs of proportions were performed on the data. For each of these tests the data was separated into two classes. The first class contained all those officers who had the specialty under question as either a primary or an alternate specialty. The second class contained the remainder of the officers. Proportions were formed for each class by taking the ratio of the number selected and the number considered. The test was performed to decide whether the two proportions were equal or not. A detailed explanation of the test of differences between two proportions is presented in reference 7, pages 552-555. A separate test was performed for each of the specialties designated as over or under aligned at the time the board was convened.

IV. PROBLEM ANALYSIS

The earlier chapters of this thesis laid the groundwork for the analysis that is presented here. Briefly, the problem that has been developed may be stated by asking whether OPMS is doing its job as evidenced by promotion board results. If so, one should expect a higher than average selection rate for promotion to Lieutenant Colonel for those Majors who have an under aligned specialty and alternately a lower than average selection rate for those Majors who have an over aligned specialty. The testing of this hypothesis is divided into two parts for each of the two lists to be analyzed.

Section A of this chapter will present the analysis of the 1977 list in three parts. First, a discussion of the accuracy of the data base used for this list is presented. Second, a contingency table analysis is presented where the considered and selected officers are subdivided into classes based on specialty alignment. Third, a statistical test for the significance of the difference between two proportions is conducted for each of the specialties designated as either over or under aligned at the time of the convening of the promotion board. Section B of this chapter presents a similar analysis of the 1978 list. Section C presents a summary of sections A and B.

A. 1977 PROMOTION BOARD RESULTS ANALYSIS

The data base which was used for the analysis of the 1977 recommended list for promotion to Lieutenant Colonel was established in the following manner. The Defense Manpower Data Center (MARDAC) officer history file dated 31 March 1977 was used to establish the working data base. From this history file all records for Majors managed under OPMS having dates of rank in the grade of Major between 1 September 1968 and 30 June 1969 were extracted to form a disk file. Initially this disk file contained 1692 entries that met the requirements of the extract program.

This disk file was edited on a name by name basis by comparison with the considered and selected lists published in the promotion board results. Editing was done in an interactive mode and the number of entries reduced to 1586. The 106 entries that were deleted were the records of Majors who were selected on the previous list but for whom a promotion transaction had not yet been processed and National Guard and Army Reserve officers on active duty who would not be considered by an Army Promotion List (APL) board. Of the 1586 entries on this edited working data base 1063 were selected for promotion.

A cross tabulation by OPMS specialties was prepared for this data base; the results of that cross tabulation are shown in Appendix C. The actual number of officers considered for promotion in the primary zone (first time considered) as announced in the promotion board results was 1591 of which

1068 were selected for promotion. [8] Therefore, the working data base for this analysis is more than 99% accurate.

At the time of the convening of this promotion board, the following specialties were under aligned: 21 (Engineer), 27 (Communications-Electronics Engineering), 31 (Law Enforcement), 37 (Electronic Warfare/Cryptology), 43 (Club Management), 44 (Finance), 49 (Operations Research/Systems Analysis), and 93 (Logistics Services Management). The following specialties were over aligned: 15 (Aviation), 36 (Counterintelligence/ Human Intelligence), 54 (Operations and Force Development), 71 (Aviation Materiel Management), 76 (Armament Materiel Management), and 86 (Traffic Management). [10] Specialties not listed as over or under aligned are assumed to be balanced in alignment.

For the contingency table analysis, all officers considered and selected were placed into one of fifteen classes. Each of the first fourteen classes consisted of all those officers who had an over or under aligned specialty for either their primary or alternate specialty. For instance, class 31 consists of all officers having specialty 31 (Law Enforcement) as either a primary or alternate specialty. A final fifteenth class was made up of the remainder of the officers not put into the first fourteen classes. This fifteenth class consists of all the officers whose primary and alternate specialties are balanced; hence, this class was named balanced.

In order to conduct a contingency table analysis, both observed and expected frequencies for each cross classification

of the data must be computed. Table I shows the observed and expected frequencies for the classifications being used here. The observed frequencies are computed from the data contained in Appendices C and D. Each expected frequency in the table is computed by multiplying the sum of the observed column by the sum of the two numbers appearing in the observed category for each classification, and dividing by the sum of all observed entries in the table.

TABLE I: CONTINGENCY TABLE, 1977 LIST

Category	Selected		Not Selected	
	Observed	Expected	Observed	Expected
Over				
15	97	103.09	58	51.91
36	33	51.21	44	25.79
54	130	120.38	51	60.62
71	8	8.65	5	4.35
76	2	3.33	3	1.67
86	13	13.30	7	6.70
Under				
21	73	71.83	35	36.17
27	21	19.29	8	9.71
31	34	35.25	19	17.75
37	25	25.27	13	12.73
43	4	5.99	5	3.01
44	16	18.62	12	9.38
49	53	41.90	10	21.10
93	11	15.30	12	7.70
Balanced	592	578.61	278	291.39

From this table a χ^2 statistic can be computed. This statistic is given by $\chi^2 = \Sigma \frac{(\text{Observed-Expected})^2}{\text{Expected}}$. The χ^2 statistic for the data contained in Table I is 41.4753 with 14 degrees of freedom. This statistic is significant at a level beyond 0.001. For this analysis a decision level of 0.05 is used. The hypothesis of the independence of the classifications may be rejected if the computed significance level is less than the decision significance level. Since in this case the computed significance level is less than the decision significance level, the hypothesis may be rejected. Therefore, it can be concluded that the probability of promotion is not statistically independent of the classification to which the officer is assigned.

Since the contingency table allows the rejection of the hypothesis of independence of the classification, individual tests of the significance between two proportions may be conducted for each of the specialties designated as either over or under aligned. For each of these tests the officers considered and selected are divided into two classes: those officers having the specialty in question (either as a primary or alternate specialty) and those not having the specialty. For each of the two classes, proportions are formed by dividing the number of officers selected by the number of officers considered. Let P_1 represent the proportion of selection for promotion for those officers not having the specialty in question and P_2 represent the proportion of selection for promotion for officers having the specialty in question.

The proportion P_1 is used as an estimate of the overall selection rate for the test. The intermediate data (extracted from the data in Appendix C) needed to compute P_1 and P_2 is tabulated in Appendix D.

The hypothesis being tested may be written in the following manner,

$$H_0: \quad P_1 = P_2 \quad \text{(Null Hypothesis)}$$

$$H_1: \quad P_1 \neq P_2 \quad \text{(Alternate Hypothesis)}.$$

In order to perform the test of this hypothesis a normal statistic must be calculated. The test statistic, Z, is given by the following formulas:

$$Z = \frac{P_1 - P_2}{\hat{\sigma}}$$

where $\hat{\sigma} = \sqrt{P(1-P)\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}$

$$P = \frac{N_1 P_1 + N_2 P_2}{N_1 + N_2}$$

N_1 = number of officers considered for promotion not having the specialty in question

N_2 = number of officers considered for promotion having the specialty in question

and P_1 and P_2 are as defined above.

From this normal statistic, the significance level is computed by finding the area under the normal curve going towards the extreme. For example, if the normal statistic Z is negative, then the area under the curve from $-\infty$ to Z is

the significance level. If Z is positive, then the area under the curve from Z to ∞ is the computed significance level. For this test a decision significance level of 0.10 is selected. As is common in a test of this type, this significance level is split into 0.05 levels for each of the extremities of the area under the normal curve. Therefore, for any computed significance level smaller than 0.05 the null hypothesis ($P_1 = P_2$) may be rejected. Table II summarizes the results for each of the statistical tests for each of the over or under aligned specialties.

TABLE II: TESTS FOR DIFFERENCE OF PROPORTIONS RESULTS, 1977 LIST

Specialty	P_1	P_2	Test Statistic	Significance Level
Over				
15	.675	.626	1.239	.1077
36	.683	.429	4.624	.0000
54	.664	.718	-1.459	.0723
71	.671	.615	0.422	.3365
76	.671	.400	1.287	.0991
86	.670	.650	0.194	.4231
Under				
21	.670	.676	-0.130	.4483
27	.669	.724	-0.623	.2666
31	.671	.642	0.453	.3253
37	.671	.657	0.164	.4347
43	.672	.444	1.445	.0742
44	.672	.571	1.122	.1309
49	.663	.841	-2.947	.0016
93	.673	.478	1.973	.0270

From Table II one may conclude that among the over aligned specialties only specialty 36 (Counterintelligence/ Human Intelligence) is significantly different from the overall average. In this case it may be concluded that of all the officers having over aligned specialties only officers having specialy 36 were promoted at a rate below average. Also, it may be concluded that the promotion proportions for all the other over aligned specialties are not significantly different from the average. Also from Table II one may conclude that of all officers having under aligned specialties only officers having specialties 49 (Operations Research/ Systems Analysis) and 93 (Logistics Services Management) were promoted at rates significantly different than the average. In the case of specialty 49, officers having this specialty were promoted at a rate significantly higher than the average. For specialty 93, officers having this specialty were promoted at a rate lower than the average. Also, one may conclude that the remainder of the officers having under aligned specialties were promoted at rates not significantly different than the average.

B. 1978 PROMOTION BOARD RESULTS ANALYSIS

The data base which was used for the analysis of the 1978 recommended list for promotion to Lieutenant Colonel was established in the same manner as the data base for the 1977 list. The Defense Manpower Data Center (MARDAC) officer history file dated 30 June 1978 was used to establish this working data base. From this history file all records for

Majors managed under OPMS with dates of rank for promotion to Major between 30 June 1969 and 28 February 1971 were extracted to form a disk file. Initially this disk file contained 1549 entries that met the requirements of the extract program.

This disk file was edited on a name by name basis by comparison with the considered and selected lists published in the promotion board results. Interactive editing of the disk file reduced the number of entries to 1451. The 98 entries were deleted for the same reasons as the deletions made in the 1977 list. Of the 1451 entries on the edited working data base, 1007 were selected for promotion. A cross tabulation by specialties of the data contained in this data base is in Appendix C. The actual number considered in the primary zone (first time considered) as announced in the promotion board results was 1455, of which 1011 were selected. [9] Therefore, the working data base for this analysis is also more than 99% accurate.

There was a slight problem in identifying the specialties that were under aligned at the time of the convening of the 1978 Lieutenant Colonel promotion board. A Military Personnel Center (MILPERCEN) message listed the following specialties as over aligned: 15 (Aviation), 36 (Counterintelligence/ Human Intelligence), 51 (Research and Development), 54 (Operations and Force Development), 71 (Aviation Materiel Management), 76 (Armament Materiel Management), 77 (Tank/Ground Mobility Materiel Management), 86 (Traffic Management), and

88 (Highway and Rail Operations). That message listed the following specialties as under aligned specialties: 21 (Engineer), 27 (Communications-Electronics Engineering), 31 (Law Enforcement), 37 (Electronic Warfare/Cryptology), 44 (Finance), 49 (Operations Research/Systems Analysis), and 93 (Logistics Services Management). [11] However, guidance to the board differed from the above information in that specialties 46 (Public Affairs), 48 (Foreign Area Officer), and 72 (Communications-Electronics Materiel Management) were also listed as under aligned specialties while specialties 49 (Operations Research/Systems Analysis) and 93 (Logistics Services Management) were not. [9] For the analysis in this thesis, all specialties listed as under aligned by either the MILPERCEN message or the guidance to the board are considered under aligned. Once again, specialties not specified as over or under aligned are considered to be balanced in alignment.

The same methodology and classifications used in the 1977 contingency table analysis are used in the 1978 contingency table analysis. The contingency table is shown in Table III. The X^2 statistic computed for this data is 54.3868 with 19 degrees of freedom. This statistic is significant at a level beyond 0.001. From this analysis, one may reject the hypothesis that the specialty alignment classifications are independent of the probability of promotion. Alternatively stated, it may be concluded that officers in each classification are not equally likely to be promoted.

TABLE III: CONTINGENCY TABLE, 1978 LIST

Category	Selected		Not Selected	
	Observed	Expected	Observed	Expected
Over				
15	112	103.21	36	44.79
36	32	36.96	21	16.04
51	77	74.62	30	32.38
54	125	120.64	48	52.36
71	15	13.25	4	5.75
76	3	4.18	3	1.82
77	8	12.55	10	5.46
86	10	11.16	6	4.84
88	9	8.37	3	3.63
Under				
21	71	62.76	19	27.24
27	25	21.62	6	9.38
31	39	45.33	26	19.67
37	23	20.92	7	9.08
44	13	16.04	10	6.96
46	23	24.41	12	10.59
48	94	80.89	22	35.11
49	73	58.58	11	25.42
72	15	14.64	6	6.36
93	16	16.74	8	7.26
Balanced	353	389.13	205	168.87

Once again, since this hypothesis was rejected, individual tests of the difference between two proportions may be conducted for each of the specialties designated as either over or under aligned at the time of the convening of the board. These tests are conducted in precisely the same manner as those for the 1977 list. Table IV summarizes the results of these tests.

TABLE IV: TESTS FOR DIFFERENCE OF PROPORTIONS RESULTS, 1978 LIST

Specialty	P_1	P_2	Test Statistic	Significance Level
Over				
15	.687	.757	-1.748	.0402
36	.697	.604	1.452	.0733
51	.692	.720	-0.598	.2749
54	.690	.723	-0.868	.1927
71	.693	.789	-0.909	.1817
76	.695	.500	1.033	.1508
77	.697	.444	2.312	.0104
86	.695	.625	0.602	.2736
88	.694	.750	-0.423	.3361
Under				
21	.688	.789	-2.017	.0218
27	.692	.806	-1.373	.0848
31	.698	.600	1.683	.0462
37	.692	.767	-0.873	.1913
44	.696	.565	1.351	.0883
46	.695	.657	0.479	.3160
48	.684	.810	-2.835	.0022
49	.683	.869	-3.587	.0002
72	.694	.714	-0.203	.4196
93	.694	.667	0.293	.3848

From Table IV one may conclude that of the over aligned specialties only specialties 15 (Aviation) and 77 (Tank/Ground Mobility Materiel Management) are significant. In the case of specialty 15, it may be concluded that officers having this specialty were promoted at a rate higher than the average. In the case of specialty 77, one may conclude that

officers having this specialty were promoted at a rate lower than the average. For the remainder of the over aligned specialties, it may be concluded that officers having these specialties were promoted at rates not significantly different from the average.

Also from Table IV, one may conclude that of all the under aligned specialties only specialties 21 (Engineer), 31 (Law Enforcement), 48 (Foreign Area Officer), and 49 (Operations Research/Systems Analysis) are significant. For specialties 21, 48, and 49, it may be concluded that officers possessing these specialties were promoted at rates higher than the average. For specialty 31, one may conclude that officers having this specialty were promoted at a rate lower than the average. For the remainder of the under aligned specialties, it may be concluded that officers possessing these specialties were promoted at rates not significantly different than the average.

C. SUMMARY OF RESULTS

This section presents a summary of the results of the analysis of the two Lieutenant Colonel lists with respect to questions raised in Chapter III, namely: Is the Officer Personnel Management System meeting its goal of producing the right number of officers at the right times and with the right skills through the use of a disciplined dual specialty? If so, one should expect officers having over aligned specialties to be promoted at rates lower than the average and officers having under aligned specialties to be promoted at rates

higher than the average. The analysis of the 1977 and 1978 Lieutenant Colonel promotion lists shows that there are doubts about whether OPMS is reaching its goal through the mechanism of promotional rates.

The 1977 list analysis shows that promotion under OPMS is doing little to rectify the problem of providing the right number of officers with the right skills and at the right time. In one instance, promotion under OPMS is compounding the problem. From this analysis, it may be concluded that officers having over or under aligned specialties (with the exception of specialties of 36, 49, and 93) are promoted at an average rate. Therefore, the problem of over or under alignment of these 11 specialties (again, with the same exception) is being continued. However, officers having specialty 36 (Counterintelligence/Human Intelligence), an over aligned specialty, are promoted at a rate lower than average. Officers having specialty 49 (Operations Research/ Systems Analysis), an under aligned specialty, are promoted at a rate higher than the average. Therefore, for these two specialties promotion under OPMS is tending towards meeting the goal of OPMS. For specialty 93 (Logistics Services Management), the problem is being compounded. While specialty 93 is an under aligned specialty, officers having this specialty are promoted at a rate lower than the average. Thus, for this specialty, the promotion board results aggravate the problem and cause this specialty to become more severely under aligned. Table V summarizes these results.

TABLE V: SUMMARY OF ANALYSIS, 1977 LIST

Specialty		Problem Status
15	Aviation	0
36	Counterintelligence/Human Intelligence	+
54	Operations and Force Development	0
71	Aviation Materiel Management	0
76	Armament Materiel Management	0
86	Traffic Management	0
21	Engineer	0
27	Communications-Electronics Engineering	0
31	Law Enforcement	0
37	Electronic Warfare/ Cryptology	0
43	Club Management	0
44	Finance	0
49	Operations Research/ Systems Analysis	+
93	Logistics Services Management	-

Legend:

0 Board action has no effect on specialty alignment

\+ Board action alleviates specialty alignment

\- Board action aggravates specialty alignment

The 1978 list analysis shows that promotion under OPMS is again doing little to meet the goals of OPMS. In fact, for these promotion results the problem of meeting those goals has been compounded in two instances. With the exception of specialties 15, 77, 21, 31, 48, and 49, officers having over or under aligned specialties are promoted at an average rate. Therefore, the problem of over and under alignment of these 13 specialties is continued. The picture is brighter for specialties 21 (Engineer), 77 (Tank/Ground Mobility Materiel Management), 48 (Foreign Area Officer), and 49 (Operations Research/Systems Analysis). Officers with the under aligned specialties 21, 48, and 49 are promoted at rates higher than the average, and officers with the over aligned specialty 77 are promoted at a rate lower than the average. Therefore, the problems of over or under alignment for these four specialties is alleviated. The picture is darker for specialties 15 (Aviation) and 31 (Law Enforcement). Officers with the over aligned specialty 15 are promoted at a rate higher than the average, while officers with the under aligned specialty 31 are promoted at a rate lower than the average. Therefore, the problem of over or under alignment for these two specialties is aggravated. Table VI summarizes these results.

While an extensive analysis of trends is difficult with the results of just two promotion boards, some analysis is possible here. Of all the over aligned specialties, six are listed as over aligned in both 1977 and 1978. Also, of all

TABLE VI: SUMMARY OF ANALYSIS, 1978 LIST

Specialty		Problem Status
15	Aviation	-
36	Counterintelligence/Human Intelligence	0
51	Research and Development	0
54	Operations and Force Development	0
71	Aviation Materiel Management	0
76	Armament Materiel Management	0
77	Tank/Ground Mobility Materiel Management	+
86	Traffic Management	0
88	Highway and Rail Operations	0
21	Engineer	+
27	Communications-Electronics Engineering	0
31	Law Enforcement	-
37	Electronic Warfare/Cryptology	0
44	Finance	0
46	Public Affairs	0
48	Foreign Area Officer	+
49	Operations Research/Systems Analysis	+
72	Communications-Electronics Materiel Management	0
93	Logistics Services Management	0

Legend:

0 Board action has no effect on specialty alignment

\+ Board action alleviates specialty alignment

\- Board action aggravates specialty alignment

the under aligned specialties, seven are listed as under aligned in both 1977 and 1978. Therefore, a trend analysis from 1977 to 1978 is possible for these thirteen specialties. A trend is defined to be positive if the actions of the boards from 1977 to 1978 show a movement in the direction which may tend to reduce surpluses or deficits in specialty alignment by controlling the promotion of officers with given specialties. For instance, for an over aligned specialty, if the 1977 board promoted officers with this specialty at an average rate while the 1978 board promoted officers with this specialty at a below average rate, then this trend would be defined as positive. Conversely, a trend is defined to be negative if the actions of the boards from 1977 to 1978 show a movement in the direction which may tend to increase surpluses or deficits in specialty alignment. For instance, for an under aligned specialty, if the 1977 board promoted officers with this specialty at an above average rate while the 1978 board promoted officers with this specialty at an average rate, then the trend would be defined as negative. Table VII summarizes the results of the trend from 1977 to 1978 for the specialties listed as either over or under aligned in both 1977 and 1978. From this table it appears unlikely that OPMS is alleviating the problem of over and under alignment of specialties by any method.

Overall, it may be concluded from the analysis of these two Lieutenant Colonel promotion lists and the trend analysis that the promotion system under OPMS is still a long way from

meeting its goal of providing the right number of officers at the right time and with the right skills through a disciplined dual specialty system.

TABLE VII: TRENDS FROM 1977 TO 1978

Specialty		Trend
15	Aviation	-
36	Counterintelligence/Human Intelligence	-
54	Operations and Force Development	0
71	Aviation Materiel Management	0
76	Armament Materiel Management	0
86	Traffic Management	0
21	Engineer	+
27	Communications-Electronics Engineering	0
31	Law Enforcement	-
37	Electronic Warfare/Cryptology	0
44	Finance	0
49	Operations Research/Systems Analysis	+
93	Logistics Services Management	+

Legend:

0 No trend is evident

+ Positive trend

- Negative trend

V. CONCLUSIONS AND RECOMMENDATIONS

From the analysis presented in the last chapter it may be concluded that the results of the last two Lieutenant Colonel promotion boards do not indicate that OPMS is meeting its goal (through the promotion system) of providing the right number of officers at the right time and with the right skills with the exception of a very few specialties. For the 1977 Lieutenant Colonel promotion list analysis, the actions of the board in promoting officers to reduce deficits and surpluses in under and over aligned specialties were positive in one case, negative in another, and neither positive nor negative in the remaining eleven cases. For the 1978 Lieutenant Colonel promotion list analysis, the actions of the board in promoting officers to reduce deficits and surpluses in under and over aligned specialties were positive in four cases, negative in two others, and neither positive nor negative in the remaining thirteen cases. The results of the trend analysis show that there is a positive trend in rectifying the over and under alignment problem in three cases, a negative trend in three cases, and no trend in the remaining seven cases.

Assuming that the Army is committed to the Officer Personnel Management System, the conclusions of the analysis point to the need for some remedial action. One course of action would be to induce promotion boards to promote officers

in order to meet the present OPMS doctrine and goals. To pursue this course of action requires close monitoring of promotion board results and provision for additional guidance to promotion boards. Since large amounts of time, money, and effort have been expended in the development of the OPMS system, this course of action seem particularly justified. The remainder of this chapter presents a plan for this course of action.

The recommended plan for insuring that promotion boards will promote officers to meet the stated goals of OPMS may be divided into two steps. In step one, which should be instituted immediately, promotion boards should be provided with the following guidance to aid board members in the selection of the "best qualified" officers for promotion. First, the board should be given a list of all under and over aligned specialties and a description of the degree of the alignment problem for each of these specialties. Secondly, the board should be provided with specific guidance which would emphasize the importance of reducing deficits or surpluses in these specialties.

The policy outlined in step one should be followed for three years. The results of each promotion board should be analyzed in a manner similar to the analysis presented in this thesis. After this initial period of three years, a decision would be required. If the results of the analyses of these promotion boards for the three years studied show that promotion boards are selecting officers for promotion

in a manner that alleviates the problems of over and under alignment, then more stringent action would not be required. Boards would continue to be provided the guidance outlined in step one.

However, if the results of the promotion boards for those three years show that promotion boards are selecting officers for promotion in such a way that the problems of over and under alignment of specialties are not alleviated, then more stringent action would be required. Such action in the form of step two would be to provide the board with specific guidance, establishing floors and ceilings for the promotion of officers having certain specialties. Ceilings would be established for the over aligned specialties and floors for under aligned specialties. This stringent guidance should be given to promotion boards for two years. After that period of time, the step one guidance should be reinstituted. Figure 3 graphically illustrates this two step program.

In addition to the step one and two guidance to be provided to the promotion boards, the entire program should be widely publicized. The wide publication of this program will show the Army's resolve to meet the goals of OPMS. Such publication, along with the results of promotion boards showing that boards are indeed promoting officers to meet OPMS goals, will also tend to induce officers to select and change their specialties so as to reduce alignment problems in specialties. Thus, the alignment problems might possibly be resolved without the stringent action required by the step two guidance.

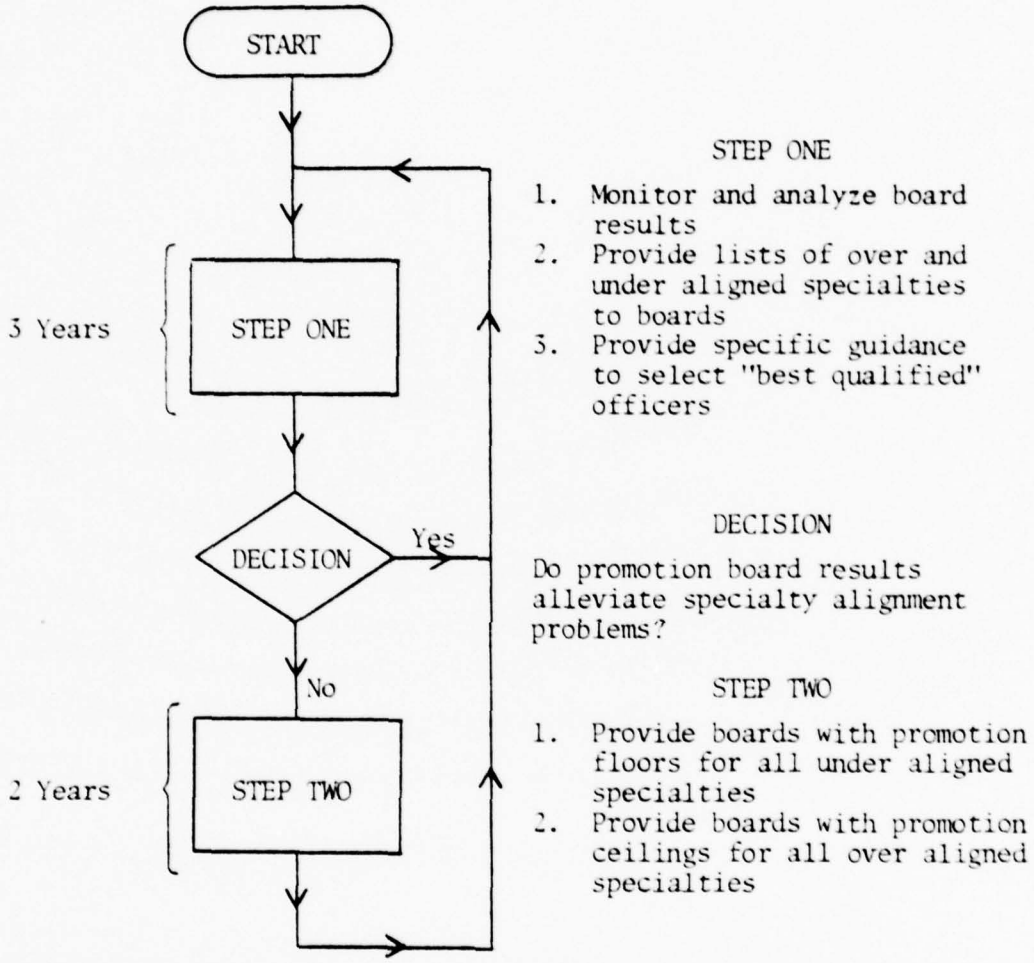


Figure 3. Recommended Program.

Although only Lieutenant Colonel promotion board results were analyzed in this thesis, this recommended program should be applied to all promotion boards for all grades below General Officer rank. Specialty alignment problems exist at all of these grade levels and action may be required at each level. The recommended program is general enough to be applied at these grade levels and, if followed, will alleviate specialty alignment problems. Additionally, if a uniform program is applied at each grade level the program will be easier to administer. Secondly, this program applied uniformly to each grade level will further demonstrate the Army's resolve to meet its requirements for the right number of officers at the right time and with the right skills through the OPMS dual specialty system.

those for the 1977 list. Table IV summarizes the results of these tests.

APPENDIX A

OFFICER PERSONNEL MANAGEMENT SPECIALTIES LISTED NUMERICALLY

Table VIII presents the Officer Personnel Management Specialties listed in numerical order. For an alphabetical listing of the specialties see Appendix B.

TABLE VIII: OFFICER PERSONNEL MANAGEMENT SPECIALTIES IN NUMERICAL ORDER

Number	Name
11	Infantry
12	Armor
13	Field Artillery
14	Air Defense Artillery
15	Aviation
21	Engineer
25	Combat Communications-Electronics
26	Fixed Telecommunications Systems
27	Communications-Electronics Engineering
28	Instructional Technology and Management
31	Law Enforcement
35	Tactical/Strategic Intelligence
36	Counterinteliigence/Human Intelligence
37	Electronic Warfare/Cryptology
41	Personnel Management
42	Personnel Administration and Administrative Management
43	Club Management
44	Finance
45	Comptroller
46	Public Affairs

age. In the case of specialty 77, one may conclude that

Number	Name
47	Education
48	Foreign Area Officer
49	Operations Research/Systems Analysis
51	Research and Development
52	Atomic Energy
53	Automatic Data Processing
54	Operations and Force Development
70	Logistics Management
71	Aviation Materiel Management
72	Communications-Electronics Materiel Management
73	Missile Materiel Management
74	Chemical
75	Munitions Materiel Management
76	Armament Materiel Management
77	Tank/Ground Mobility Materiel Management
81	Petroleum Management
82	Food Management
83	General Troop Support Materiel Management
86	Traffic Management
87	Marine and Terminal Operations
88	Highway and Rail Operations
91	Maintenance Management
92	Supply Management
93	Logistics Services Management
95	Transportation Management
97	Procurement

cers having under aligned specialties to be promoted at rates

APPENDIX B

OFFICER PERSONNEL MANAGEMENT SPECIALTIES LISTED ALPHABETICALLY

Table IX presents the Officer Personnel Management Specialties listed in alphabetical order. For a numerical listing of the specialties see Appendix A.

TABLE IX: OFFICER PERSONNEL MANAGEMENT SPECIALTIES IN ALPHABETICAL ORDER

Number	Name
14	Air Defense Artillery
76	Armament Materiel Management
12	Armor
52	Atomic Energy
53	Automatic Data Processing
15	Aviation
71	Aviation Materiel Management
74	Chemical
43	Club Management
25	Combat Communications-Electronics
27	Communications-Electronics Engineering
72	Communications-Electronics Materiel Management
45	Comptroller
36	Counterintelligence/Human Intelligence
47	Education
37	Electronic Warfare/Cryptology
21	Engineer
13	Field Artillery
44	Finance
26	Fixed Telecommunications Systems

under aligned. Table V summarizes these results.

Number	Name
82	Food Management
48	Foreign Area Officer
83	General Troop Support Materiel Management
88	Highway and Rail Operations
11	Infantry
28	Instructional Technology and Management
31	Law Enforcement
70	Logistics Management
93	Logistics Services Management
91	Maintenance Management
87	Marine and Terminal Operations
73	Missile Materiel Management
75	Munitions Materiel Management
54	Operations and Force Development
49	Operations Research/Systems Analysis
42	Personnel Administration and Administrative Management
41	Personnel Management
81	Petroleum Management
97	Procurement
46	Public Affairs
51	Research and Development
92	Supply Management
35	Tactical/Strategic Intelligence
77	Tank/Ground Mobility Materiel Management
86	Traffic Management
95	Transportation Management

APPENDIX C

TABULAR RESULTS OF SELECTED PROMOTION BOARDS

This appendix presents the results of the cross tabulation program runs for the 1977 and 1978 Lieutenant Colonel promotion board results. The program cross tabulated all entries in each data base by primary and alternate specialties. The first column of Table X lists the primary and alternate specialties. The next two columns of the table give the number of officers considered and selected for promotion by the 1977 promotion board with the given primary and alternate specialty. Columns four and five of the table give the same information for the 1978 promotion board.

TABLE X: RESULTS OF CROSS TABULATION

Specialty	1977 List Considered	1977 List Selected	1978 List Considered	1978 List Selected
11/11	2	0	0	0
15/11	1	1	0	0
49/11	1	1	0	0
54/11	1	1	0	0
Subtotal	5	3	0	0
11/15	3	2	5	4
12/15	5	4	6	5
13/15	4	4	5	3
14/15	6	5	6	6
15/15	1	1	0	0
21/15	2	2	4	4
25/15	0	0	3	1
26/15	0	0	1	0
27/15	2	0	0	0
28/15	0	0	1	1
31/15	1	0	0	0
37/15	1	1	1	0
72/15	0	0	2	2
Subtotal	25	19	34	26
11/21	1	0	0	0
14/21	1	1	1	0
92/21	0	0	1	1
Subtotal	2	1	2	1
11/25	1	0	0	0
12/25	0	0	1	1
15/25	1	1	0	0
26/25	10	5	5	3
27/25	1	1	4	4
28/25	1	1	0	0
31/25	1	1	1	0
35/25	0	0	1	1
72/25	1	0	0	0
Subtotal	16	9	12	9
25/26	11	7	5	3
27/26	4	4	1	1
28/26	1	0	0	0
Subtotal	16	11	6	4

Specialty	1977 List		1978 List	
	Considered	Selected	Considered	Selected
11/27	1	0	0	0
15/27	0	0	1	1
25/27	5	4	11	9
26/27	9	8	4	4
36/27	0	0	1	1
37/27	0	0	2	1
72/27	0	0	1	0
Subtotal	15	12	20	16
11/28	6	5	16	10
12/28	0	0	16	9
13/28	0	0	22	16
14/28	0	0	9	7
15/28	1	0	8	6
21/28	0	0	6	4
25/28	0	0	2	0
26/28	1	0	0	0
27/28	1	1	0	0
28/28	0	0	1	0
31/28	0	0	7	6
35/28	0	0	4	3
42/28	0	0	1	1
91/28	0	0	1	0
92/28	0	0	1	0
Subtotal	9	6	94	62
11/31	3	1	8	1
12/31	1	0	1	0
13/31	2	0	0	0
15/31	5	3	2	0
21/31	0	0	2	1
35/31	3	2	0	0
36/31	3	2	1	0
92/31	1	0	2	1
Subtotal	18	8	16	3
11/35	9	6	10	7
12/35	4	3	0	0
13/35	2	1	7	3
14/35	2	2	4	2
15/35	1	0	2	2
21/35	1	1	0	0
31/35	3	2	2	1
36/35	24	9	17	7
37/35	8	5	11	8
48/35	1	1	2	2
Subtotal	55	30	55	32

Specialty	1977 List		1978 List	
	Considered	Selected	Considered	Selected
31/36	6	3	5	3
35/36	25	13	22	16
Subtotal	31	16	27	19
11/37	1	1	0	0
12/37	1	1	0	0
13/37	1	1	0	0
15/37	1	1	0	0
21/37	1	0	0	0
25/37	1	0	1	1
27/37	0	0	1	1
35/37	6	4	5	5
36/37	4	0	0	0
53/37	1	0	0	0
74/37	0	0	1	0
92/37	1	1	0	0
Subtotal	18	9	8	7
11/41	48	35	46	32
12/41	24	18	15	12
13/41	37	31	23	17
14/41	2	1	6	4
15/41	31	20	24	21
21/41	7	6	3	3
25/41	2	0	0	0
26/41	1	1	0	0
31/41	8	8	9	7
35/41	3	3	6	5
37/41	1	1	2	1
41/41	0	0	1	0
42/41	31	19	31	15
46/41	0	0	1	1
53/41	2	0	2	2
71/41	0	0	1	1
74/41	1	1	1	1
75/41	0	0	1	0
86/41	3	1	2	2
87/41	0	0	1	0
92/41	2	1	2	2
95/41	0	0	2	2
Subtotal	203	146	179	128

Specialty	1977 List		1978 List	
	Considered	Selected	Considered	Selected
11/42	8	0	5	1
13/42	0	0	1	0
14/42	1	1	6	4
15/42	2	2	1	0
25/42	0	0	2	1
31/42	3	1	2	1
35/42	2	2	1	0
37/42	0	0	1	1
41/42	27	12	22	12
46/42	1	0	0	0
53/42	3	1	4	4
75/42	0	0	1	1
86/42	1	0	0	0
88/42	1	0	0	0
92/42	2	2	1	0
93/42	0	0	1	1
95/42	2	2	1	0
Subtotal	53	23	49	26
11/43	3	2	1	0
12/43	1	0	1	0
15/43	0	0	1	1
31/43	0	0	1	1
82/43	1	0	0	0
92/43	3	1	6	2
95/43	0	0	1	1
97/43	1	1	0	0
Subtotal	9	4	11	5
11/45	8	7	8	6
12/45	7	6	4	2
13/45	4	3	6	5
14/45	5	4	1	1
15/45	3	3	4	3
21/45	2	2	3	3
25/45	2	2	1	1
31/45	0	0	1	1
35/45	1	1	1	1
36/45	2	1	1	1
37/45	2	1	0	0
41/45	2	2	2	2
42/45	0	0	1	1
44/45	25	15	23	13
71/45	1	0	1	1
75/45	0	0	1	0
91/45	1	0	0	0
92/45	2	2	1	1
95/45	1	1	0	0
Subtotal	68	50	59	42

Specialty	1977 List		1978 List	
	Considered	Selected	Considered	Selected
11/46	9	5	11	8
12/46	5	3	6	4
13/46	3	2	3	1
14/46	2	2	1	1
15/46	4	4	2	2
28/46	3	2	1	0
31/46	1	1	2	2
41/46	0	0	4	1
42/46	1	0	2	2
71/46	0	0	1	0
75/46	1	0	0	0
86/46	0	0	1	1
92/46	1	1	0	0
95/46	1	1	0	0
Subtotal	31	21	34	22
11/47	7	5	1	1
12/47	11	7	0	0
13/47	11	7	0	0
14/47	12	9	0	0
15/47	9	5	0	0
21/47	14	8	1	1
27/47	1	1	0	0
31/47	4	3	1	1
35/47	3	2	0	0
36/47	2	1	0	0
37/47	3	3	0	0
44/47	1	0	0	0
74/47	1	0	0	0
91/47	1	0	0	0
92/47	1	1	0	0
95/47	3	2	0	0
Subtotal	84	54	3	3

Specialty	1977 List		1978 List	
	Considered	Selected	Considered	Selected
11/48	46	31	42	27
12/48	22	16	11	9
13/48	18	16	8	8
14/48	4	2	6	6
15/48	6	3	2	2
21/48	13	9	4	3
25/48	2	2	2	2
26/48	2	2	0	0
31/48	7	5	6	4
35/48	21	16	17	16
36/48	7	5	5	4
37/48	2	2	1	1
41/48	0	0	1	1
42/48	0	0	1	1
49/48	0	0	1	1
72/48	0	0	1	1
74/48	1	1	1	1
91/48	1	0	2	2
92/48	5	3	0	0
95/48	0	0	2	2
Subtotal	157	111	113	91
11/49	13	12	21	19
12/49	2	2	2	1
13/49	10	9	8	8
14/49	4	4	9	9
15/49	6	5	2	0
21/49	7	5	19	17
25/49	2	1	4	4
26/49	1	1	0	0
27/49	0	0	1	1
35/49	1	0	1	1
42/49	0	0	1	1
44/49	1	1	0	0
51/49	0	0	2	1
53/49	0	0	2	1
71/49	1	0	1	1
73/49	1	1	1	0
75/49	1	1	0	0
77/49	2	2	2	2
81/49	0	0	1	1
83/49	0	0	1	1
91/49	3	2	1	0
92/49	2	1	4	4
95/49	2	2	0	0
Subtotal	59	49	83	72

Specialty	1977 List		1978 List	
	Considered	Selected	Considered	Selected
11/51	7	5	11	7
12/51	12	10	9	6
13/51	24	16	14	10
14/51	17	13	11	7
15/51	24	14	19	14
21/51	21	15	14	11
25/51	3	3	2	1
26/51	0	0	1	1
27/51	3	2	1	1
31/51	0	0	1	1
35/51	1	1	0	0
71/51	1	1	1	1
73/51	7	5	2	2
74/51	7	5	9	8
75/51	4	4	2	2
76/51	1	0	0	0
77/51	4	3	2	1
91/51	3	3	2	2
92/51	1	1	2	0
95/51	1	1	1	0
Subtotal	141	102	104	75
11/52	1	1	0	0
12/52	0	0	1	1
13/52	5	5	4	4
14/52	1	1	3	1
15/52	0	0	2	2
21/52	6	3	4	3
51/52	0	0	1	1
73/52	1	1	0	0
74/52	4	3	4	3
75/52	2	1	1	1
91/52	1	1	1	1
Subtotal	21	16	21	17

Specialty	1977 List Considered	1977 List Selected	1978 List Considered	1978 List Selected
11/53	9	8	3	3
12/53	3	0	0	0
13/53	10	4	8	5
14/53	1	0	1	0
15/53	2	1	3	1
21/53	2	2	1	1
25/53	11	8	6	4
26/53	5	4	4	4
27/53	1	0	2	1
31/53	1	1	1	0
35/53	4	4	3	3
36/53	3	3	1	0
37/53	2	2	3	3
41/53	3	3	4	4
42/53	4	2	4	2
44/53	1	0	0	0
49/53	2	2	0	0
72/53	0	0	3	2
74/53	1	0	0	0
75/53	3	2	3	2
81/53	0	0	1	1
87/53	1	0	0	0
91/53	3	1	2	1
92/53	7	5	7	4
93/53	1	0	0	0
95/53	2	1	0	0
Subtotal	82	53	60	41
11/54	66	50	60	44
12/54	21	17	10	6
13/54	28	22	37	24
14/54	14	10	5	4
15/54	21	11	35	25
21/54	9	9	7	7
25/54	6	3	4	4
26/54	0	0	4	3
27/54	1	0	0	0
31/54	7	4	6	5
35/54	1	1	2	2
36/54	1	0	0	0
37/54	1	1	2	1
74/54	1	0	0	0
87/54	1	0	0	0
92/54	2	1	1	0
95/54	1	1	0	0
Subtotal	181	130	173	125
92/71	1	0	0	0
Subtotal	1	0	0	0

Specialty	1977 List Considered	1977 List Selected	1978 List Considered	1978 List Selected
25/72	5	4	7	5
26/72	1	0	2	1
27/72	0	0	1	0
92/72	2	1	2	2
Subtotal	8	5	12	8
75/73	6	5	4	3
91/73	0	0	4	3
Subtotal	6	5	8	6
25/74	0	0	1	1
91/74	0	0	1	1
Subtotal	0	0	2	2
73/75	2	2	2	2
74/75	6	2	4	4
91/75	1	0	2	1
Subtotal	9	4	8	7
15/76	1	0	0	0
74/76	1	1	0	0
91/76	1	1	2	1
Subtotal	3	2	2	1
12/77	2	1	1	0
91/77	7	3	6	1
92/77	2	2	3	1
Subtotal	11	6	10	2
12/81	1	1	0	0
92/81	3	2	7	4
Subtotal	4	3	7	4
92/82	5	3	4	3
93/82	1	0	0	0
97/82	1	1	1	0
Subtotal	7	4	5	3
81/83	1	0	0	0
92/83	8	6	14	8
Subtotal	9	6	14	8

Specialty	1977 List		1978 List	
	Considered	Selected	Considered	Selected
15/86	1	0	0	0
71/86	1	1	0	0
87/86	1	1	0	0
88/86	1	1	0	0
95/86	7	5	6	3
Subtotal	11	8	6	3
26/87	1	1	0	0
48/87	0	0	1	1
86/87	1	1	1	0
95/87	3	1	4	2
Subtotal	5	3	6	3
13/88	1	1	0	0
31/88	0	0	1	1
86/88	1	1	0	0
95/88	6	5	6	5
Subtotal	8	7	7	6
11/91	2	0	2	1
12/91	5	4	2	1
13/91	1	0	1	1
15/91	5	2	2	2
21/91	6	0	3	2
71/91	4	3	8	6
72/91	1	0	0	0
73/91	2	1	1	1
74/91	5	3	0	0
75/91	4	1	0	0
76/91	1	0	1	0
77/91	2	1	3	2
86/91	1	1	0	0
92/91	6	5	9	2
95/91	1	1	1	1
Subtotal	46	22	33	19

Specialty	1977 List		1978 List	
	Considered	Selected	Considered	Selected
11/92	7	4	16	6
12/92	5	5	12	7
13/92	4	2	6	2
14/92	3	2	5	1
15/92	3	1	0	0
21/92	8	5	9	6
25/92	1	0	2	1
26/92	2	1	0	0
31/92	1	0	3	2
49/92	1	1	0	0
53/92	1	0	0	0
71/92	2	1	1	1
72/92	1	1	2	2
73/92	3	3	1	0
74/92	3	1	1	1
75/92	1	1	3	2
76/92	0	0	1	1
77/92	0	0	1	1
81/92	3	2	2	2
82/92	6	2	1	1
86/92	1	1	4	3
87/92	0	0	1	1
88/92	1	0	2	1
91/92	5	2	8	7
92/92	0	0	4	3
93/92	0	0	1	0
95/92	4	3	6	3
97/92	2	2	3	3
Subtotal	68	40	95	57
11/93	8	2	6	4
13/93	1	0	1	1
14/93	0	0	1	1
15/93	1	0	0	0
31/93	1	0	0	0
82/93	1	1	0	0
91/93	0	0	1	1
92/93	9	8	12	7
95/93	0	0	1	1
Subtotal	21	11	22	15
11/95	2	2	1	1
31/95	1	0	0	0
71/95	0	0	1	1
86/95	2	1	2	1
87/95	5	4	5	5
88/95	4	2	3	2
92/95	1	1	0	0
Subtotal	15	10	12	10

Specialty	1977 List		1978 List	
	Considered	Selected	Considered	Selected
11/97	2	2	0	0
12/97	2	2	2	2
13/97	2	2	2	2
14/97	1	1	0	0
15/97	1	1	4	4
21/97	6	4	8	4
25/97	2	2	1	1
71/97	2	2	4	3
73/97	0	0	1	0
74/97	1	0	0	0
75/97	5	3	1	1
76/97	0	0	2	1
77/97	1	1	0	0
81/97	1	1	1	0
82/97	0	0	1	0
83/97	1	1	0	0
91/97	6	3	5	3
92/97	19	16	4	4
95/97	3	3	3	2
Subtotal	55	44	39	27
Grand Total	1586	1063	1451	1007

APPENDIX D

INTERMEDIATE TABULAR RESULTS FOR THE 1977 LIEUTENANT COLONEL PROMOTION LIST

This appendix presents the intermediate data results that were used in the analysis presented in Chapter IV. The intermediate data results presented here represent the results of the 1977 Lieutenant Colonel promotion board; Appendix E presents similar results for the 1978 Lieutenant Colonel promotion board results. The data is shown in Table XI. This data was obtained by aggregating the data contained in Appendix C. Results are presented for all specialties that were over or under aligned at the time of the convening of the board. Three results are presented for each specialty under question. The three results are entries for all officers having the specialty in question as their primary or alternate specialty with any other under aligned specialty as their second specialty, with any other balanced specialty as their second specialty, and with any other over aligned specialty as their second specialty. For example, for specialty 15 (Aviation) the three entries are 15/Under, 15/Balanced, and 15/Over. The 15/Under entry stands for all those officers considered and selected for promotion that had 15 for either their primary or alternate specialty and had any other under aligned specialty for their alternate or primary specialty.

TABLE XI: INTERMEDIATE DATA RESULTS, 1977 LIST

Specialties	Considered	Selected	Promotion Proportion
15/Under	19	12	.632
15/Balanced	112	73	.652
15/Over	24	12	.500
Subtotal	155	97	.626
36/Under	13	5	.556
36/Balanced	63	28	.444
36/Over	1	0	.000
Subtotal	77	33	.429
54/Under	18	14	.778
54/Balanced	141	105	.745
54/Over	22	11	.500
Subtotal	181	130	.718
71/Under	1	0	.000
71/Balanced	11	7	.636
71/Over	1	1	1.000
Subtotal	13	8	.615
76/Under	0	0	--
76/Balanced	4	2	.500
76/Over	1	0	.000
Subtotal	5	2	.400
86/Under	0	0	--
86/Balanced	18	12	.667
86/Over	2	1	.500
Subtotal	20	13	.650
21/Under	8	5	.625
21/Balanced	89	57	.640
21/Over	11	11	1.000
Subtotal	108	73	.676
27/Under	0	0	--
27/Balanced	26	21	.808
27/Over	3	0	.000
Subtotal	29	21	.724

Specialties	Considered	Selected	Promotion Proportion
31/Under	1	0	.000
31/Balanced	30	22	.733
31/Over	22	12	.545
Subtotal	53	34	.642
37/Under	1	0	.000
37/Balanced	30	22	.733
37/Over	7	3	.429
Subtotal	38	25	.657
43/Under	0	0	--
43/Balanced	9	4	.444
43/Over	0	0	--
Subtotal	9	4	.444
44/Under	1	1	1.000
44/Balanced	27	15	.556
44/Over	0	0	--
Subtotal	28	16	.571
49/Under	8	6	.750
49/Balanced	48	42	.875
49/Over	7	5	.714
Subtotal	63	53	.841
93/Under	1	0	.000
93/Balanced	21	11	.524
93/Over	1	0	.000
Subtotal	23	11	.478

APPENDIX E

INTERMEDIATE TABULAR RESULTS FOR THE 1978 LIEUTENANT COLONEL PROMOTION LIST

This appendix presents the intermediate data results that were used in the analysis presented in Chapter IV. The intermediate data results presented here represent the results of the 1978 Lieutenant Colonel promotion board; Appendix D presents similar results for the 1977 Lieutenant Colonel promotion board results. The data is shown in Table XII. This data was obtained by aggregating the data contained in Appendix C. Results are presented for all specialties that were over or under aligned at the time of the convening of the board. Three results are presented for each specialty under question. The three results are entries for all officers having the specialty in question as their primary or alternate specialty with any other under aligned specialty as their second specialty, with any other balanced specialty as their second specialty, and with any other over aligned specialty as their second specialty. For example, for specialty 15 (Aviation) the three entries are 15/Under, 15/Balanced, and 15/Over. The 15/Under entry stands for all those officers considered and selected for promotion that had 15 for either their primary or alternate specialty and had any other under aligned specialty for their alternate or primary specialty.

TABLE XII: INTERMEDIATE DATA RESULTS, 1978 LIST

Specialties	Considered	Selected	Promotion Proportion
15/Under	10	5	.500
15/Balanced	84	68	.810
15/Over	54	39	.722
Subtotal	148	112	.757
36/Under	7	4	.571
36/Balanced	46	28	.609
36/Over	0	0	--
Subtotal	53	32	.604
51/Under	18	14	.778
51/Balanced	70	49	.700
51/Over	19	14	.737
Subtotal	107	77	.720
54/Under	15	13	.867
54/Balanced	123	87	.707
54/Over	35	25	.710
Subtotal	173	125	.723
71/Under	1	1	1.000
71/Balanced	17	13	.765
71/Over	1	1	1.000
Subtotal	19	15	.789
76/Under	0	0	--
76/Balanced	6	3	.500
76/Over	0	0	--
Subtotal	6	3	.500
77/Under	2	2	1.000
77/Balanced	14	5	.357
77/Over	2	1	.500
Subtotal	18	8	.444
86/Under	0	0	--
86/Balanced	16	10	.625
86/Over	0	0	--
Subtotal	16	10	.625

Specialties	Considered	Selected	Promotion Proportion
88/Under	0	0	--
88/Balanced	12	9	.750
88/Over	0	0	--
Subtotal	12	9	.750
21/Under	21	18	.857
21/Balanced	44	31	.705
21/Over	25	22	.880
Subtotal	90	71	.789
27/Under	4	3	.750
27/Balanced	24	19	.833
27/Over	3	3	1.000
Subtotal	31	25	.806
31/Under	2	1	.500
31/Balanced	47	28	.596
31/Over	16	10	.625
Subtotal	65	39	.600
37/Under	3	2	.667
37/Balanced	25	20	.800
37/Over	2	1	.500
Subtotal	30	23	.767
44/Under	0	0	--
44/Balanced	23	13	.565
44/Over	0	0	--
Subtotal	23	13	.565
46/Under	3	2	.667
46/Balanced	29	18	.621
46/Over	3	3	1.000
Subtotal	35	23	.657
48/Under	12	9	.750
48/Balanced	97	79	.814
48/Over	7	6	.857
Subtotal	116	94	.810
49/Under	20	18	.900
49/Balanced	57	51	.895
49/Over	7	4	.571
Subtotal	84	73	.869

Specialties	Considered	Selected	Promotion Proportion
72/Under	2	1	.500
72/Balanced	17	12	.706
72/Over	2	2	1.000
Subtotal	21	15	.714
93/Under	0	0	--
93/Balanced	24	16	.667
93/Over	0	0	--
Subtotal	24	16	.667

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