

1

AD-A196 863

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER AFIT/CI/NR 88- 4B	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
TITLE (and Subtitle) STRENGTHENING THE DEPARTMENT OF DEFENSE PROGRAM MANAGERS: TOWARD A BETTER SYSTEM OF PREPARATION AND SELECTION		5. TYPE OF REPORT & PERIOD COVERED MS THESIS
AUTHOR(s) RICHARD A. KLUMPP, JR.		6. PERFORMING ORG. REPORT NUMBER
PERFORMING ORGANIZATION NAME AND ADDRESS AFIT STUDENT AT:		8. CONTRACT OR GRANT NUMBER(s)
CONTROLLING OFFICE NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) AFIT/NR Wright-Patterson AFB OH 45433-6583		12. REPORT DATE 1988
		13. NUMBER OF PAGES 100
		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) DISTRIBUTED UNLIMITED: APPROVED FOR PUBLIC RELEASE		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) SAME AS REPORT		
18. SUPPLEMENTARY NOTES Approved for Public Release: IAW AFR 190-1 LYNN E. WOLAVER <i>Lynn E. Wolaiver</i> 18 July 88 Dean for Research and Professional Development Air Force Institute of Technology Wright-Patterson AFB OH 45433-6583		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) ATTACHED		

DTIC
SELECTE
AUG 03 1988
S H D

EXECUTIVE SUMMARY

Introduction

The Department of Defense spends hundreds of billions of dollars on acquisition each year. Once the money has been earmarked, DoD assigns the responsibility for overseeing each system to a single person. I will examine the preparation and selection process for this person - the program manager.

Each program manager is responsible for a system that can range in cost from several thousand to several billion dollars, and for a staff of a handful to several hundred people. The Office of Management and Budget lists the essential qualities of a program manager as: an understanding of user needs and constraints, familiarity with system development principles, requisite management skills and experience in a variety of areas, and a long enough tenure in the job to provide a reasonable amount of continuity.

I will examine current systems of preparing program managers and, through a combination of research and survey data, determine how well these systems are preparing DoD program managers. These systems will be examined in five areas: experience, operational expertise, training and education, career possibilities, and tenure and responsibility.

After I probe the current systems, I will use the same criteria to examine three alternative systems: 1) A defense acquisition corps, 2) Clearly defined career patterns for military program managers, and 3) A system of co-program managers.

Problems with the Current System

The expert consensus is that the current system for preparation, selection, and rotation of program managers is severely flawed, not only in the final selection process, but in the entire system of preparing and motivating personnel to assume the job of program manager. By examining each aspect of the program manager's job in turn, those flaws can be illuminated.

A. Experience - Current systems recommend at least eight years of acquisition office experience for major-system program managers, including at least two years in an actual program office. A broad range of jobs actually qualify as acquisition experience, however, and those who don't meet this requirement can get a waiver from the Service Secretary. In addition, acquisition tours are usually career-broadening moves with the officer's prime focus on his operational career. The value of such tours is limited.

B. Operational Expertise - The services feel there is no substitute for the 'user perspective,' or actual operational experience. This leads to overemphasis on technical skills at the expense of management skills. While the user perspective is important, it can't be used as excuse for foregoing sound management skills.

C. Training and Education - Minimum amounts of training and education provide a good background for officers to use when they begin getting practical on-the-job experience. This training is ostensibly available through the Defense Systems Management College (DSMC), although those officers who can break away from their duties for the training often find that most subjects receive only cursory, introductory treatment.



SEARCHED	INDEXED
SERIALIZED	FILED
A-1	

Strengthening the Department of Defense Program Managers:

Towards a Better System of Preparation and Selection

prepared by

Richard A. Klumpp, Jr.

MPP '87

for

Robert Murray

James Cooney

Peter Zimmerman

and

Liz Marsh

Spring 1987

TABLE OF CONTENTS

Executive Summary.....i

Introduction.....1

Part I - Problems with the Current System.....3

 Introduction.....3

 A. Experience.....7

 B. Operational Expertise.....9

 C. Training and Education.....11

 D. Career Possibilities.....13

 E. Tenure and Responsibility.....16

Part II - Alternative Preparation and Selection Systems.19

 1. A Defense Acquisition Corps.....19

 2. Clearly Defined Military Acquisition Careers...25

 3. Co-Program Managers.....30

Part III - Recommendations and Conclusions.....35

Endnotes.....F-1

Appendix 1 - Operational Career Paths.....A1.1

Appendix 2 - Military Acquisition Management Programs.A2.1

Appendix 3 - Memos Regarding Acquisition Requirements.A3.1

Bibliography.....B-1

EXECUTIVE SUMMARY

Introduction

The Department of Defense spends hundreds of billions of dollars on acquisition each year. Once the money has been earmarked, DoD assigns the responsibility for overseeing each system to a single person. I will examine the preparation and selection process for this person - the program manager.

Each program manager is responsible for a system that can range in cost from several thousand to several billion dollars, and for a staff of a handful to several hundred people. The Office of Management and Budget lists the essential qualities of a program manager as: an understanding of user needs and constraints, familiarity with system development principles, requisite management skills and experience in a variety of areas, and a long enough tenure in the job to provide a reasonable amount of continuity.

I will examine current systems of preparing program managers and, through a combination of research and survey data, determine how well these systems are preparing DoD program managers. These systems will be examined in five areas: experience, operational expertise, training and education, career possibilities, and tenure and responsibility.

After I probe the current systems, I will use the same criteria to examine three alternative systems: 1) A defense acquisition corps, 2) Clearly defined career patterns for military program managers, and 3) A system of co-program managers.

Problems with the Current System

The expert consensus is that the current system for preparation, selection, and rotation of program managers is severely flawed, not only in the final selection process, but in the entire system of preparing and motivating personnel to assume the job of program manager. By examining each aspect of the program manager's job in turn, those flaws can be illuminated.

A. Experience - Current systems recommend at least eight years of acquisition office experience for major-system program managers, including at least two years in an actual program office. A broad range of jobs actually qualify as acquisition experience, however, and those who don't meet this requirement can get a waiver from the Service Secretary. In addition, acquisition tours are usually career-broadening moves with the officer's prime focus on his operational career. The value of such tours is limited.

B. Operational Expertise - The services feel there is no substitute for the 'user perspective,' or actual operational experience. This leads to overemphasis on technical skills at the expense of management skills. While the user perspective is important, it can't be used as excuse for foregoing sound management skills.

C. Training and Education - Minimum amounts of training and education provide a good background for officers to use when they begin getting practical on-the-job experience. This training is ostensibly available through the Defense Systems Management College (DSMC), although those officers who can break away from their duties for the training often find that most subjects receive only cursory, introductory treatment.

D. Career Possibilities - Because the business of the military is war-fighting, most officers pursue an operational career in order to increase their chances of promotion. Personnel perceive restricted promotional opportunities in the acquisition field, leading high-quality personnel to try to avoid such duty. As long as the opportunities for failure are great and the rewards for success are minor, this situation will persist.

E. Tenure and Responsibility - Current service rotational policies emphasize acquiring a broad variety of skills. This requires rotating personnel out of their current jobs about every two to three years. This policy tends to result in discontinuities in the program offices, with personnel unfamiliar with the project bringing new management styles into the office and requiring several months to get the office back up to speed.

For the most part, the current systems for preparing and selecting program managers focus on operational expertise at the expense of acquisition experience, training, and education. The resulting managers are put in a job with few rewards or possibilities of promotion, and many chances to fail. They remain in the job for only 2-3 years, leading to discontinuities in the office. The result is inefficiently run programs with a history of cost overruns and fielding delays. We will now turn to possible solutions for these problems.

Alternative Preparation and Selection Systems

1. A Defense Acquisition Corps - The proposed defense acquisition corps would consist of civilian and military personnel selected on the basis of education, experience, training, and examination. Pay, bonuses, promotions, and responsibilities would be based primarily on performance and achievement rather than seniority. DoD would also set up a Defense Acquisition University whose sole purpose would be to prepare students for careers in acquisitions. The idea is to attract skilled personnel with better incentives and a more professional job force.

Strengths of a Corps

- The corps promotes experienced, technically-knowledgeable personnel.
- All corps personnel have a strong background in acquisition procedures and responsibilities.
- Career opportunities for civilian acquisition personnel are enhanced.
- Continuity is improved, resulting in a clear source of responsibility for program successes and failures.
- The acquisition process is professionalized.

Weaknesses of a Corps

- Lack of a user perspective.
- The military loses control of the procurement process.
- Technically-qualified personnel are more likely to choose industry jobs.
- Military acquisition personnel will be practically eliminated.
- There will be a loss of fresh perspectives due to reduced rotation.

2. Clearly Defined Military Acquisition Career Paths - Deputy Secretary of Defense William H. Taft, IV, called for the services to provide specific criteria for training and experience for program managers. The responses focused on increasing the number of acquisition tours, clarifying the distinct operational and acquisition career paths, and reducing the emphasis on operational experience.

Strengths of Clearer Career Paths

- Program managers gain more experience in the acquisition business.
- Through increased training requirements, program managers get a better background in acquisition.
- The dual career track allows those interested in acquisition to concentrate their careers in this area.
- Program managers are better prepared to meet the varied requirements of their job.

Weaknesses of Clearer Career Paths

- Reduces operational expertise of program managers in most cases.
- Doesn't address quality of current training programs.
- Doesn't address time restraints on acquiring necessary training.
- Fails to address problem of what to do with program managers after their program or tour is completed.
- Maintains current rotational process, thus hurting continuity and making responsibility difficult to pinpoint.

3. Co-Program Managers - This system divides the task of the program manager into technical/operational tasks and management/business tasks. It then assigns co-program managers for each set of tasks and gives each of them a military assistant. The idea is to allow each manager to focus their career on one aspect or the other, and allows them to concentrate on that aspect when they make it to the position of program manager. The assistant managers would rotate into the full manager slots at the end of each four-year tour, with these rotations staggered so that only one side of the office is in transition at any one time.

Strengths of the Co-Program Manager System

- Allows both program managers to concentrate on developing the necessary experience to run a program office.
- Provides one member of the team who is thoroughly grounded in the user perspective.
- Allows both members to concentrate on their particular field in completing academic degrees.
- Provides time for the acquisition manager to get the necessary procurement training.
- Greatly improves continuity in the program office.

Weaknesses of the Co-Program Manager System

- Limits amount of experience each manager acquires in the other's field.
- Relies on DSMC courses for training, thus giving only general, introductory instruction.
- Puts technical managers in a program office for eight years during their prime years for command experience, probably decreasing promotion opportunities.
- Adds to the confusion regarding who is to blame when project goes awry.

Recommendations and Conclusions

Recommendations

DoD should establish a dual-career track leading to co-program managers overseeing each program office.

The service academies should set up a systems acquisition major to prepare cadets anticipating a non-rated career to be program managers.

DSMC should also offer an expanded version of its Program Management Course for those acquisitions managers who have time for more in-depth study of the required topics.

Each program manager should also have an assistant program manager who rotates up when the departing manager rotates out, with these rotations staggered to occur every other year.

Conclusions

Leadership in a program management office can often make or break the program. A system of co-program managers increases the time each manager can devote to individual people and individual topics, allowing them to make stronger decisions. Although this system may cost upwards of \$15 million each year in additional salaries, it seems a small price to pay when compared to \$170 billion in outlays. There will still be problems attracting high-quality people to the field due to the glamour of the operational field. However, if the services can find a way to reward quality acquisition managers for a job well-done, quality people will find their way into acquisition manager slots.

INTRODUCTION

The Department of Defense spends hundreds of billions of dollars on acquisition each year. Its critics claim that it manages to waste billions of those dollars each year as well. While tales of cost overruns and production delays tend to support these critics, many years of attempted reform have proven that there are no quick fixes in this business. Much as it might like to see an immediate solution to all the problems of this process, DoD must accept the tendency towards evolutionary rather than revolutionary change. If DoD can learn from its mistakes and do better next time, the process should improve over time.

The defense acquisition process is much like an avalanche racing out of control down the slope. Even though you try to avoid it, it will probably grab you at some point. Once it does, you just hang on and hope to come out in one piece. Some people pop out unscathed, some come out worse for the wear, and some are never seen again. As yet, no one has been able to change its course and few have been able to slow it down.

In this spirit, I will not try to change the direction of the whole process, but instead will focus on one small part in hopes of just slowing it down a bit. I will examine the preparation and selection process for program managers, those individuals who oversee the acquisition process for a specific system. The system can range in cost from several thousand to several billion dollars, with staffs of a handful to several hundred people dedicated to bringing that system on line. As of 1986, DoD had approximately 100 major weapons systems under way with a completion cost of approximately \$750 billion.² There are also hundreds of non-major programs in development and procurement as well. These

programs all have one thing in common: a single person, either military or civilian, manages the program and guides it towards completion.

The Office of Management and Budget recently outlined the essential qualities of these program managers:

- an understanding of user needs and constraints;
- familiarity with development principles;
- requisite management skills and experience. Ideally this category includes specific skills in R&D, operations, engineering, construction, testing, contracting, budgeting, finance, and control.
- permanence of position: with satisfactory performance, the tenure of the program manager should be long enough to provide continuity and personal accountability.³)

These qualities are as diverse as they are numerous. They require personnel with a wide variety of managerial and technical/operational skills to ensure that the program runs smoothly and efficiently.

In this paper, I will look at the problems with the current system of preparing and selecting program managers to see if those managers who are chosen have the proper mix of skills and whether anything can be done to help provide them. Several proposals have already been set forth in this effort. I will distill them down into three that encompass most facets of the individual proposals: 1) A defense acquisition corps, 2) Clearly defined career patterns for military program managers, and 3) A system of co-program managers. I will then determine which process or combination of processes will ensure that the best possible personnel are selected to head procurement programs.

Part I - Problems with the Current System

Introduction

In testimony before the Senate Armed Services Committee on December 13, 1984, retired Army General Henry A. Miley observed that:

"...even though many weapons systems have been developed and deployed, the Army's perception is that at least some of the programs were not as successful as they could have been. Further, there is a perception that the quality and performance of the project managers have been contributing factors. The accepted indicators of the less than reasonable success of the programs have been the highly publicized reports of system deficiencies, cost overruns, and delayed fielding."

Defense analyst Robert Maguan is even more specific. He lists three aspects - short tenure on the job, limited management ability or experience, and the program manager's position within his own command structure - as barriers to the program manager effectively exercising his authority.⁵

And finally, Professor J. Ronald Fox of the Harvard Business School, speaking before a Conference on Developing Leaders for Defense Acquisition, noted that training and management experience are the keys to successful program management. He wondered whether acquisition experience would ever replace operational experience as the services' primary criteria for selecting program managers.⁶

All of these statements lead to one inescapable conclusion: the current preparation, selection, and rotation system for program managers is severely flawed. It is flawed not only in the final selection process, but in the entire system of preparing and motivating personnel to assume the job of program manager.

The flaws in the system are especially visible in its products. A survey conducted by the Packard Commission determined that military program managers feel they aren't the equal of their industry counterparts. Only 25% feel DoD program managers are better than industry PMs, while 35% feel they are about equal and a full 40% feel industry PMs are better qualified. On the other side of the coin, over eighty percent of the industry program managers recently polled by the National Security Fellows at Harvard's Kennedy School of Government feel the government personnel system does not provide trained personnel with sufficient understanding of industry/defense operations.

Should this come as a surprise? Probably not. If we go back to the requirements outlined by the OMB, we'll see the depth of talents and experience a program manager must have.

1 - Understanding of user needs and constraints.

This is usually interpreted as systems/operational expertise. The PM should have some operational background with systems similar to the one they are responsible for developing.

2 - Familiarity with development principles.

A degree in systems management would prepare the PM to establish and maintain a program office, set up a work schedule for completing the project in an efficient and timely manner, and integrate the new system with the necessary support and maintenance groups. Attending the Defense Systems Management College (DSMC) Program Management Course is considered an acceptable alternative, although it would not provide the in-depth knowledge of an academic degree.

3 - Requisite management skills and experience.

Since this category ideally includes specific skills in R&D, operations, engineering, construction, testing, contracting, budgeting, finance, and controls, it would probably require a bachelor's and master's degree in the specific field involved, as well as at least a bachelor's degree in management and/or business administration, in addition to several years of actual experience in the acquisition field.

4 - Permanence of position.

Allowing a program manager to stay with the job for at least four years, or until the completion of a program milestone, provides continuity in the program and personal accountability, but also requires a loosening of the services' rotational policies.

5 - In addition, OMB neglected to include such implicit skills as:

Public speaking - program managers have several live and practice briefings each week, and an ability to sell the program in these briefings often determines its success;

Political science - a working knowledge of the Congressional budgeting and committee processes is essential in an environment with four committees, several subcommittees, and annual (or more frequent) program reviews;

Highly developed sense of self-worth/self-confidence - As the late Woody Hayes, the great Ohio State football coach, once said of the forward pass, "Three things can happen when you pass, and two of them are bad." This could easily describe the program manager's feelings upon assignment to this difficult job in the face of its endless opportunities for failure and limited chances for promotion (even with successful completion). It takes a great deal of self-confidence to persevere in such trying circumstances.

All of these skills make up a successful program manager. By determining which qualities current program managers lack, DoD can move forward to a better preparation and selection system. In order to simplify matters, I have divided the necessary qualities into several specific areas: experience, operational expertise, training and education, career opportunities, and tenure and responsibility.

We can now proceed to the current situation in each of these five areas, after which we can compare the alternative systems to see how they measure up under these criteria.

A. Experience

DoD Directive 5000.23, System Acquisition Management Careers, sets the experience requirements for program managers of non-major and major programs. Program managers for non-major programs should have "three years in acquisition, support, and maintenance of weapons systems or in acquisition, at least one of which was performed while assigned to a procurement command. (Time spent pursuing a program of post-graduate education in a technical or management field or attending the Program Management Course at DSMC may be counted for up to two years of the experience requirement.)"⁹ The requirements are similar for major program PMs, but increase to eight years experience with at least two in a procurement command. In both cases the requirement can be waived, by a general/flag officer for non-major programs or a Service Secretary for major programs.

These guidelines are very general and leave a lot of leeway in the selection of program managers. A 1986 Government Accounting Office (GAO) study entitled DoD Acquisition: Strengthening Capabilities of Key Personnel in Systems Acquisition was a little more specific in identifying key experiences that might help a program manager:

- operational experience, that is, experience with a combat or support command or with the fleet;
- multiple program office assignments; and
- experience, through program office and other acquisition assignments, in systems engineering, testing, laboratory, and logistics and at headquarters (service level or above).(10)

At present, the services emphasize operational experience, often at the expense of the other areas. Typical career paths run from eight

to eleven years of actual operational experience in the Army up to seventeen years in the Air Force. (See appendix 1 for illustration of service specific career paths.) This doesn't leave much time to pursue an alternative career in acquisition.

The survey of industry program managers and a similar survey of retired military program managers provides some interesting insights in this area. Eighty percent of the industry PMs and even 53 percent of the military PMs felt that government trained personnel don't have a sufficient understanding of industry/defense operations. Sixty-three percent of the industry PMs felt that lack of experience was one of the major shortcomings of the military PMs. At the same time, eighty-four percent of the industry PMs and 77 percent of the military PMs agreed that
11
experience is more important than training.

Finally, a study prepared by Leonard Sullivan, Jr. for the Georgetown Center of Strategic and International Studies in 1986 found that "military program managers are frequently on their first tour in the acquisition game and tend to come from the operational forces. Officers rarely serve more than 6-8 years in program management in any capacity, and even more rarely have suitable undergraduate training in engineering,
12
accounting, or business management."

Although most of those involved seem to agree that acquisition experience is important, little has been done to see that adequate opportunities are provided. All three services now have some acquisition management programs. (see Appendix 2) However, in examining these programs, the GAO study concluded that:

All three services provide the option for officers to spend the major part of their careers in acquisition. At the same time, service programs also allow officers to pursue careers in both acquisition and operational specialties. With the requirements in operational

specialties clearly defined, development of acquisition skills is fitted into the remaining time. This becomes problematic when the remaining time is limited. The services need to address the issue of how much operational experience is necessary for the development of program managers.

Improvements are needed in other areas as well. Desired qualifying experiences need to be clearly defined.(13)

Program management office experience is essential. The intricacies of the defense acquisition process cannot possibly be learned in one twenty-week DSMC course on program management. The personnel system must provide military officers with the opportunity to get the required experience so that they can efficiently run their programs. At this point in time, the system does not meet this goal.

B. Operational Expertise

Operational expertise ultimately means actual operational experience with a system similar to the one that the program manager is attempting to field. The services feel there is no substitute for a 'user perspective'. As General Skantze, USAF, put it:

It is important for program managers to appreciate the full spectrum of what the military business is from an operational point of view...The program manager has to understand the customer's requirements and where he is coming from and why he thinks the characteristics of the weapons system he needs are important, and in some cases be willing to engage in dialogue with him and force some trade-offs, and ultimately pin down that program requirement. I think our military people are more capable of doing that with the user than our civilian people are.(14)

Not only do leaders in acquisition see this dichotomy between military and civilian, but also within the military between the rated and non-rated, the unrestricted line and restricted line, the operational and

the support groups.(15) The user perspective evolves from actual experience with, and command of, particular systems.

The Packard Commission survey highlights the extent to which the services rely on the user perspective for major system program management. Only 18.8 percent of the civilians program managers or deputy program managers were even involved with major systems/R&D acquisition programs.

Nearly three-quarters of the military PMs had responsibilities in this area.¹⁶ According to the GAO study, as of September 1985 there were

only four civilian PMs on major Navy programs and one civilian PM on major Air Force programs. The Army had no civilian PMs on its major programs. The numbers were higher on non-major programs - 35 percent of Air Force, 25 percent of Navy, and 21 percent of Army PMs in this area were civilians.¹⁷

It all comes down to trying to decide what will work on the battlefield, and the services trust their own to make that decision better than civilians in DoD. As the Air Force put it in response to the GAO panel:

Military acquisition decisions are basically trade-offs between increasing effectiveness of weapons systems and the cost of those capabilities. They require sound military judgment about war-fighting capability, as well as firm grounding in sound business practice and public policy.(18)

If the services stuck to this ideal, they might have fewer problems. All too often, however, they emphasize operational/technical skills over business skills. These people have been in the field and know what works and what doesn't. This might also partially explain why none of the military PM's interviewed by the Packard Commission were women (who aren't eligible for combat duties). This results in systems that are usually very expensive, since human nature leads the program managers to

provide the best system possible, given that they might have to use it, regardless of the cost. If the program managers don't understand the implications of excess cost, they won't be as inclined to worry about it while working to protect "their boys on the line." While I agree that a 'user perspective' is important, it is equally important to remember that this cannot be used as an excuse for foregoing sound management skills.

C. Training and Education

While experience and expertise have been identified as keys for excellence in program management, both of these require minimum amounts of training and education. Although training and education alone are not sufficient criteria for good program management - practical application of the lessons learned in school enhances the value of those lessons - lack of training and education multiplies the on-the-job training necessary to be a good program manager.

DoD Directive 5000.23 identifies minimal training and education requirements for program managers of major and non-major programs. Bachelor's degrees are mandatory for all PMs, with master's degrees in the appropriate field seen as desirable. The Program Management Course at DSMC (or a comparable civilian institution equivalent) and intermediate service school are both mandatory for major program managers, but can be waived by the Service Secretary. They are merely desirable for non-major program managers.

The DSMC Program Management Course provides an excellent case in point regarding the current inadequacy of training. Of the thirty-four recently-assigned, major-system program managers surveyed by the GAO

panel, only 16 had actually attended the course.(20) Those who did attend were not all that far ahead of their counterparts. The 20-week course deals mostly with introductory material on contracts, procedures, regulations, and reporting systems. There simply is not enough time to cover the intricacies of the defense acquisition process in depth, with many subjects allowing only one to three hours of seminar instruction to master the material.

Academic degrees also lack real-world experience, although they provide a much better general background. The consensus seems to be that the proper mix is some sort of engineering degree from an undergraduate institution coupled with a master's in business or systems management. This at least allows the candidate to acquire some of the basic skills required to be an effective program manager.

Those program personnel who wish to pursue any of the above training (or other training) often cannot find the time or the permission to pursue it. A busy PM is not going to release necessary personnel for additional training; if the personnel want the training they have to get it on their own time. The Packard Commission survey found that sixty percent of the civilians and seventy-five percent of the military program managers didn't feel time was available for them to get the training they needed, and over eighty-five percent of the military PMs would not take acquisition-related
21
courses on their own time.

One interesting dichotomy in the survey data involved the adequacy of training. Slightly more than half of the military program managers surveyed felt they had received adequate training through formal courses, and only thirty-five percent had business or public administration related degrees. However, a full seventy-five percent still felt they had come to

their present job with the appropriate education to perform their job well.²² This implies either an inflated valuation of operational expertise or a gross underestimation of the requirements of the job. Either way, the inadequate performance of program managers points out the importance of a well-rounded background in all the areas discussed thus far. While experience can serve as a substitute for education, it might take several years of trial and error to learn the basic principles provided in an intensive one-year master's program in systems management. It is interesting to note that only ten percent of the military program managers feel they are over-qualified for the jobs they do, and only forty percent of the civilian PM's believe DoD personnel in similar jobs have sufficient education and training.²³

It takes many years of training and experience before the services allow an officer to command a battalion, a wing, or a fleet. Why, then, do they allow personnel with very little acquisition experience to run a major program office? Operational commanders will be around for a couple of years and, more often than not, their impact will fade as soon as they rotate out. Program managers, on the other hand, oversee projects that could impact on their service for years to come (e.g. planes, ships, and tanks); yet DoD still lacks quality, available training for these personnel.

D. Career Possibilities

This part of the problem is a little harder to get a handle on. If DoD can get people with the proper experience, expertise, training, and education then it ought to follow that they should be good program

managers. However, because the requirements are so complex, it would take even high-quality personnel much time to master all the various skills. But the quality personnel tend to the operational side of the house. Why? The problem is mainly one of perceptions.

The business of the military is war-fighting. The top positions in each service, therefore, go to those who have proven themselves in operational areas over a long period of time. Acquisition, along with non-rated fields like intelligence and communications, is perceived as a dead-end career field. It doesn't have the glamour attached to it of a battalion command. A person at the O-6 level (colonel or captain) who is shunted into a program management slot doesn't have the same wide range of possibilities in front of him as a battalion or wing commander. Those who have an assignment in a program office at the lieutenant/ensign to lieutenant colonel/commander levels often look to jump back to the operational area at the earliest possibility. The result is a paucity of experienced, trained, acquisition professionals to manage the service program offices.

Andrea L. Fischer, special counsel to the Assistant Secretary of Defense (Acquisition and Logistics), addressed the problem in a call for a professional acquisition corps:

The Department (of Defense) must be able to show an individual choosing acquisition as a career path that he or she has a distinct career path that rewards quality performance.

Changes in pay structures, rotational programs, and training; more flexible DoD-wide personnel procedures; real opportunities for upward mobility; and rewards for experience and competence will help us attract and retain a talented cadre of professionals who have the proper background and experience.(24)

As long as those who actually occupy program manager slots are not satisfied with their promotion possibilities, the perception that those

possibilities are inadequate will remain. If more former program managers were distributed throughout the command structure, they could praise the system for the opportunities it provides. But as long as the majority of program managers retire soon after they complete their assignment, the perception will persist.

Interviews with current program managers bolster the evidence that these perceptions exist. Only one-third of the military program managers interviewed by the Packard Commission would definitely not leave to work in private industry if they had the opportunity. While current job satisfaction is high - around 90 percent - future prospects are considered dim; even though eighty-two percent of current program managers feel promotion would be an adequate reward for good performance, nearly forty percent were not clear what they had to do for promotion. None of the retired program managers felt promotion actually existed as a reward for them.

As long as personnel perceive fewer opportunities for promotion in acquisition than in operations, acquisition will have difficulty attracting equal or better quality personnel. The first step might be to emphasize the long-range importance of the programs as outlined in the previous section on training. The chance to have a long-term impact might increase the glamour of the acquisition field. But it still has a long way to go to overcome the current fear of failure. As long as the opportunity for failure is great and the rewards for success are minor to non-existent, the acquisition process will suffer.

E. Tenure and Responsibility

The final piece of the program manager puzzle is tenure and responsibility. The importance of tenure manifests itself in both experience and responsibility.

Typical service rotation policy moves personnel in and out of jobs every two to three years. DoD Directive 5000.23 recommends program managers remain on the job for at least four years and preferably until a major program milestone has been reached. Even so, this does little to solve the problem of unqualified program managers. If the person has shifted between the operational and acquisitions career fields several times on their way up the ladder, they will not have had the chance to gain adequate experience to run a program office. As I explained above, large doses of training and experience are required to become a program manager. The current rotational policy hurts both the manager and his program.

A program manager coming in from the field or from a different program office will take several months to get up to speed on the project. Meanwhile, the industry program manager has to delay major program decisions. Once the new program manager has become acquainted with the program, his staff has to get used to working with him. This results in an unstable program office for at least one out of every four years, and usually one out of every three years since program manager's
26
tenures average about 30 months.

The rapid turnover rate also makes it difficult to pin down responsibility for program delays and cost overruns. Even when the program manager has been on the job for several years, he shouldn't

automatically be held responsible for every problem. As the Packard Commission concluded:

The program manager finds that, far from being the manager of the program, he is merely one of the participants who can influence it. An army of advocates for special interests descends on the program to ensure that it complies with various standards for military specifications, reliability, maintainability, operability, small and minority business utilization, and competition, to name a few. Each of these advocates can demand that the program manager take or refrain from taking some action but none of them has any responsibility for the ultimate cost, schedule, or performance of the program.(27)

This leaves DoD with a system that has few rewards for good performance, and even fewer penalties for poor performance. This leads the program managers to latch onto their programs. They do their best to sell it, since there is no reward for closing up a program office and they don't want to be accused of having the ship run aground on their watch. After all, if this job is to be the capstone of their careers, as it often is, they want to be able to point to something concrete and proudly claim, "I had a hand in bringing that system on line."

Conclusions

What have we learned? For the most part, the current systems for preparing and selecting program managers focus on operational expertise at the expense of acquisition experience, training, and education. The resulting managers are put in a job with few rewards or possibilities of promotion. They have many opportunities for failure, but few punishments for that either. Thus, they remain in the job for 2-3 years, then are rotated out on schedule. This leads to discontinuities in individual program offices, which cause inefficiently run programs with a history of

cost overruns and fielding delays (The B-1, the Sgt York, the Bradley fighting vehicle, and the F-18 to name a few). What can we do? That is the subject of the next part, with the five criteria set forth above as the basis for discussing three possible alternatives: 1) A defense acquisition corps, 2) Clearly defined career patterns for military program managers, and 3) A system of co-program managers.

Part II - Alternative Preparation and Selection Systems

1. A Defense Acquisition Corps

In an article in Defense Management Journal entitled "DoD Needs a Professional Acquisition Corps," Andrea L. Fischer outlined the guidelines for a proposed "defense acquisition corps":

"1. Made up of qualified civilian and military personnel in all acquisition-related fields as determined by the Undersecretary of Defense (Acquisition); no more than 200,000 strong.

"2. Basis for entry: education, experience, training, and depending on the level of entry, examination.

"3. The Undersecretary of Defense (Acquisition) and the Assistant Secretary of Defense (Force Management and Personnel) would prescribe salary classes for the corps similar to those used in the Navy's China Lake experimental program. Basic salary rates would not exceed the maximum rate of basic pay for a member of the senior executive service.

"4. The same under and assistant secretaries would set promotion, retention, rotation, demotion, and removal procedures.

"5. Members of the acquisition corps would qualify for bonuses on the basis of achievement, that is, attaining and maintaining professional certification and holding contracting officer warrants; retaining selected critical skills would be a factor as well.

"6. DoD would set up a Defense Acquisition University that would encompass all existing acquisition-related defense schools. It would include separate colleges for functional specialties such as contracting and acquisition, logistics, quality assurance, program management, systems engineering, production, and manufacturing. Each college would be accredited and offer degrees. All students would take a core acquisition and contracting curriculum to assure a common understanding of mission roles and responsibilities.

"7. Finally, the Undersecretary of Defense (Acquisition) and the Assistant Secretary of Defense (Force Management and Personnel) would develop policies and programs for the recruiting, placement, and training (including high-tech training), and development of career personnel in the defense acquisition corps."(29)

As former Assistant Secretary of Defense (Acquisition and Logistics) Dr. James Wade saw it, "We lack a cadre of seasoned, well-rounded, technically-oriented, acquisition professionals. These people are the key to improving the DoD system acquisition process. While no amount of reorganization will, by itself, solve these problems, a system which

results in clearly defined lines of authority, responsibility, and accountability -- and manned by experienced, high-tech-oriented professionals dedicated to making the system work -- has a far better chance of success."

30

Fischer summed up the goals as follows:

The department must be able to show an individual choosing acquisition as a career that he or she has a distinct career path that rewards quality performance.

Changes in pay structures, rotational programs, and training; more flexible, DoD-wide personnel procedures; real opportunities for upward mobility; and rewards for experience and competence will help us attract and retain a talented cadre of professionals who have the proper backgrounds and experience.

Establishment of a defense acquisition corps of highly-skilled personnel would serve as a basis for necessary personnel reforms....The department would have increased flexibility to move corps members to another service or agency, as dictated by need....The emphasis would be on acquisition as a profession."(31)

A. Experience

The strength of this proposal lies in how it deals with the experience problem. The operational requirements of the military system make it difficult to draw a career ladder that encompasses the proper amount of acquisition experience. By feeding all acquisition-related personnel into a single corps, qualified personnel can be identified early on and groomed for positions as program managers. Those in the military who qualify would be transferred in, although the model doesn't completely address whether they would be able to return to the operational field if they so desired.

A potential problem might be that a high climate of expectations could be developed by those who are selected for this program. The elitist nature of the corps would raise a person's expectations in terms

of career progression, and the restricted number of program manager slots could result in a log-jam at the top. Many of the 200,000 members would never get to use their extensive and expensive government training unless they resign and shift over to the private sector.

B. Operational Expertise

If this proposal has one glaring deficiency, it is the lack of the so-called "user perspective". Although I noted earlier that the services were over-dependent on operational expertise, complete independence from such expertise is not the answer. Moreover, the services are not likely to turn over all program authority to a civilian-managed defense acquisition corps. The retired military program managers were unanimous in their support for military control of the program management office. Industry would also react unfavorably. The Harvard survey of industry PMs shows that they favor military program managers by a four to one ratio over civilian PMs. Although we saw above that they felt military PM's were under-qualified, one must assume they feel civilian PM's are even less qualified due to their lack of a user perspective.

While a strong technical background will certainly overcome a lack of operational expertise to some extent, it will not do so completely. There is also a question as to how many truly-qualified, technical people could be attracted to this corps given government pay-scales. The last thing DoD wants to do is substitute one system of partially-qualified personnel for another.

C. Training and Education

All claims of elitism aside, a Defense Acquisition University would probably be the best training ground for entry-level acquisition personnel. A concentrated core curriculum focusing on management, business, and necessary political and speaking skills, with a major in one of these fields or an engineering field, would provide a prospective program manager with a solid foundation on which to build. This system would provide a common basis of understanding of the acquisition process, and would allow in-depth study of concepts that receive only introductory treatment in current DSMC courses. If the school included a master's program as well, prospective Corps members could complete the necessary education prior to embarking on their careers, allowing them to concentrate on their jobs once they begin work.

D. Career Possibilities

This system will enhance civilian careers in acquisition at the expense of military careers in this area. The change to a civilian-managed corps with stringent entrance requirements would deter military entrance into the field, since the training required would not allow the officer to spend much time back in operations. The civilians would welcome this prospect with open arms. As noted earlier, there were only five civilian program managers on major programs by late 1985. If the defense acquisition corps is established, this number will rise dramatically. Eventually the great majority of program managers would be civilians because civilians will spend their entire career progressing

through the corps, while military members will slow their own advance by spending time over in operations to fulfill military requirements.

E. Tenure and Responsibility

The Corps would go a long way toward stabilizing weapons programs and pinpointing responsibility. Due to the lack of rotational requirements, the civilian program manager could stick to his program for many years, just as his industry counterpart does. The relationships could be strengthened, and familiarity with standard procedures would make the program more efficient.

One danger of this system could be the lack of fresh perspectives. Rotating personnel in and out of the program office provides a variety of approaches to problem solving that could highlight solutions previously ignored. As long as a tenured program manager actively seeks out fresh ideas this problem won't exist. But once the program manager starts reverting to the same solutions every time there is a problem, he will miss alternative solutions that could be more efficient.

Strengths of the Corps

- The Corps promotes experienced, technically-knowledgeable personnel.
- All Corps personnel have a strong background in acquisition procedures and responsibilities.
- Career opportunities for civilian acquisition personnel are enhanced.
- Continuity is improved, resulting in a clear source of responsibility for program successes and failures.
- The acquisition process is professionalized.

Weaknesses of the Corps

- There is a lack of the "user perspective."
- The military loses control of the procurement process.
- Technically-qualified personnel are more likely to choose industry jobs.
- Military acquisition personnel will be practically eliminated.
- There will be a loss of fresh perspectives due to reduced rotation.

2. Clearly Defined Military Acquisition Career Paths

In testimony before the Senate Armed Services Committee on November 16, 1983, former Deputy Secretary of Defense David Packard set forth the idea of separate career paths for acquisition personnel:

I believe that each service should be restructured to have two clearly defined and separate career paths for the development of officers. One should be to train men and women as commanders of military forces. The other would be to train men and women as managers in procurement.(33)

On August 19, 1985, Deputy Secretary of Defense William H. Taft, IV, stated that "recent acquisition initiatives aimed at restructuring management emphasis and policy...must be coupled with improvements in the training and experience of our program management and procurement professionals, both military and civilian." He went on to request "...desired experience and training objectives by job function and experience level..." (for Taft's memo and portions of the replies, please see Appendix 3).

While no service set up a separation along the lines of Packard's suggestion, most emphasized the need for increased training and experience for program managers. They outlined specific experience needs in configuration, data, subsystems, financial, test/deployment, or program management. They suggest at least one acquisition tour at each grade from captain through lieutenant colonel, culminating in one or more program management assignments at the O-6 (colonel/captain) level.

None of the services specifically mentions operational experience as a prerequisite, but most leave room to acquire some operational experience as the officer moves up the ladder. All of the services either prefer or

demand at least a master's degree in engineering or some business/management area by the time the officer reaches the program manager level. They also require several training courses in acquisition management.

A. Experience

The DoD authorization act of 1986 required that program managers have at least eight years experience in the acquisition, support, and maintenance of weapons systems, including two years at a procurement ³⁶ command. The service responses to Taft's memo outline possible areas where this experience can be gained. They address the problem of insufficient time spent learning the tools of the acquisition trade before assignment as a program manager. However, they fall short in providing the depth of experience necessary to learn all the facets of the program manager's job. Because the responsibilities are so wide-ranging, even three tours in acquisition may not provide sufficient experience. Packard's idea of separate tracks leaves much more time to develop the skills required by a program manager. As long as the dual track does not preclude crossing over from one track to the other for a career-broadening tour, it could solve the problem of ensuring that the future program manager can focus on learning the proper skills.

B. Operational Expertise

Both Packard's system and the service systems of expanded acquisition experience and training leave little time to gain more than cursory operational experience. Officers trained solely on an acquisition track may get one, or possibly two, operational assignments, but their lack of an operational background will preclude their gaining much authority or first-hand experience with weapons systems. Instead, this tour will probably be spent in some operational support field, with maintenance likely to be the most useful to them in the long run. In addition, the systems proposed by the services will turn the officers into a jacks-of-all-trades, masters-of-none. Officers who choose this acquisition gauntlet will bounce back and forth from acquisitions to operations at every grade. They will lack the continuity necessary to really learn a system, since just as they get comfortable they will be rotated out. The likely result is that they will neither be prepared for operational command nor for program manager duties.

C. Training and Education

The new service training requirements certainly provide for increased training and education. However, they neglect to address questions of either the quality of the class or when and where the officer will take the class. Taft suggested the possibility of alternative education systems, such as videotaped courses, but none of the services picked up on this. Most of the courses suggested are general, introductory type courses that would do little to train the officer for

the intricacies of the defense acquisitions business.

D. Career Possibilities

Although the services don't specifically address careers, they do provide a good progression up to the program manager slot. They fail to provide any suggestions for what to do with program managers after they have successfully completed that job. Apparently the general officer ranks are still predominantly the province of rated or line officers, with those in the support fields left to fight for a few token slots. Packard's idea of the dual track does leave room for advancement, since each track would probably have a separate command structure. However, funneling all acquisition personnel into a single track would probably limit their opportunities for command outside of the acquisition field and would definitely limit their opportunities to participate in the real business of the military -- war-fighting.

E. Tenure and Responsibility

This issue is not addressed at all. Although DoD Directive 5000.23 requires at least four years or completion of a major milestone for a tour, that can and has been waived many times. As long as officers continue to rotate in and out of program manager slots, continuity will be a problem, and accountability will be difficult to pinpoint.

Strengths of Clearer Career Paths

- Program managers gain more experience in the acquisition business.
- Through increased training requirements, program managers get a better background in acquisition.
- The dual career track allows those interested in acquisition to concentrate their careers in this area.
- Program managers are better prepared to meet the varied requirements of their job.

Weaknesses of Clearer Career Paths

- Reduces operational expertise of program managers in most cases.
- Doesn't address quality of available training.
- Doesn't address time constraints on acquiring necessary training.
- Fails to address problem of what to do with program managers after their program is completed.
- Maintains current rotational process, thus hurting continuity and making responsibility difficult to pinpoint.

3. Co-Program Managers

As I noted above, OMB circulated an outline of the required skills of a program manager. These included: understanding user needs; familiarity with development principles; and skills in R&D, operations, engineering, construction, testing, contracting, budgeting, finance, and control. Because this array of skills is so varied, program managers have difficulty coming to their job with expertise in every area. It often takes them several months to get up to speed, and even then they don't have time to adequately handle all the responsibilities required of them.

The co-program manager system is designed to solve this problem. Basically, the tasks are divided into technical skills (R&D, testing, operations, engineering, and construction) and management/business skills (contracting, budgeting, finance, control, and *system management*). Each program management office would then have a team of program managers, one who has the operational and technical expertise, the other who has the business and management expertise. Each co-program manager would also have a military officer as their primary assistant. This system would mainly be used on major programs, although it could be used on non-major programs if the scale is large enough.

The career paths would be similar to those proposed by Packard. The managers would spend the great majority of their careers in either acquisitions or operations, with maybe one cross-over tour as a captain/lieutenant for exposure purposes. Both PM's would be required to have master's degrees in their field of expertise, although this requirement could be waived in extraordinary circumstances. They would also both have to have attended the DSMC Program Management Course, to

ensure that both have some basic understanding of the acquisition field requirements.

The tour of duty should be three to four years, and should be staggered so that only one side of the office is in transition at any one time. By staggering transitions, you ensure that there is at least one experienced team member around to provide continuity. The assistant program managers would be chosen with the expectation that they would be the replacement for the outgoing program manager, except in extreme cases where performance does not warrant promotion. This would also enhance continuity, and ensure a quicker and smoother transition when the new PM moves in.

Ideally, the initial team of co-managers would consist of an acquisition manager who has just rotated out of a previous assignment and has a good idea of the requirements of a program management office, and a technical manager who was an assistant in a program office that was closed down or cut back due to completion of the system. The initial acquisition manager would remain for only two years, after which new acquisition managers would rotate on a four year schedule. The initial technical manager would rotate out after four years, with new managers coming in every four years after that. In this manner, an assistant would become a program manager every two years, with a new assistant taking his place. Only one of the four top people would ever be new to the office.

A. Experience

The co-program manager system allows each PM to focus on that area which they will be responsible for when they are in charge of a project. The great majority of a technical manager's preparatory assignments will be in the field or in a laboratory, while the great majority of an acquisition manager's preparatory assignments will be with program offices. They will learn what is required for their particular area, and will have plenty of time to master the various related concepts. The broadening tour that each goes through will give them an appreciation of the needs and constraints imposed by technical or management requirements, although this will only be a minor introduction. Teamwork and cooperation will be the keys to making this system work.

B. Operational Expertise

Operational expertise is one of the strong points of this system. By having an acquisition manager, the technical manager is able to concentrate on the system without having to worry about as many of the management details as he did in the old system. Since minimal program office experience is required before becoming an assistant technical manager, personnel can spend the majority of their time learning what works and what doesn't in the operational arena. They don't have to worry about spending three tours in acquisitions and losing their currency every three or four years.

C. Training and Education

The co-program manager system is a little weak in this area. Although it does allow each manager to concentrate their education in their field of expertise rather than having to broaden their skills, it also relies on the DSMC for training courses and those have proven to be of limited value. It also provides no solutions for the limited-time problem, although by concentrating on one career field the acquisitions manager may be able to find more time for training available between assignments since they no longer have to perform so many cross-over tours in operations.

D. Career Possibilities

The co-program manager system also has deficiencies in career management. There still is no real progression past the program manager slot. These officers have little to look forward to. The technical managers will have spent eight years as assistant and full program managers. Although the experience is probably as valuable as battalion or wing command, the personnel hierarchy will have to have a change of heart before it is accepted as such. The acquisition managers will have even more restricted opportunities since they lack any useful amounts of operational experience.

E. Tenure and Responsibility

Another strong point of the co-program manager system is its emphasis on continuity. By rotating assistants into program manager slots

and staggering the rotation of technical and acquisitions managers, the office will experience a continuity that is missing today. The senior program managers will be able to somewhat carry the junior PM's while the junior PM's learn anything they weren't able to pick up as assistants. Since the two will be working together, each will have an idea of the requirements of the other's job and should be able to provide assistance if necessary.

As for responsibility, there still may be difficulty pinpointing blame if problems arise, although it will be easier to narrow it down. Two people working together ought to be better able to withstand external onslaughts and solve internal problems, especially after six to eight years on the job, and thus should shoulder the bulk of the responsibility for problems.

Strengths of the Co-Program Manager System

- Allows both program managers to concentrate on developing the necessary experience to run a program office.
- Provides one member of the team who is thoroughly grounded in the "user perspective".
- Allows both members to concentrate on their particular field in completing academic degrees.
- Provides time for the acquisition manager to get the necessary procurement training.
- Greatly improves continuity in the program office.

Weaknesses of the Co-Program Manager System

- Limits amount of experience each manager acquires in the other's field.
- Relies on DSMC courses for training, thus giving only general, introductory instruction.
- Puts technical managers in a program office for eight years during prime years for command experience, probably decreasing promotion opportunities.
- Fails to provide any upward outlets for promoting acquisition managers.
- Adds to the confusion regarding who to blame when project goes awry.

Part III - Recommendations and Conclusions

Recommendations

I recommend that the services establish a dual career track, similar to David Packard's suggestion, but along the lines of the co-program manager system. In spite of its drawbacks, this system is the only one that addresses the question of whether any one person can possibly be expected to perform all the required duties of a program manager at a level of competence that should be expected for multi-billion dollar programs.

I would also recommend that a course of study be set up at the service academies and designed in such a way as to provide a major in systems acquisition. They could use the human factors engineering major as a model of a multi-divisional major (it combines psychology and engineering) and provide instruction in management, business, the budget process, government contracts, and systems management. Since most of these courses already exist, it should be easy to structure such a major. When coupled with a master's in business or management, the officer would have a solid foundation for a career as an acquisition manager.

I recommend that the program management course at DSMC also come in an extended, year-long version so that adequate treatment of the required policies and regulations could be given. Any one who plans to be an acquisitions manager should be required to take this course when they are a captain/lieutenant. Technical managers can continue to take the 20-week course.

Finally, I recommend that the program management office contain two managers - one technical and one acquisitions - and that each of these

managers have an assistant who will rotate up when they rotate out. This system should be used for all major programs and those non-major programs for which it is necessary. Non-major programs that don't use this system should still have a manager and an assistant, one who is on an acquisition track and one who is on a technical track. Civilians may be used in this capacity and should be encouraged.

Conclusions

The program manager preparation and selection system is an important part of the acquisition process. Leadership in the program office can make or break the program. The institution of a system which provides co-program managers will improve continuity and efficiency in the program office. Since PM's will be working together in teams, individual managers will be free to concentrate more fully on their responsibilities. Having two officers also means that briefings and committee hearings can be divided up, and preparation time cut considerably since each person has fewer responsibilities. The presence of assistants will also ease the burden.

Some may critique this as a costly way of doing things, but the additional three members of the program offices for 100 programs will only add about \$15 million/yr (at an average salary of \$50,000/yr). When compared with \$170 billion of programs each year this is a minimal amount to pay for increased efficiency and expertise.

There will still be problems attracting quality people to this career field, even if the demands are reduced and the rewards are slightly increased. As long as acquisitions has a reputation as playing second

fiddle to operations, the promotion opportunities and prestige will be missing. General officer billets in the command structure can't be specifically earmarked for acquisition personnel; that would violate the rules of fair competition. Instead, the services have to mount an active campaign to educate all of their personnel on the importance of having high-quality acquisition personnel. After all, these are the men and women responsible for fielding the equipment that the operational commanders have to fight with. Therefore, its in the Service Secretaries' best interests to make sure the right people are receiving the right training to provide the best equipment at a reasonable cost. Otherwise Congress may rebel against gross waste in the Department of Defense and make arbitrary cuts that hamstring the department. DoD has a chance to slow down the avalanche on its own, and all parties should take this opportunity to help make that happen as DoD becomes increasingly able to field weapons in a more timely and cost-efficient manner.

ENDNOTES

1. Department of Defense Directive 5000.1, "Major System Acquisitions," March 12, 1986, pp. 5-6, includes a definition of major weapons system programs (Selected Acquisition Review (SAR) Programs):

The decision to designate any system as major may, after consultation with the DoD component concerned, be based upon:

a. Development risk, urgency of need, or other items of interest to the Secretary of Defense.

b. Joint acquisition of a system by the Department of Defense and representatives of another nation, or by two or more DoD components.

c. The estimated requirement for the system's research, development, T & E, procurement (production), and operation and support resources. A JMSNS is required for all acquisitions for which the DoD component estimates costs to exceed \$200 million (FY80 dollars) in RDT&E funds or \$1 billion (FY80 dollars) in procurement (production) funds, or both.

d. Significant congressional interest.

2. Government Accounting Office (GAO), DoD Acquisition: Strengthening Capabilities of Key Personnel in System Acquisition, (GAO/NSIAD 86-45, Washington, D.C.: May 1986), p. 2.

3. OMB Circular A-109, (Major Systems Acquisition), (Washington, D.C.: 1986).

4. General Henry A. Miley, testimony before the Senate Armed Services Committee for a hearing on "Career Paths and Professional Development for Acquisition Managers," December 13, 1986.

5. Robert A. Mangan, "In Search of "End Game": A Comparison of U.S. and Foreign Weapon Systems," A Study conducted under the DCI Exceptional Intelligence Analyst Program, 1984, pp. 63-66.

6. J. Ronald Fox, Speaking before the Conference on Developing Leaders for Defense Acquisition, John F. Kennedy School of Government, Cambridge, MA, Feb. 12, 1987.

7. In a survey conducted by the President's Blue Ribbon Commission on Defense Management (Packard Survey), 70 military program managers were asked to compare the qualifications of the typical program manager in DoD with the typical PM in industry. 4.2% felt DoD was much better, 21.1% felt DoD was better, 35.2% thought they were about equal, 35.2% felt industry was better, and 4.2% felt industry was much better.

8. In a survey of retired military program managers and current industry program managers conducted by the National Security Fellows (NSF survey) at Harvard's John F. Kennedy School of Government, the industry program managers were asked whether the government personnel system provides trained personnel with sufficient understanding of industry/defense operations. Of the 84 respondents, 35.7% felt strongly that it did not, 46.4% felt that it did not, 4.7% had no opinion, and 13.1% felt that it did.

9. Department of Defense Directive 5000.23, System Acquisition Management Careers, (Washington, D.C.: Dec. 9, 1986), pp. 2-3.

10. GAO, p. 72.

11. NSF Survey: When asked whether they felt experience in program acquisition was more important than training, 29.3% of the 82 industry PM's strongly agreed, 54.9% agreed, 9.8% had no opinion, and 6.1% disagreed. Of the 13 retired military PM's questioned, 76.9% agreed and 23.1% disagreed.

12. Leonard Sullivan, Jr., Characterizing the Acquisition Process, prepared for the CSIS Defense Acquisition Study, (Washington, D.C.: Jan. 1986), p. E-4.

13. GAO, p. 106.

14. General Lawrence Skantze, testimony before the Senate Armed Services Subcommittee on Defense Acquisition Policy for a hearing on "The Defense Procurement Process," Feb. 20, 1985.

15. Packard Survey: When asked which grouping best described the type of acquisition with which they were involved, 74.6% of the 69 military PM's answered Major Systems/R&D, 16.9% listed Logistics/Spare Parts, and 8.4% went with Base Level and Support Systems. Of the 83 civilian PM's asked, 18.8% replied Major Systems/R&D, 72.9% were in Logistics/Spare Parts, and 8.3% were Base Level and Support Services.

16. GAO, p. 102.

17. GAO, p. 72.

18. DoD Directive 5000.23, pp. 2-3.

19. GAO, p. 77.

20. Packard Survey: When asked whether there was enough time to get the training they needed, 27.1% of the 85 civilian DoD PM's and 33.8% of the 71 military PM's strongly disagreed, 34.1% and 39.4% disagreed, 10.6% and 14.1% were neutral, 25.9% and 11.3% agreed, and 2.4% and 1.4% strongly agreed. When asked whether they would take acquisition-related courses on their own time, 14.1% of the military PM's said yes, while 85.9% said no.

21. Packard Survey: When asked whether they received adequate training through formal courses, 2.8% of the military PM's strongly disagreed, 25.4% disagreed, 16.9% were neutral, 49.3% agreed, and 5.6% strongly agreed. When asked the major at their highest level of education, 33.8% claimed Business, 1.4% had Liberal Arts, 33.8% had Engineering, 1.4% had Public Administration, and 29.6% marked 'Other.' Finally, when asked whether they had come with the appropriate education to perform the job well, 2.8% strongly disagreed, 12.7% disagreed, 9.9% were neutral, 43.7% agreed, and 31% strongly agreed.

22. Packard Survey: When asked whether they felt they were overqualified for the job they do, 16.9% of the military PM's strongly disagreed, 57.7% disagreed, 15.5% were neutral, 8.5% agreed, and 1.4% strongly agreed. When asked whether they believed those in DoD doing the same job they were had sufficient education and training, 3.5% of the civilian DoD PM's strongly disagreed, 30.6% disagreed, 24.7% were neutral, and 41.2% agreed.

23. Non-rated is an Air Force euphemism for those fields which are not directly involved in military operations. Rated officers include pilots, missile launch officers, navigators, astronauts, ship captains and their subordinates, and field commanders and their subordinates. Those who are not eligible for one of the above positions are non-rated.

24. Andrea L. Fischer, "DoD Needs a Professional Acquisition Corps," Defense Management Journal, July-August 1986, p. 8.

25. Packard Survey: When asked if they were satisfied with their job, 2.8% of the military PM's strongly disagreed, 4.2% disagreed, 2.8% were neutral, 60.6% agreed, and 29.6% strongly agreed. When asked whether promotions would be an adequate reward for good performance, 1.4% of the military PM's strongly disagreed, 2.8% disagreed, 12.7% were neutral, 36.6% agreed, and 46.5% strongly agreed. When asked whether it was clear what they must do to be promoted, 5.6% disagreed strongly, 14.1% disagreed, 15.5% were neutral, 47.9% agreed, and 16.9% agreed strongly.

NSF Survey: When asked what rewards were provided for keeping on schedule/budget, none of the retired military PM's checked promotions, 56.3% checked self-satisfaction, 12.5% checked incentive awards, and 6.25% checked other rewards.

26. Magnan, p. 63.

27. A Quest for Excellence, Final Report to the President by the President's Blue Ribbon Commission on Defense Management, June 1986, p. 46.

28. According to Larry J. Wilson's article, "The Navy's Experiment with Pay, Performance, and Appraisal," in Defense Management Journal (3rd Quarter, 1985), the Alternative Personnel System Demonstration Project at the Navy's China Lake, California facility had the following guidelines:

- A simplified, more flexible, position-classification system.

- Streamlined procedures for movement of personnel between classification levels under a concept known as 'pay banding.'

- A performance appraisal system that links performance and compensation.

- An expanded application of the merit-pay concept for both supervisory and non-supervisory personnel at all grade levels.

- An emphasis on performance as a primary criterion in reduction-in-force.

- Use of suspended penalties in certain adverse actions to encourage behavioral changes.

For more information on the project, please see Wilson's article.

29. Fischer, pp. 9-10.

30. Dr. James Wade, Assistant Secretary of Defense (Acquisitions and Logistics), "DoD Acquisition Improvements - The Challenges Ahead," November 5, 1985, pp. 7-10.

31. Fischer, p. 8.

32. NSF Survey: When asked who the initial government program managers should be, 79% of the 68 industry PM's felt they should be military, while 21% felt they should be civilians. All retired military PM's interviewed felt that government PM's should be military.

33. David Packard, testimony before the Senate Armed Services Committee hearing on "The Organization, Structure, and Decision-Making Procedures of the Department of Defense," Nov. 16, 1983.

34. William H. Taft, IV, Deputy Secretary of Defense, Memorandum for the Secretaries of the Military Departments, et al, on "Program Management and Procurement Training and Experience Prerequisites," Aug. 19, 1985, p. 1.

35. Taft, p. 2.

36. GAO, p. 106.

Appendix 1 - Operational Career Paths

(Reprinted from DoD Acquisition: Strengthening Capabilities of Key Personnel in System Acquisition. GAO/NSIAD-86-45, pp. 73.)

Chapter 4
Career Preparation of Program Managers

Table 4.2: Career Development in Operational Fields

Army: Progression to Command of Infantry Brigade

Grade	Target position	Years with troops (at each grade)	Specialized training	Professional military education
Lt.	Platoon leader	2 to 3	Basic (5 mos.)	
Captain	Company commander	2 to 3	Advanced (6 mos.)	Combined Arms and Services School (2 mos.)
Major	Battalion executive officer	2 to 3		Command and General Staff College (10 mos.)
Lt. Col.	Battalion command	2		Senior service college (10 mos.)

Navy: Progression to Major Sea Command For Surface Warfare Officer

Grade	Target position	Years with fleet	Specialized training	Professional military education
Ensign/lt.	Division officer	2 1/2 to 4	Basic (6 mos.)	
LT	Department head	3	Department head course (6 mos.)	
Lt. Commander	Executive or commanding officer	3		Jr. service college (6-10 mos.)
Commander	Ship commanding officer	2 to 3		Senior service college (10 mos.)

Air Force: Progression to Wing Commander

Grade	Target position	Years in operational duties	Specialized training	Professional military education
Lt.	Copilot/pilot	3	Undergraduate flying training (12 mos.)	
Captain	Aircraft commander/ instructor pilot/flight examiner	6 1/2	Initial crew training (6 mos.)	Squadron Officers School (2 mos.)
Major	Flight commander/ operations officer	4		Intermediate service college (6-10 mos.)
Lt. Col.	Squadron commander/ wing staff	4		Senior service college (10 mos.)

Appendix 2 - Military Acquisition Management Programs

A2.1 - Air Force

A2.8 - Army

A2.14 - Navy

(Reprinted from DoD Acquisition: Strengthening Capabilities of Key Personnel in System Acquisition. GAO/NSIAD-86-45, pp. 81-101.)

Current Programs to Develop Military Program Managers Fall Short of Those Desired

All three services have programs aimed at developing military program managers, with the Army and Navy having made significant changes in their programs over the past 3 years. While the Air Force's program most closely approximates the desired condition, further changes are needed in the programs of all three services to develop program managers with the desired career pattern and sufficient acquisition experience. Features of the services' programs are summarized in table 4.5.

Chapter 4
Career Preparation of Program Managers

Table 4.5: Service Programs for Developing Military Program Managers

	Summary of programs	Key issues
Air Force:	Except for pilots and navigators, officers may enter directly into the acquisition field or transfer into it after an initial assignment in an operational command. Officers receive repeated assignments in acquisition management, normally including assignments in a program office and at headquarters. Rated officers (pilots and navigators) typically receive one 3-year acquisition assignment before their 15th year of service and repeated acquisition assignments starting about their 15th to 16th year.	Limited time available for development of rated officers. Desired kinds of acquisition experience defined but not clearly identified in official career guidance.
Army:	Officers normally enter the Materiel Acquisition Management program between their 6th to 8th year of service. By their 16th year of service, officers should complete the Materiel Acquisition Management course, the DSMC Program Management Course and two (3-year) acquisition management assignments.	Program receives low priority in assignments process. Limited time available for some officers pursuing two specialties. Desired kinds of acquisition experience not identified.
Navy:	Officers normally enter the Weapon Systems Acquisition Management Program as lieutenant commanders. Officers from the unrestricted line (aviation, surface, and submarine warfare) and the Supply Corps alternate between sea and acquisition (shore) assignments. Officers from the restricted line receive assignments in acquisition and logistics. The Materiel Professional Program, which includes officers from the commander/captain grades and above, ensures that officers in the program are assigned exclusively to material management positions.	Limited shore time available to develop officers from the unrestricted line (warfighting communities). Desired kinds of acquisition experience not identified.

Air Force Program Approaches Desired Conditions for Some Officers

The Air Force is unique among the services in having a specialization in program management. Typical career paths leading to a position as a major program manager are shown in figures 4.3 and 4.4. The career path for rated officers (pilots and navigators) is significantly different from that followed by nonrated officers.

Over their careers, nonrated officers progress from one career field to another, generally starting with a technical field and moving into fields that emphasize managerial and leadership skills. They may begin their careers in the Air Force Systems Command, or they may enter through

Chapter 4
Career Preparation of Program Managers

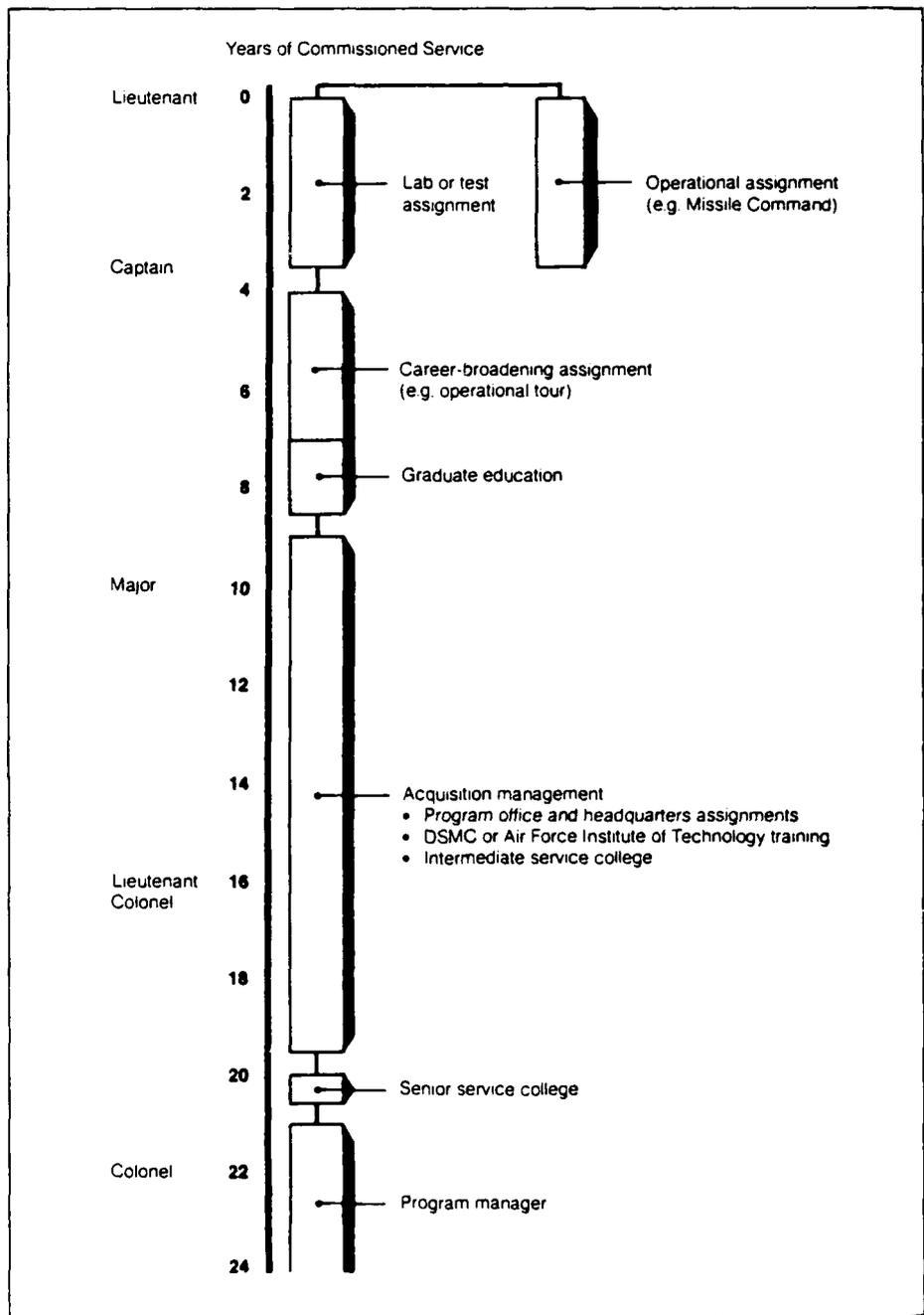
an operational command, such as the Missile Command. Officers beginning in the Systems Command are likely to enter acquisition management via the development engineering or scientific fields and receive an initial assignment in a lab or test center. At about their 4th to 6th year, officers are advised to take a career-broadening tour. Obtaining operational experience is encouraged, although Air Force officials report difficulties in releasing engineers to operational assignments when shortages of engineers exist. Alternatively, officers may take career-broadening assignments outside their initial career fields. Officers who began their career in an operational command may transfer into the Air Force Systems Command at this point and take an assignment in a lab, test center, or program office. During this period, officers are also encouraged to attend Squadron Officers School and apply for graduate education.

Between their 7th and 11th year of service, nonrated officers pursuing program management as a career transfer out of their technical field into the acquisition program management career field. Officers entering this field must have an undergraduate degree in engineering, a physical science, math, or business management. Over the next 12 years, officers typically have two program office assignments and a headquarters assignment.

Program office assignments are intended to provide experience in two or three functional areas, such as (1) engineering, (2) configuration management (a component of systems engineering), (3) program control (financial management), (4) logistics support, and (5) test and evaluation. Headquarters assignments may be at the Systems Command headquarters or at the Air Staff or DOD level, although two headquarters assignments (one at Systems Command and one at Air Staff or higher level) are not uncommon. Officers may also receive a second operational assignment and/or participate in the Education with Industry program.

Chapter 4
 Career Preparation of Program Managers

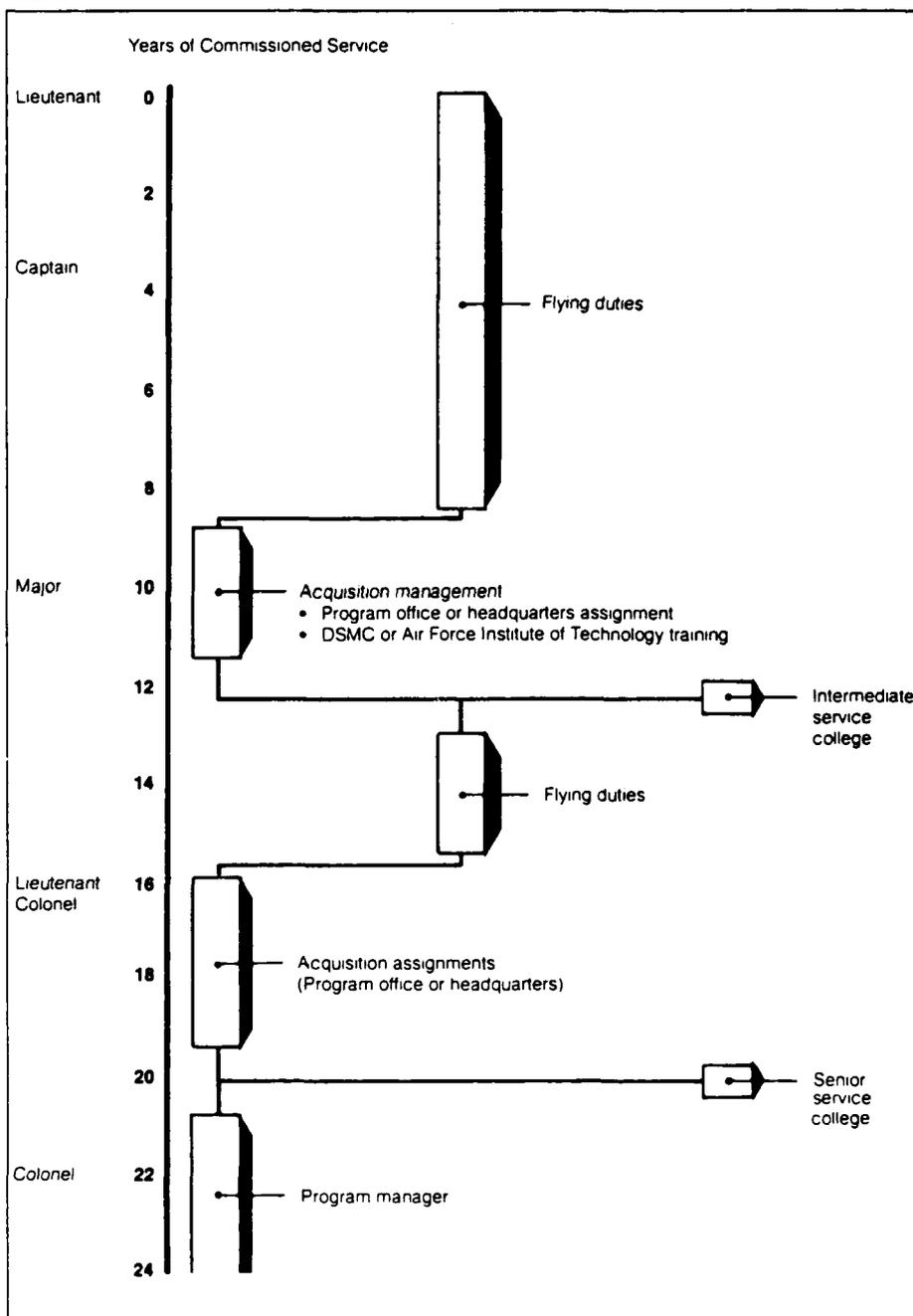
Figure 4.3: Typical Air Force Career Path for Nonrated Officer



Note: Individual career paths will vary.

**Chapter 4
Career Preparation of Program Managers**

Figure 4.4: Typical Air Force Career Path for Rated Officer



Note: Individual career paths will vary

Chapter 4
Career Preparation of Program Managers

During this period, officers attend either the DSMC Program Management Course or specialized courses at the Air Force Institute of Technology. Officers may be selected to attend an intermediate service college (Armed Forces Staff College or Air Command and Staff College) and later, a senior service college (National War College, Air War College, or Industrial College of the Armed Forces).

Limited Time for Development of
Rated Officers

The career path for rated officers differs from that followed by nonrated officers. For the Air Force to receive an appropriate return on training, and for officers to qualify for aviation incentive pay, rated officers generally spend at least 9 to 11 years in flying duties. Typically, officers spend their first 9 years in flying duties. They then rotate into the Systems Command for a 3-year acquisition assignment, often followed by attendance of intermediate service college, returning at completion to flying duties for an additional 3 years. At about their 15th to 16th year, officers are likely to return to the Systems Command and spend the remainder of their career in acquisition management. Thus, by the time rated officers are considered for assignment as program managers, they are likely to have about 7 years of acquisition experience. Air Force officials report that rated officers comprise about a third of those in acquisition management, although they account for about half the major program manager positions.

Selection of Program Managers

At about their 21st to 22nd year of service, officers are likely to be considered for program manager positions on major programs. Those selected are transferred into the program management career field. Eligibility requirements for this field, as defined in Air Force regulations, include (1) an undergraduate degree in engineering, a physical science, or math, (2) completion of the DSMC resident course, and (3) full qualification in a research and development career field, usually meaning 18 months to 4 years experience in either the acquisition program management, engineering development, or scientific career fields. Regulations also identify as desirable an advanced degree in management and completion of the Education with Industry program. Air Force officials report that these requirements are sometimes waived.

Selections of major program managers are made by the Commander, Air Force Systems Command, based on recommendations from the product divisions. Product division commanders select program managers for nonmajor programs, although colonels must also be approved by the vice commander of the Systems Command.

Copy available to DTIC does not
permit fully legible reproduction

Air Force Career Path Not Always Followed

In several respects, the Air Force program resembles the desired conditions previously discussed: nonrated officers enter the acquisition field early in their career, usually gaining some early operational experience. Most of those entering the field have a degree in a technical field and are encouraged to earn an advanced degree in management. Completion of specialized training and service college is also encouraged. A career path has been established and desirable experiences, including experience across functional areas, have been identified. A program manager developed under the program would likely have at least one 4-year tour in a program office, headquarters experience, and at least 12 years total acquisition experience.

However, while the desired career path for nonrated officers was outlined by Air Force officials in response to our management survey and has been articulated in testimony by the commander of the Air Force Systems Command, we could not identify any written description of the career path for rated officers. Moreover, neither career path is clearly defined in official career guidance (Air Force Regulation 36-23). For example, the guidance does not define the importance or desirability of headquarters experience.

Further, the career pattern of several recently appointed program managers in our sample deviated significantly from the desired career pattern. Four of the 11 program managers in our sample lacked operational experience. Three lacked experience in a program office. Four had no headquarters experience. One officer's experience was almost exclusively in headquarters. Another's was exclusively in test. One officer entered the acquisition field as a colonel. And less than half attended the DSMC Program Management Course.

Rated officers had less acquisition experience; only one of the five rated officers in our sample had 8 years acquisition experience. The career path for rated officers provides for about 7 years of acquisition experience by their 21st year of service. Intensive management of rated officers' assignments could provide for more acquisition experience: certain acquisition-related positions such as test pilot also satisfy flying obligations. Alternatively, we believe Air Force management needs to consider the extent to which rated officers should be a source of program managers.

Copy available to DTIC does not
permit fully legible reproduction

Copy available to DTIC does not
permit fully legible reproduction

Chapter 4
Career Preparation of Program Managers

Changes Needed in Army Program

The Army's program for developing acquisition managers, including program managers, is the Materiel Acquisition Management (MAM) program. Initiated in 1983, the program focuses on ensuring that officers with the appropriate background and interest are assigned to acquisition positions and obtain specialized training. It is a more structured program involving more intensive management than the program it replaced.

MAM operates within the framework of the Army's Officer Personnel Management System, a system based on the concept of dual specialty development.⁶ Under the current system, officers entering the Army are assigned to a combat arms branch (e.g., infantry, aviation), combat support branch (e.g., Signal Corps), or combat services support branch (e.g., ordnance, Transportation Corps). Officers also select an initial specialty generally associated with their branch, such as infantry or missile material management. By completion of their 8th year, the officers must also designate an additional specialty or functional area. Additional specialties include most of the 26 initial specialties and 12 other specialties not available to officers on initial entry into the Army. The latter includes such acquisition-related specialties as research and development and procurement. Starting about the 6th to 8th year, and for the remainder of their careers, officers generally alternate between assignments in their initial (branch) specialty and those in their additional specialty.

Acquisition management is neither an initial nor an additional specialty. Rather, officers in acquisition-related specialties (see table 4.6) can participate in MAM, which seeks to ensure that they are assigned to acquisition-related positions within their acquisition specialty.⁷

⁶Changes in the system were approved in 1984 and are being implemented incrementally from 1985 to 1989. Key changes are discussed below.

⁷A MAM specialty can be an officer's initial or additional specialty (or both) but is most commonly the additional specialty.

Chapter 4
Career Preparation of Program Managers

Table 4.6: MAM-Related Specialties

Specialty	Number of positions (FY 1985)	Percent of 1,909 MAM officers with specialty ^a
Research and development	1,247	43.9
Procurement and production	306	16.3
Operations research/systems analysis	142	8.3
Automated data systems management	90	4.5
Communications-electronics engineering	72	6.9
Missile material management	45	7.0
Communications-electronics material	40	2.4
Maintenance management	30	16.3
Material/services management	30	14.3
Aviation logistics	28	7.5
Comptroller	13	1.3
Chemical	11	2.8
Nuclear weapons	10	2.1
Munitions material management	3	6.4
Total	2,067	

^aAdds to more than 100 percent since some officers' initial and additional specialties are both MAM specialties. (As of August 1985.)

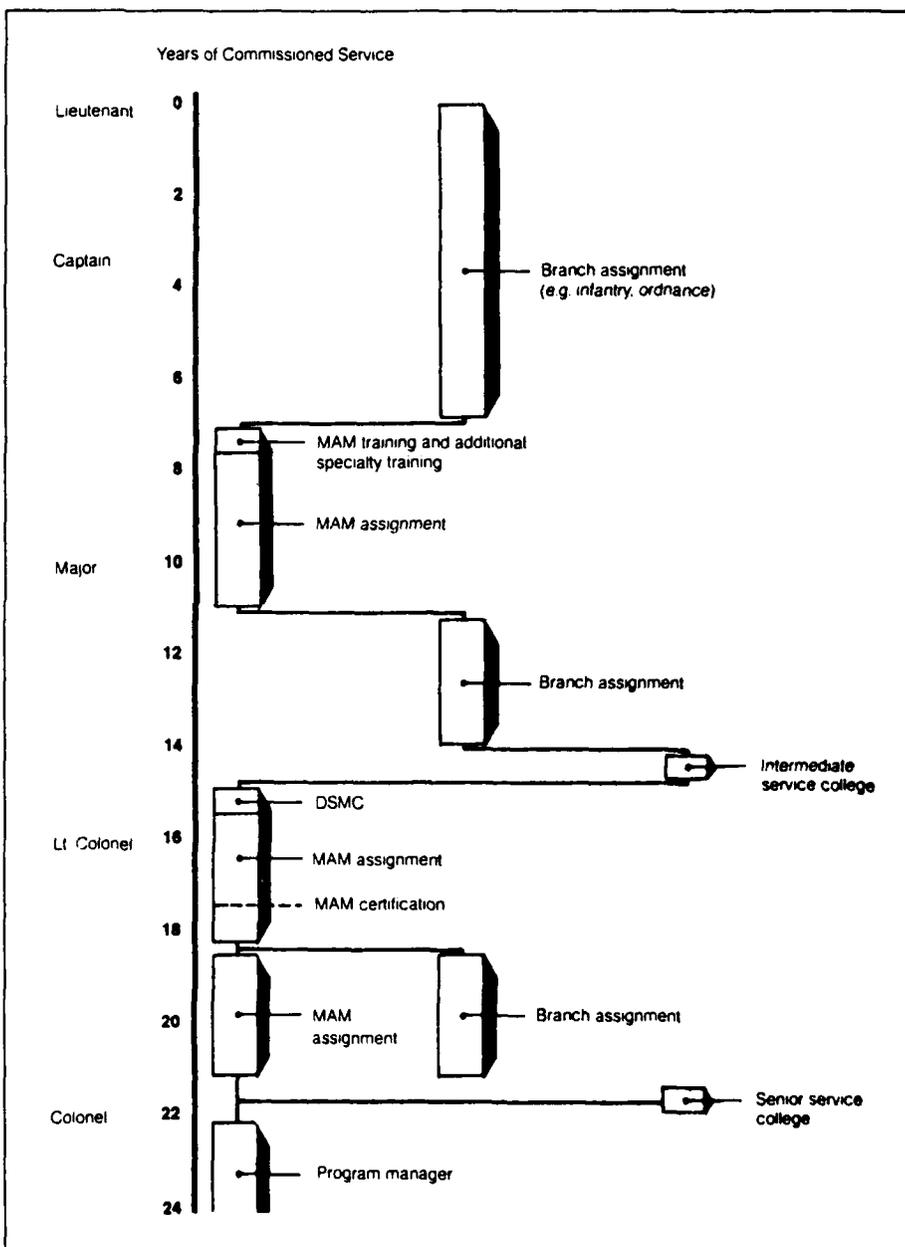
Officers are encouraged to apply for MAM after 5-1/2 years of service, although entry is allowed considerably later. Entry is competitive with selections made by a central selection board. Entry requirements include (1) designation of a MAM-related specialty, (2) a degree in engineering, science, or business/management (officers without degrees in these fields may qualify on the basis of acquisition training or experience), and (3) 6 years of commissioned service remaining.

MAM consists of three phases. The first, called the user/support development phase, is the officers' first 6 to 8 years of service, spent in the initial branch, as shown in figure 4.5. This phase provides experience with the type of systems and equipment that officers may eventually develop and acquire.

The second phase, known as the MAM development phase, begins after formal entry into MAM and runs from about the officers' 6th to 8th year of service to the 16th year. During this phase, MAM officers attend the 9-week MAM training course at the Army Logistics Management Center and complete their first acquisition assignment. Following an assignment in their branch, officers also attend the DSMC Program Management Course and complete a second MAM assignment. MAM development assignments

Chapter 4
Career Preparation of Program Managers

Figure 4.5: Typical Army Career Path for MAM Officer



Note: Individual career paths will vary.

Chapter 4
Career Preparation of Program Managers

include, for example, positions in a program office or a research and development lab, at headquarters, or with industry under the Training with Industry program.

The third phase, known as the certified manager phase, commences at approximately the 16th year of service. After selection for promotion to lieutenant colonel, officers are evaluated for certification as Materiel Acquisition Managers by a central board. Certification requirements for the mature MAM program include completing two acquisition assignments and the MAM and DSMC training courses. As certified acquisition managers, the officers could be considered for appointment as program managers of major programs, as well as other acquisition positions of significant responsibility.

MAM certification is not a prerequisite for appointment as a program manager. Selection criteria depend on the specific position but generally include command, program office and headquarters experience, DSMC training, and senior service college. Selections are made by a central board.

MAM is in Transitional Stage

It is envisioned that under a mature MAM program, officers will enter MAM at about their 6th year of service and complete two MAM assignments and training courses before being certified at the lieutenant colonel level. Army officials recognize, however, that it will take several years to achieve this goal. Officers are entering MAM at the rank of major and lieutenant colonel and can be certified without meeting all of the established criteria for the mature program. For example, 46 percent of the 334 officers admitted to MAM by the 1984-85 selection boards⁸ were captains, 41 percent were majors, and 13 percent were lieutenant colonels. Officers are admitted to MAM later than envisioned partly because of the program's newness and partly because of a shortage of MAM officers relative to the number of MAM positions. Further, certification requirements have also been relaxed. Officers can be certified if they completed the DSMC Program Management Course and one MAM assignment or, if they did not attend DSMC, if they completed two or more MAM assignments.

⁸September 1984, January 1985, and April 1985 selection boards.

Chapter 4
Career Preparation of Program Managers

Changes in Personnel System Will Provide Opportunity for Increased Acquisition Experience

Changes in the Army's officer personnel management system were approved in 1984. Under the modified system, some officers will continue to dual track, that is, alternate between assignments in their branch and their additional specialty, called "functional area" under the revised system. However, some will be allowed to "sequentially" track, that is, transfer from their branch to a functional area in about their 8th year (or to another branch in their 3rd or 8th year), receiving repetitive assignments in that functional area or branch. Such officers will not receive further assignments in their initial, accession branch. (The modified system will also permit some officers to "single track," that is, receive assignments only in their initial branch, but Army officials stated that this option will not normally apply to officers in acquisition fields.) As before, MAM will not be a specialty or functional area, but a skill encompassing officers across functional areas.

Army officials were unsure of the effect of these changes on MAM; the number of officers who will dual track or sequentially track has not yet been determined. However, combat arms officers (i.e., those in infantry, armor, artillery and aviation specialties) who want to remain in these specialties will be required to dual track. By the time they are promoted to colonel, these officers will likely receive only about 6 years of experience if they return to their branch as lieutenant colonels, for example, for assignment as battalion commander. Officers who remain in acquisition assignments after MAM certification will likely receive 8 to 9 years of acquisition experience. Officers who sequentially track will receive significantly more years of acquisition experience in an acquisition specialty. To the extent that MAM officers will sequentially track, we believe the program will be strengthened since sequential tracking will allow them to obtain substantial qualifying acquisition experience and leave time in their careers to utilize it.

MAM Officers Retain Functional Specialty Identity

MAM is designed to ensure that MAM officers are placed in acquisition positions within their specialty or functional area. Limited emphasis is placed on providing officers experience in different functional fields, the desired development pattern defined earlier.

Officers' positions are coded with two numbers. The first number (for MAM positions) denotes the acquisition specialty or functional area required and the second denotes the "hardware/ alignment" specialty desired, that is, the initial combat arms or support/services branch which gives officers their user orientation. MAM positions are also identified by a third number (6T) called an additional skill identifier.

Chapter 4
Career Preparation of Program Managers

Officers are assigned to positions in their functional area, generally dealing with acquisition of hardware and equipment associated with their branch. As a result, a research and development officer would receive only MAM assignments requiring this specialty. Exposure to other functional areas would be limited to assignments, such as those in a program office, requiring coordination or integration of functional areas. For example, a research and development coordinator in a program office could work with the logistics manager to ensure that logistics issues are addressed in system design, thus gaining some familiarity with logistics.

Some specialties, such as research and development—a specialty held by 44 percent of MAM officers—are relatively broad. The research and development specialty can include assignments in a program office, laboratory, test center or at headquarters. However, the research and development officer may choose to develop an area of concentration or subspecialty, limiting the diversity of assignments. For example, one research and development officer in our sample had experience almost exclusively in logistics management before becoming program manager of a major program. Another's experience was oriented primarily to the early requirements determination process.

Other MAM specialties are considerably narrower. For example, the procurement and production specialty involves assignments in contract formulation and administration and/or in production management and analyses. Officers in the operations research/systems analysis specialty are assigned to positions requiring the application of quantitative analysis skills to strategy, operational, and managerial defense issues; few such opportunities currently exist in program offices. Such specialties are not designed to develop acquisition managers with diversified acquisition experience.

Functional Specialty in Acquisition Management Is Desirable

Development of a career program that meets the desired conditions, that is, provides sufficient and diversified acquisition experience, suggests the need to create a functional specialty in material acquisition management. A functional specialty has several advantages.

First, it would permit greater direction and control over officers' career paths. Currently, MAM does not define the types of experiences—such as program office, logistics, test, or headquarters—desired for officers with particular career goals, such as program management. The number of specialties included in MAM makes it difficult to do so since many of

Chapter 4
Career Preparation of Program Managers

the specialties are relatively narrow or include few MAM-designated positions.

Second, a functional specialty would give MAM higher priority in the assignment process. Currently, first priority is given to matching an officer's specialty to the first specialty designated on a position request, second priority to the second specialty listed, and third priority to the MAM (additional skill) identifier. About 40 percent of MAM-designated positions are filled by MAM officers. If it were a specialty, MAM would be given first priority in the assignment process.

Third, as a functional specialty, there would be a floor (minimum) on the number of MAM promotions. A floor is set for each specialty based on the number of eligible officers in the specialty. Army officials are concerned that MAM will increasingly take officers away from the troops, affecting their competitiveness for battalion command and, thus, promotion. Battalion command is closely related to promotion: 94.4 percent of those with command credit were promoted to colonel (first time considered) in 1985, compared with an average promotion rate of 53.4 percent.

Changes Needed in Navy Program

The Navy has two programs for developing program managers. The Weapon Systems Acquisition Management (WSAM) Program, instituted in 1975, covers development of officers in the lieutenant through captain grades. The Materiel Professional Program, instituted in 1985, covers officers in the commander/captain grades and above.

WSAM Program

WSAM was created to identify, track, and improve utilization of personnel with experience and education related to the acquisition field. Like the Army's MAM program, it is not a specialty but is composed of officers from several specialties. It is less structured than MAM and requires less experience to be designated as a fully qualified manager.

WSAM officers are designated as either proven managers or manager selectees. To qualify as a proven manager (designated WW1) the officer should have (1) 4 years or two tours in acquisition positions, (2) graduate education in a technical or business field or completion of the Nuclear Power School, the Test Pilot School, the Industrial College of the Armed Forces, or DSMC, and (3) demonstrated superior performance. An officer designated as a proven manager by two successive selection boards is given the designation WW2. DSMC training is not required for an officer to be designated a proven manager.

Chapter 4
Career Preparation of Program Managers

To be designated a manager selectee, officers at the lieutenant commander grade or above must have a technical or business educational background (as defined above) and one 2-year tour in an acquisition position. Officers generally enter the program at the grade of lieutenant commander or commander.

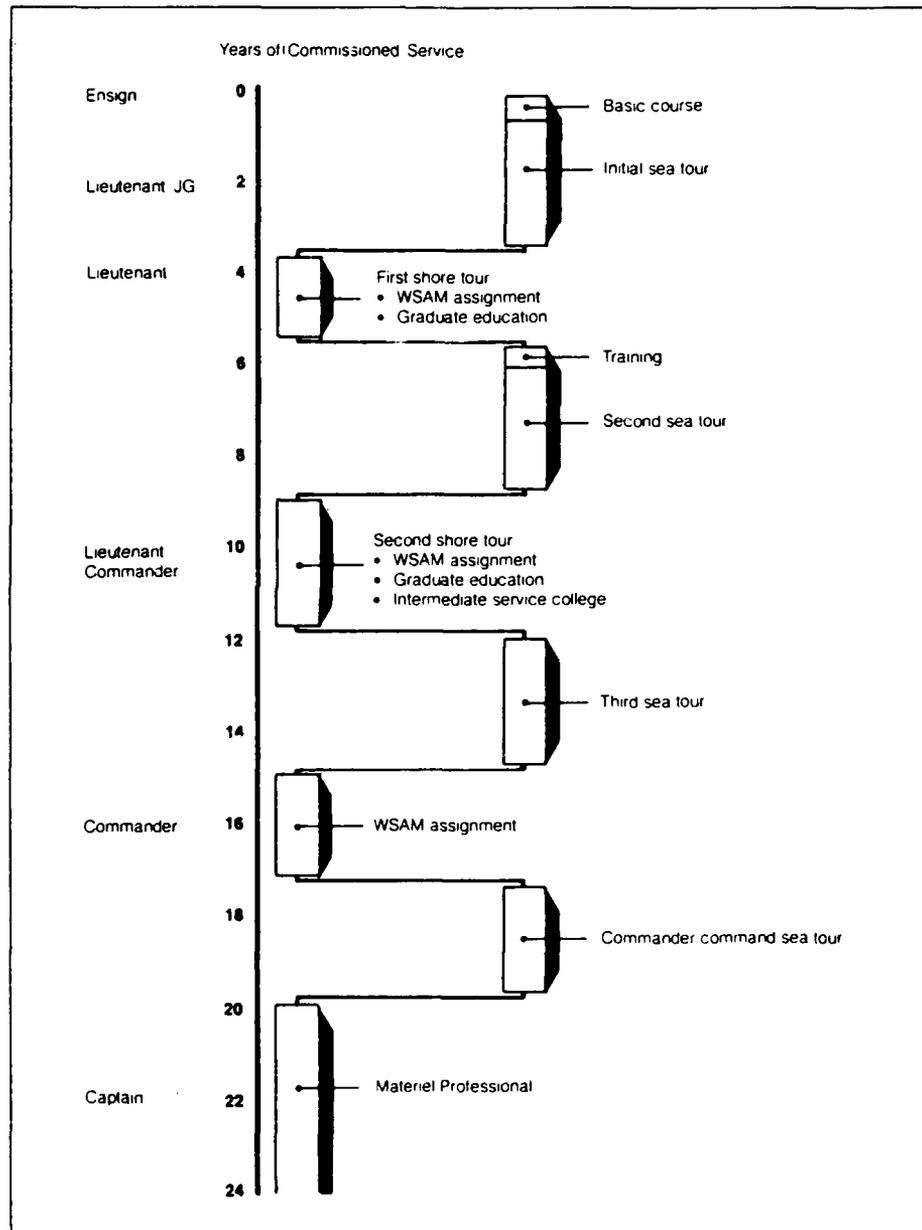
WSAM positions are classified in three categories: (1) WW1 positions requiring a proven manager, (2) WPI positions for which a proven manager is preferred, and (3) WT1 positions, which are training positions for manager selectees or officers interested in qualifying for WSAM. Assignment of a WSAM officer to a non-WSAM position (and vice versus) requires approval by a flag officer.

A WSAM selection board meets annually to screen new applicants and evaluate officers' qualifications for designation as a proven manager. The board also evaluates whether officers should be dropped from the WSAM pool, based on the absence of a recent acquisition assignment.

The WSAM population includes unrestricted line officers (those in such warfighting specialties as surface warfare, aviation warfare, and submarine warfare); restricted line officers (e.g., those in engineering duty and aeronautical engineering duty specialties); and staff corps (e.g., those in the Supply Corps). As of October 1985, 45 percent of the 2,834 WSAM officers were drawn from the unrestricted line, 38 percent from the restricted line, and 16 percent from the staff corps. The career paths for unrestricted and restricted line officers are illustrated in figures 4.6 and 4.7.

Chapter 4
Career Preparation of Program Managers

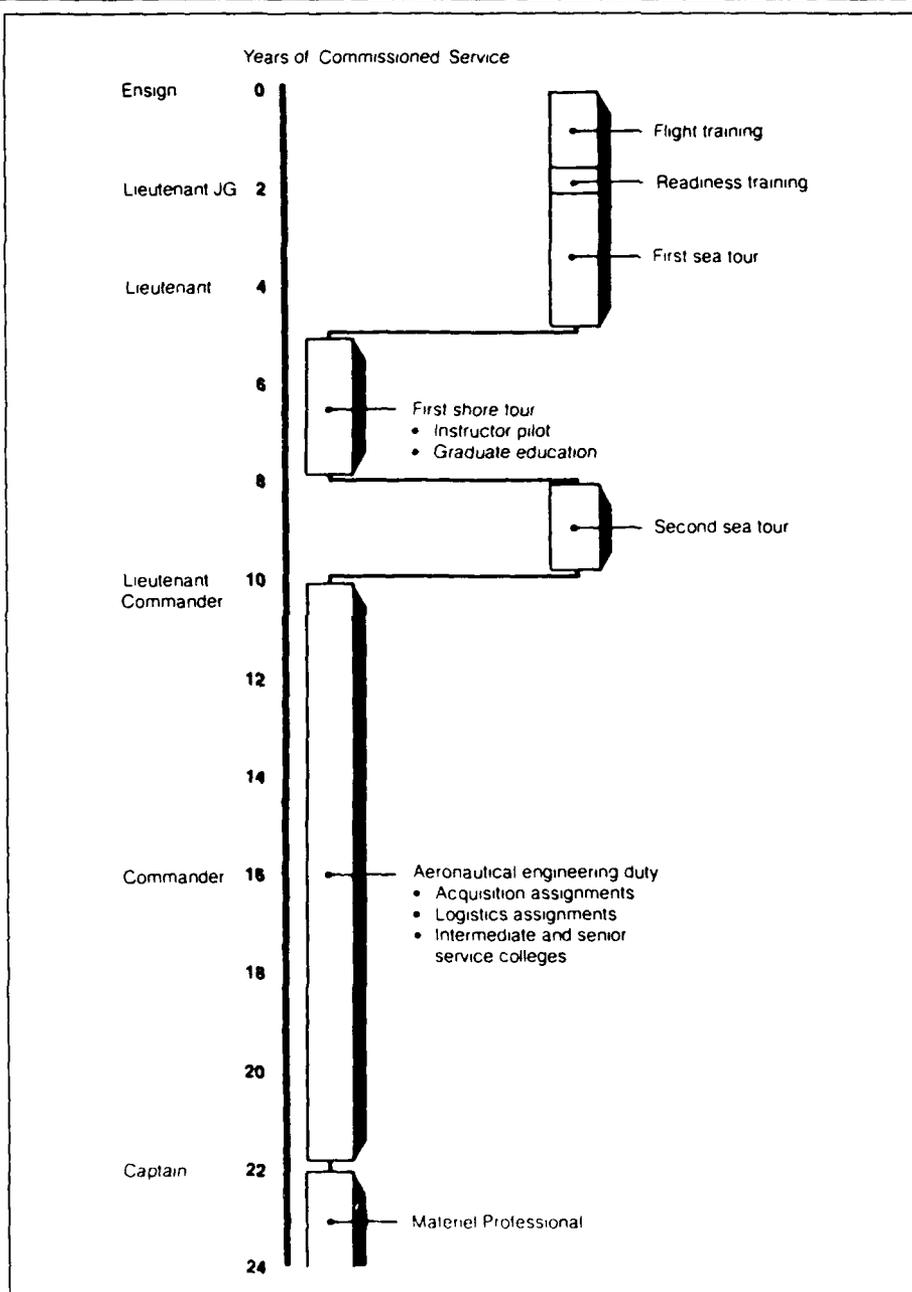
Figure 4.6: Typical Navy Career Path for Unrestricted Line (Surface Warfare) Officer



Note: Individual career paths will vary.

Chapter 4
 Career Preparation of Program Managers

Figure 4.7: Typical Navy Career Path for Restricted Line (Aeronautical Engineering Duty) Officer



Note: Individual career paths will vary

Chapter 4
Career Preparation of Program Managers

Unrestricted line officers spend a considerable portion of their first 20 years at sea or in specialized training, usually about 12 to 14 years. This leaves limited time available for development of a WSAM subspecialty. As shown in figure 4.6, unrestricted line officers typically serve in their first acquisition assignment at the grade of lieutenant or lieutenant commander, often devoting one of their shore assignments to graduate education. As commanders, they are likely to have a second acquisition assignment, and possibly a third assignment as a senior commander. Thus, by the time unrestricted line officers reach the grade of captain, they are likely to have approximately 4 to 7 years of acquisition experience, less than that desired.

The career pattern for restricted line officers more closely resembles the desired career pattern. Officers spend the first part of their career in the unrestricted line. Officers typically transfer into the engineering duty community after completing their first or second sea tour. Aviation officers typically transfer into the aeronautical engineering duty community at the rank of lieutenant commander, usually after 9 to 12 years of service. These officers spend the remainder of their careers in engineering positions and thus have the opportunity to gain a substantial number of years of acquisition experience.

Supply Corps officers alternate between sea and shore assignments, typically spending about 6 to 8 years at sea during their first 20 years of service. They are primarily concerned with the financial management and contracting aspects of acquisition and have little opportunity to gain experience in technical positions. Supply Corps officers are thus only considered for program manager positions for programs in the production phase.

Differences between the experience of unrestricted line officers and that of restricted line/staff corps officers are confirmed by Navy statistics on WSAM proven managers. Unrestricted line proven managers (as of November 1984) had an average of 4.3 years of acquisition experience. In contrast, restricted line officers had an average of 7.2 years of experience and staff corps proven managers, an average of 7.4 years.⁹

Materiel Professional Program

The Materiel Professional Program was created to attract and develop high-quality officers for managing systems acquisition, logistics, and

⁹These figures are subject to error but are the best available; they should thus be viewed as indicative of trends rather than as precise measures of acquisition experience.

Chapter 4
Career Preparation of Program Managers

support. The program seeks to achieve this objective by providing a clear path to flag rank for officers in material management; about 40 percent of the Navy's 253 flag rank positions are reserved for officers in the program. However, the program does not significantly alter the career pattern of officers in the acquisition field, thus having little effect on the time available for unrestricted line officers to obtain acquisition (or other material management) experience.

Materiel Professional officers are drawn from the unrestricted line, the restricted line, and the staff corps. Once selected for the program, officers are assigned to Materiel Professional designated positions for the remainder of their careers. Assignment of a Materiel Professional officer to a nonprogram position or a nonprogram officer to a Materiel Professional position requires a waiver recommended by the Chief of Naval Operations and approved by the Secretary of the Navy.

Procedures for selecting officers for the program differ for the unrestricted line and the restricted line/staff corps. Unrestricted line officers are evaluated by a screening board after they have been screened for command assignments at the commander grade. The screening board considers those officers in the surface warfare, submarine warfare, or aviation specialties (1) who have the subspecialties shown in table 4.7 or are WSAM proven managers (WW1/WW2) or (2) who volunteer for the program. Officers are evaluated using "best qualified" standards based on education, experience, and potential. There are no minimum educational or experience requirements. A list of candidates is submitted to the Materiel Professional Standing Board. The standing board selects candidates and forwards its list to the Secretary of the Navy for approval. Those selected are invited to become Materiel Professionals; entry is voluntary.

The number of Materiel Professionals selected from the unrestricted line is controlled by a quota system. The approximate annual quota is 13 aviation, 12 surface warfare, and 7 submarine warfare officers.

Officers in the covered restricted line and staff corps specialties (shown in table 4.7) are evaluated by the standing board after promotion to captain. Those selected and approved by the Secretary of the Navy are invited to become Materiel Professionals. It is anticipated that nearly all the captain positions in the covered restricted line and staff corps communities will be included in the Materiel Professional Program.

Chapter 4
Career Preparation of Program Managers

Table 4.7: Specialties Included in Materiel Professional Program

Unrestricted line	Specialties
	Surface warfare Aviation warfare Submarine warfare
	Subspecialties
	Financial management Material logistics support management Acquisition management Applied math Operational analysis Antisubmarine warfare Command and control Electronic warfare Geophysics Oceanography Naval systems engineering Weapon systems engineering Aeronautical systems engineering Communications Computer technology Masters of Business Administration
	Additional qualification designator
	Weapon systems acquisition management (WW1/WW2)
Restricted line	Engineering duty Aeronautical engineering duty Aviation maintenance duty
Staff corps	Supply Corps Civil Engineering Corps

Materiel Professional officers will compete for promotion within their respective line and staff corps communities. Equitable consideration will be ensured by precepts (instructions) to the promotion boards. These precepts will identify Materiel Professional skill needs and any personnel shortages. Approximately 38 flag rank positions are reserved for Materiel Professionals in the unrestricted line, 28 in the restricted line, and 35 in the staff corps.

Career Pattern for Materiel Professionals

The career pattern for officers selected for the Materiel Professional Program will not be significantly different from that previously followed by officers in acquisition management. As before, restricted line and staff corps officers will have repeated assignments in their specialty, except that they will likely be designated Materiel Professionals after promotion to captain. Unrestricted line officers will, as before,

Chapter 4
Career Preparation of Program Managers

spend most of their first 20 years in operational assignments. These officers will be evaluated for the Materiel Professional Program as commanders. Selected officers are expected to complete their commander command assignments, thus becoming available for their first Materiel Professional assignments at about their 20th to 21st year of service, or about the time of promotion to captain. As captains, they would be considered for assignment to positions of significant responsibility, such as major program manager. Previously, unrestricted line officers were screened for major program manager, major sea command, and major shore command at the grade of captain. (Major program managers have also been selected from officers completing major sea or shore commands.)

The primary impact of the Materiel Professional Program is expected to be on the kind of officer attracted to material management. By providing a clear path to flag rank, Navy officials expect to attract high-quality officers who otherwise would seek major sea or shore command. Previously, officers without major sea or shore command were unlikely to be promoted to flag rank. Of the eight unrestricted line officers promoted to flag rank in fiscal years 1983-85 who had served as major program managers, all but one had had a major sea command. Moreover, Navy officials anticipate that officers seeking to be competitive for the program will place greater priority on obtaining desired education and material management experience.

**Some Program Managers Selected
Have Limited Acquisition
Experience**

Major program managers will be selected from among Materiel Professional officers. A screening board (the Materiel Professional Major Command Screening Board) will identify candidates for program manager positions. Selections will be made by the commander of the appropriate systems command or the Chief of Naval Research and forwarded to the Materiel Professional Standing Board for approval.

As of September 1985, 44 percent of major program managers were restricted line officers and 41 percent were unrestricted line; none were from the Supply Corps. (The remaining program manager positions were filled by civilians, Marine Corps and Medical Corps officers.)

Recent selections include officers with limited or no acquisition experience. One of the 10 officers in our sample had no prior acquisition experience, and 3 other officers had less than 4 years. Half had no prior program office experience.

Appendix 3 - Memos Regarding Acquisition Requirements

A3.1 - Memo from Dep. SecDef William H. Taft, IV

A3.3 - Excerpts from Air Force response

A3.8 - Excerpts from Army response



THE DEPUTY SECRETARY OF DEFENSE

WASHINGTON, D. C. 20301

19 AUG 1985

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
ASSISTANT SECRETARY OF DEFENSE (FORCE MANAGEMENT
AND PERSONNEL)
ASSISTANT SECRETARY OF DEFENSE (ACQUISITION
AND LOGISTICS)
DIRECTORS OF DEFENSE AGENCIES

SUBJECT: Program Management and Procurement Training and
Experience Prerequisites

A recent meeting of the Defense Council on Integrity and Management Improvement (DCIMI) identified several acquisition issues for additional management attention. One of these involved near-term actions for the development of better qualified procurement personnel. The Defense Authorization Bill for 1986, now pending, has mandated certain training and experience levels for military program managers and quality assurance personnel. Executive Order 12352 on Federal Procurement Reforms has also directed action to promote a more professional procurement work force. Many recent acquisition initiatives have been aimed at restructuring management emphasis and policy to make our acquisition system more supportive of good procurement actions. These actions must be coupled with improvements in the training and experience of our program management and procurement professionals, both military and civilian. Although several acquisition career management initiatives are underway, we need a comprehensive review of the field leading to well focused changes to support our acquisition initiatives.

Within 180 days, the Assistant Secretary of Defense (FM&P), as Chairman of the Defense Management, Education and Training (DMET) Board, will establish a set of experience prerequisites and training requirements for both military and civilian procurement and program management officials based on the recommendations of the Assistant Secretary of Defense (A&L). Within 60 days, the Secretaries of the Military Departments and Directors of Defense Agencies are directed to identify to the Assistant Secretary of Defense (A&L) desired experience and training objectives by job function and experience level to support this task. Format instructions and example are at Enclosure 1. 1800

As part of the functional manager's recommendation, existing training requirements such as those contained in DoD Manual

15966

51101012

1430.10-M-1, "DoD Civilian Career Program for Contracting and Acquisition Personnel," as well as career management efforts under Executive Order 12352, will be reviewed by the Assistant Secretary of Defense (A&L) and revised as appropriate. The objective of this review is to ensure that the number and content of mandatory and optional training courses are adequate to improve and sustain high-quality procurement actions. Wherever possible, skills training will be emphasized. The recommendations will also reflect a review of DoD and Service procurement and program management schools and education centers to ensure their effective and efficient utilization, eliminate unnecessary duplication, promote wider use of nontraditional training methods (such as video tape seminars), and enable the full use of recognized expertise of those schools where capability for teaching specific courses is adjudged superior.



William H. Taft, IV

Enclosure

APR 21 1964



DEPARTMENT OF THE AIR FORCE
WASHINGTON, D C 20330

W 14 → U R Fisher
② DASD (P) A3.3
Appropriate Action
I have not yet
read!

OFFICE OF THE SECRETARY

NOV 13 1985

Jim M/14

MEMORANDUM FOR ASSISTANT SECRETARY OF DEFENSE (ACQUISITION AND LOGISTICS)

SUBJECT: Program Management and Procurement Training and Experience Prerequisites - INFORMATION MEMORANDUM

We have reviewed the August 19, 1985 Deputy Secretary of Defense memorandum requesting desired training and experience objectives for procurement and program management officials. Recommendations reflecting the consensus of the affected functional managers are attached.

a. Attachment 1 is a brief description of the evaluation procedure and recommended changes to the baseline for evaluation outlined by Enclosure 1 to the August 19, 1985 memorandum.

✓ b. Attachment 2 is a discussion supporting the procurement community recommendation to require a baccalaureate degree for civilians entering the procurement career force.

✓ c. Attachment 3 is a discussion supporting the procurement community recommendation for a feasibility study of consolidating and centrally funding DoD training as well as implementing a revised training agenda.

d. Attachments 4 through 11 are Job Function Requirements (JFRs) for procurement and program management positions. The procurement JFRs embody the recommendations outlined in Attachments 1 through 3.

Changes in statute or regulatory directives may be required to implement some of the proposals. The personnel community cautions, however, that before requesting such changes, the proposed requirements must be fully documented and validated. Nevertheless, our functional managers view consideration of the proposed requirements necessary and timely. The overall concern is to develop and sustain a career force of professionals.

Tom

THOMAS E. COOPER
Assistant Secretary
Research, Development
and Logistics

- 11 Attachments
- 1. Procedure/Baseline Recommendations
- 2. Education Recommendation
- 3. Training Recommendations
- 4.-11. Job Function Requirements

85-2643

JOB FUNCTION REQUIREMENTS

PROGRAM MANAGER *

1. GENERAL DESCRIPTION: Plans and manages acquisition of system, subsystem, equipment, or follow-on development or modification programs.
2. SELECTION CRITERIA: Experience and education are not the only factors that determine success for a program manager. Personality traits and the ability to handle stress and complex issues are important determinants. A combination of experience, training, and personality traits need to be judges in making progression decisions within the career field.
3. LEVEL I: O-1 through O-3, and GS-7 through GS-9.

EXPERIENCE: As this will be an individual's first assignment little experience can be expected. Selection will necessarily depend upon prior formal education and training. Initial assignment could be considered as a form of on-the-job training. To become fully qualified the individual must have at least 18 months' experience in configuration, data, subsystems, financial, test/deployment, or project management.

EDUCATION: Bachelor's degree in engineering, engineering science, engineering management, math, physical science, or business/management. Post graduate education is desirable.

TRAINING: Military officers should complete company grade professional military course. Prior to progression to Level II, completion of the following courses is mandatory:

- o Principles of Systems Acquisition Management
- o Acquisition Planning and Analysis
- o Financial Management in Weapon Systems Acquisition

* Applies also to Deputy Program Manager, who serves as the principal assistant to the Program Manager.

DUTIES: Individuals normally serve initially as project officers/managers working under the direction of a program manager or system program director. As they gain experience and demonstrate a high level of performance they will be given responsibility for larger efforts. Individuals will translate operational requirements into system/equipment designs, evaluate program progress and initiate corrective actions as required, manage collective actions of participating organizations, chair meetings with contractor and/or government personnel, develop acquisition strategies, define funding requirements, establish schedules, and apprise superiors of project accomplishments and problems.

4. LEVEL II: O-3 through O-6 and GS-11 through GM-15.

EXPERIENCE: At least three years in Level I positions or similar experience in Laboratories or support organizations. Alternatively, three years experience in acquisition management functional specialities such as configuration and data management, program control, business/financial management, test and deployment management, integrated logistics support, or engineering management would be acceptable depending on the individual's performance.

EDUCATION: Same as Level I but completion of an advanced degree in systems/business management or related technical field is preferred.

TRAINING: Completion of introductory course in systems acquisition management is required. Individual's should complete locally available courses in acquisition management. Individuals should complete AFIT 200 and 300 level courses or DSMC acquisition courses. Selected individuals should attend the DSMC Program Management Course. Also, officers should complete Intermediate Service School while in Level II.

DUTIES: Similar to Level I except the programs are larger in size and

complexity and individuals work with less supervision. Individuals manage programs for less than major weapon systems or programs for subsystems of major weapon systems. Direct efforts to establish the technical, military, and economic basis for a program in the conceptual phase and all managerial efforts needed during the other phases of the acquisition life cycle. Has the authority, is responsible, and is held accountable for meeting approved program objectives. Reports program progress to senior Air Force leaders when directed.

5. LEVEL III: O-5 and above, and GM-14s and above.

EXPERIENCE: At least three years in Level II type assignments, or in a comparable position, managing or directly supporting management of a major acquisition program.

EDUCATION: Same as level II.

TRAINING: Individuals must complete the DSMC Program Management Course or DSMC executive courses prior to commencement of duties in a Level III position. Officers must have completed company grade Intermediate Service School, professional military education. Also, officers should complete Senior Service School when eligible. Civilians should complete an executive development course.

DUTIES: Directs and provides executive management supervision for major system acquisition programs throughout all phases of the acquisition life cycle. Formulates system objectives and policies. Organizes and directs the Program Office. Coordinates system program with using and supporting commands. Maintains a continuous assessment of program progress and performance versus requirements, threat, schedule and costs, and informs headquarters of recommended changes as well as potential or actual breaches of program thresholds.

6. EQUIVALENT EXPERIENCE AND TRAINING: Acquisition management experience with defense contractors, Air Staff experience, or completion of advance degrees in a management field may be considered as possibly meeting the prerequisites for Level II positions.

7. SPECIAL CONDITIONS: Individuals will rarely be program managers in every assignment. They will be assigned to functional offices within Program Offices, Test Centers or Air Force Plant Representative Offices. Also, individuals will be expected to have experience in operational or support commands prior to being assigned to senior program manager positions. Finally, most officers will have had an Headquarter's tour prior to being assigned to a Level III position.

8. MAINTENANCE TRAINING: Individuals will attend management courses offered through AFIT and DSMC and program management workshops throughout their careers.



DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, DC 20310-0103

7 NOV 1985

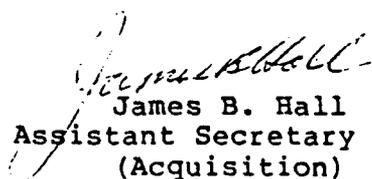
SARDA

MEMORANDUM FOR DEPUTY ASSISTANT SECRETARY OF DEFENSE
(PROCUREMENT)

SUBJECT: Program Management and Procurement Training and
Experience Prerequisites

1. The enclosed detailed recommendations comprise the Army's response to the Deputy Secretary of Defense memorandum of 19 August 1985, subject as above.
2. It is my understanding that, as a minimum, the proposed procurement training and experience prerequisites have been previously provided to the DMET Board group meeting at DSMC, through the Army member.
3. The qualifications and training of our procurement and program/project management personnel is an issue of the highest importance and priority in the Department of the Army.

Encl
as


James B. Hall
Deputy Assistant Secretary of the Army
(Acquisition)

1. **PROGRAM MANAGER.** The individual dedicates the majority of his/her time to planning, direction, control of tasks, and utilization of resources involved in the research, development, testing, procurement and production, and fielding of a weapon/equipment system.

2. **Selection Criteria.** Outstanding performance, experience in a project management office, graduate of the 20-week Program Management Course at the Defense Systems Management College, masters degree in a hard science or business administration, certified member of the MAM program, experience in materiel management at the Department of the Army or higher staff level, senior service college graduate.

LEVEL I - Captain Phase (years 4-10)

Objective: Continue development in primary specialty. Begin development of materiel acquisition management (MAM) knowledge, technical competency, leadership and managerial abilities.

Experience: First assignment to a Materiel Acquisition Management (MAM) designation position.

Education: Baccalaureate degree, MA in systems management.

Training: Officer Advanced Course
Materiel Acquisition Management Course
Additional Specialty Course
Training with Industry (Optional)

Typical Assignments: **Duty Description:** Research and Development (R&D) Engineer
Command/Location: R&D Laboratory, AMC MSC's, OTEA, TECOM

Duty Description: Project Officer
Command/Location: PM Office

LEVEL II - Major Phase (Years 11-15)

Objective: Pursue advanced development in MAM. Emphasis should be directed toward achieving enhanced knowledge, technical competence, leadership and managerial ability.

Experience: Second assignment to a MAM designated position.

Education: MA in systems management.

Training: Command and Staff College
Specialty Related Graduate Study
Materiel Acquisition Management Course
Program Management Course
Training with Industry (Optional)

Em...

Typical Duty Description: Weapon System Manager
 Assignments: Command/Location: AHC

Duty Description: Staff Officer
 Command/Location: Department of the Army

Duty Description: R&D Project Officer
 Command/Location: Department of Defense

LEVEL III - Lieutenant Colonel Phase (Years 16-20)

Objective: MAM certification. First utilization in Additional Skill Identifier 6T manager designated positions. Continue developmental experience as a manager.

Experience: Complete second MAM assignment, if applicable. Receive first manager utilization assignment.

Education: MA in systems management.

Training: Senior Service College
 Specialty Related Graduate Study
 Senior Training with Industry (Optional)

Typical Duty Description: Weapon System Manager
 Assignments: Command/Location: MACOM

Duty Description: Staff Officer
 Command/Location: Department of Defense/Department of the Army

Duty Description: Combat Development Staff Officer
 Command/Location: TRADOC

Duty Description: Deputy and Assistant Project Managers
 Command/Location: PM Office

LEVEL IV - Colonel Phase (Years 21-30)

Objective: Maximum use of management expertise and experience in materiel acquisition management positions.

Experience: Receive successive manager utilization assignments.

Education: MA in systems management.

Training: Industrial College for the Armed Forces
 Specialty Functional Training
 Senior Commanders Orientation Course
 Executive Refresher Course in Program Management
 Project Planning and Control Techniques
 Management of Life Cycle Cost Course
 Joint Service Program Managers' Workshop

BIBLIOGRAPHY

- A Quest for Excellence. Final Report to the President by the President's Blue Ribbon Commission on Defense Management. Washington, D.C.: GPO, Jun. 1986.
- Department of Defense Directive 5000.1. "Major System Acquisitions." Washington, D.C.: GPO, Mar. 12, 1986.
- Department of Defense Directive 5000.23. "System Acquisition Management Careers." Washington, D.C.: GPO, Dec. 9, 1986.
- Fischer, Andrea L. "DoD Needs a Professional Acquisition Corps." Defense Management Journal, Jul/Aug 1986, pp. 8-11.
- Fox, J. Ronald. Remarks to the Conference on Developing Leaders for Defense Acquisition. John F. Kennedy School of Government, Harvard University, Cambridge, Ma.: Feb. 12, 1987.
- Government Accounting Office. DoD Acquisition: Strengthening Capabilities of Key Personnel in Systems Acquisition. Washington, D.C.: GAO/NSIAD 86-45, May 1986.
- Magnan, Robert A. "In Search of "End Game": A Comparison of U.S. and Foreign Weapon Systems." A study conducted under the DCI exceptional intelligence analyst program. Washington, D.C.: GPO, 1984.
- OMB Circular A-109. (Major System Acquisition). Washington, D.C.: GPO, 1985.
- Sullivan, Leonard Jr. Characterizing the Acquisition Process. Washington D.C.: Center for Strategic and International Studies, Jan. 1986.
- Taft, William H. IV. Memorandum for the Secretaries of the Military Departments, et al. "Program Management and Procurement Training and Experience Prerequisites." Washington, D.C.: DoD, Aug. 19, 1985.
- U.S. Cong. Senate. Armed Services Committee. Hearings. "Career Paths and Professional Development for Acquisition Managers." 98th Cong, 2nd sess. Washington, D.C.: GPO, Dec. 13, 1984.
- Hearings. "The Defense Procurement Process." 98th Cong, 2nd sess. Washington, D.C.: GPO, Sep. 13, 1984, Sep. 20, 1984.
- Hearings. "The Defense Procurement Process." 99th Cong, 1st sess. Washington, D.C.: GPO, Feb. 20, 1985.

- . Hearings. "Improving the Professionalism of the Defense Acquisition Work Force." 99th Cong, 1st sess. Washington, D.C.: GPO, Mar. 11, 1985.
- . Hearings. "The Organization, Structure, and Decision-making Procedures of the Department of Defense." 98th Cong, 1st sess. Washington, D.C.: GPO, Nov. 16, 1983.
- Wade, James. "DoD Acquisition Improvements - The Challenges Ahead." Internal memo from the Office of the Assistant Secretary of Defense (Acquisition and Logistics): Nov. 5, 1985.
- Wilson, Larry J. "The Navy's Experiment with Pay, Performance, and Appraisal." Defense Management Journal, 3rd Quarter, 1985, pp. 30-40.