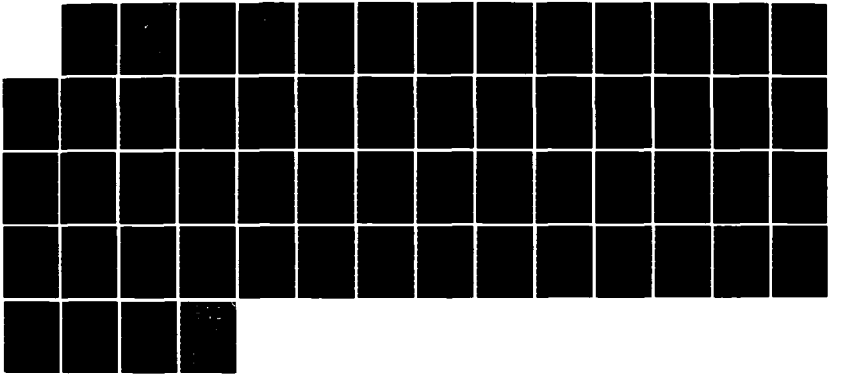
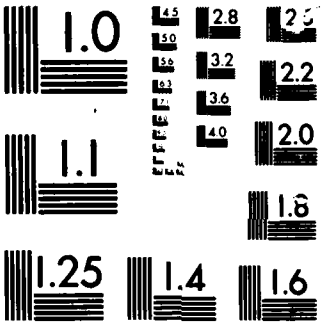
AD-A166 737 PREPARING TODAY'S MAINTENANCE NCO (NONCOMMISSIONED OFFICER) TO BE A SNCO (.. (U) AIR COMMAND AND STAFF COLL MAXWELL AFB AL D R JONES APR 86 ACSC-86-1310 1/1

UNCLASSIFIED F/G 5/9 NL





MICROCOPY CHART

AIR COMMAND AND STAFF COLLEGE

STUDENT REPORT

PREPARING TODAY'S MAINTENANCE NCO TO BE A SNCO IN THE 1990S

MAJOR DONNY R. JONES 86-1310

"insights into tomorrow"

DISCLAIMER

The views and conclusions expressed in this document are those of the author. They are not intended and should not be thought to represent official ideas, attitudes, or policies of any agency of the United States Government. The author has not had special access to official information or ideas and has employed only open-source material available to any writer on this subject.

This document is the property of the United States Government. It is available for distribution to the general public. A loan copy of the document may be obtained from the Air University Interlibrary Loan Service (AUL/LDEX, Maxwell AFB, Alabama, 36112) or the Defense Technical Information Center. Request must include the author's name and complete title of the study.

This document may be reproduced for use in other research reports or educational pursuits contingent upon the following stipulations:

-- Reproduction rights do not extend to any copyrighted material that may be contained in the research report.

-- All reproduced copies must contain the following credit line: "Reprinted by permission of the Air Command and Staff College."

-- All reproduced copies must contain the name(s) of the report's author(s).

-- If format modification is necessary to better serve the user's needs, adjustments may be made to this report--this authorization does not extend to copyrighted information or material. The following statement must accompany the modified document: "Adapted from Air Command and Staff Research Report (number) entitled (title) by (author) ."

-- This notice must be included with any reproduced or adapted portions of this document.

REPORT NUMBER 86-1310

TITLE PREPARING TODAY'S MAINTENANCE NCO TO BE A SNCO IN THE 1990S

AUTHOR(S) MAJOR DONNY R. JONES, USAF

FACULTY ADVISOR MAJOR RONALD F. SAMS, ACSC/EDOWC

SPONSOR COLONEL RODNEY V. COX JR., CCAF/CC

Submitted to the faculty in partial fulfillment of requirements for graduation.

AIR COMMAND AND STAFF COLLEGE
AIR UNIVERSITY
MAXWELL AFB, AL 36112

AD-A166 737

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

1a REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b RESTRICTIVE MARKINGS
2a SECURITY CLASSIFICATION AUTHORITY	3 DISTRIBUTION/AVAILABILITY OF REPORT STATEMENT "A" Approved for public release; Distribution is unlimited.
2b DECLASSIFICATION/DOWNGRADING SCHEDULE	
4 PERFORMING ORGANIZATION REPORT NUMBER(S) 86-1310	5 MONITORING ORGANIZATION REPORT NUMBER(S)
6a NAME OF PERFORMING ORGANIZATION ACSC/EDCC 6b OFFICE SYMBOL (If applicable)	7a NAME OF MONITORING ORGANIZATION
6c ADDRESS (City, State and ZIP Code) Maxwell AFB, AL 36112-5542	7b. ADDRESS (City, State and ZIP Code)
8a NAME OF FUNDING/SPONSORING ORGANIZATION 8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c ADDRESS (City, State and ZIP Code)	10. SOURCE OF FUNDING NOS. PROGRAM ELEMENT NO / PROJECT NO / TASK NO / WORK UNIT NO
11 TITLE (Include Security Classification) PREPARING TODAY'S MAINTENANCE NCO TO	
12 PERSONAL AUTHOR(S) Jones, Donny R., Major, USAF	
13a TYPE OF REPORT 13b TIME COVERED FROM ____ TO ____	14 DATE OF REPORT (Yr., Mo., Day) 1986 April 15 PAGE COUNT 56
16 SUPPLEMENTARY NOTATION ITEM 11: BE A SNCO IN THE 1990S.	
17 COSATI CODES FIELD / GROUP / SUB GR	18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number) (Noncommissioned officers)

19 ABSTRACT (Continue on reverse if necessary and identify by block number)

Enhancing the leadership or management potential of the Senior NCO holds many benefits for the Air Force. Participation in off-duty education programs is an example of how today's NCOs demonstrate a desire to become better leaders and more effective managers. The Community College of the Air Force (CCAF) has always had a direct interest in giving enlisted personnel the opportunity to improve themselves. This study identifies ways in which CCAF educational programs enhance promotion opportunities as well as the Senior NCOs' contribution to the Air Force. This study concludes that there is a significant relationship between early promotions and being registered with CCAF.

20 DISTRIBUTION/AVAILABILITY OF ABSTRACT UNCLASSIFIED/UNLIMITED SAME AS RPT ☒ DTIC USERS ☐	21 ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED
22a NAME OF RESPONSIBLE INDIVIDUAL ACSC/EDCC Maxwell AFB AL 36112-5542	22b TELEPHONE NUMBER (Include Area Code) (205) 293-2483 22c OFFICE SYMBOL

DD FORM 1473, 83 APR EDITION OF 1 JAN 73 IS OBSOLETE

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE

PREFACE

This study seeks to determine if AFMPC ATLAS Inquiry data unique to maintenance NCOs who have been promoted ahead of their contemporaries can be identified. Given the importance of test taking ability in the enlisted promotion cycle, the importance of education to the promotion process is addressed. The ways in which the Community College of the Air Force's (CCAF) educational programs can enhance promotion potential and the individual's contribution to the Air Force, are also examined.

This study was conducted for two major purposes (1) to provide a product through which the CCAF can judge its accomplishments in enhancing NCO potential and possibly advertise its efficacy in that regard, and (2) to provide an informational tool which the author can use in future assignments to assist enlisted personnel in his command to enhance their careers.

Chapter One introduces the reader to the role of Senior Noncommissioned Officers (Senior NCO) and the importance of education in fulfilling that role. The chapter develops the relationship between the role of the Senior NCO and the Community College of the Air Force (CCAF).

Chapter Two acquaints the reader with the enlisted promotion system including the Weighted Airman Promotion System and Promotion Fitness Exams and Specialty Knowledge Tests. Promotion standards and specifics from the 1985 promotion cycle are discussed, as are differences in promotion standards between NCOs and Senior NCOs. Finally, the results of the 1983 to 1985 E-8 and 1984 to 1985 E-9 promotion boards are analyzed. The significance of education and the contribution of the CCAF to promotion potential throughout the enlisted ranks are highlighted.

Chapter Three explains how ATLAS Inquiry data was reviewed and used to evaluate the contributions of the current CCAF associate degree program to early promotions. It discusses how the information was obtained and translated.

Chapter Four analyzes the information introduced in Chapter Three to determine the significance and the strength of the relationships to early or late promotions for maintenance

CONTINUED

TSgts. The Chi-square distribution and contingency coefficient are used to measure the significance of the relationships. The information is displayed by Primary Air Force Specialty Code (PAFSC) and across the entire project sample.

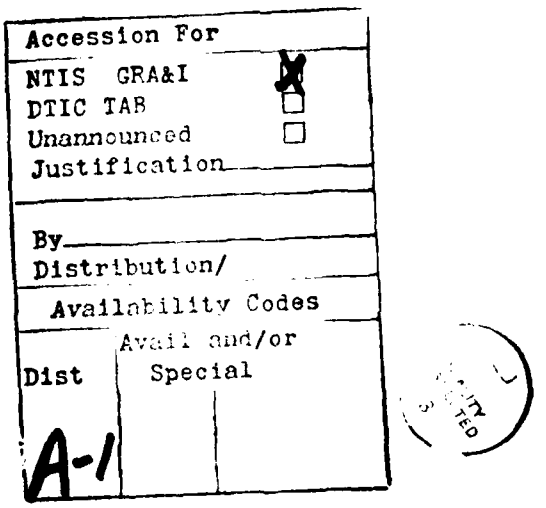
Chapter Five concludes the project by illustrating the significance of the relationship between Armed Forces Qualification Test (AFQT) scores and early promotions as well as being registered with CCAF and early promotions.

Chapter Six recommends CCAF sponsor a more in-depth study of areas within this project as well as expanding the field of the study. It recommends CCAF include the results of this study in its General Catalog. It also recommends insuring personnel at all levels in the Air Force be made aware of the relationship between early promotions and being registered with the CCAF.

The data used for this project includes Air Force Manpower and Personnel Center (AFMPC) enlisted personnel information. This information was accessed using the ATLAS Inquiry retrieval system to selectively access data from over 250 personnel data bases resident on the AFMPC Honeywell DP 58 computer. The specific information used in this project was translated to an Apple IIc Superbase database program and the results of a matching analysis were tested for significance using a utility program to calculate Chi-square and contingency coefficients. The data used in this study can be obtained by contacting Dr. Ray Lewiski, CCAF/DFR.

There are several individuals to whom the author is indebted for their contributions to this project. Chief Master Sergeant Walt Johnson of the First Tactical Fighter Wing, Aircraft Generation Squadron impressed upon the author the importance of education in the development of career noncommissioned officers. Colonel Rodney V. Cox Jr, President of the Community College of the Air Force, gave direction to, but allowed a free reign in, the research. Dr. Ray Lewiski, Personnel Research Psychologist of the Community College of the Air Force assisted in requesting data and invested long hours in explaining the statistics and mechanics of programming

needed for this study. Major Ron Sams was a critical yet extremely understanding project advisor. Most importantly, the author would like to acknowledge the long hours of editing, word processing, and data base loading put in by Christina Jones.



ABOUT THE AUTHOR

Major Jones received his Bachelor of Science Degree in Engineering Management and was commissioned from the United States Air Force Academy in 1972. He is an Aircraft Maintenance Officer with twelve years experience on fighter aircraft.

He completed the Aircraft Maintenance Officers' Course at Chanute Technical Training Center in 1973 and was assigned to the 87th Fighter Interceptor Squadron, K.I. Sawyer AFB, Michigan. In 1976 he was selected to participate in the Air Force Institute of Technology's Master's program. He received his Master of Science Degree in Systems Management in 1977 and was reassigned to the 87th Fighter Interceptor Squadron. In 1980 he was assigned to the 57th Fighter Interceptor Squadron, Keflavik NAS, Iceland.

In 1981 he was chosen to participate in the United States Air Force/Royal Air Force Exchange Program, serving a Joint Tour with the Royal Air Force. As Officer Commanding Rectification Flight, 228 Operational Conversion Unit, RAF Coningsby, UK, he was responsible for the welfare, counseling, discipline, training, and work scheduling of 110 Royal Air Force enlisted personnel. While with the RAF he participated in deployments to Decimomannu (Sardinia) for a Dissimilar Air Combat Training Camp and to RAF Akrotiri, Cyprus for Armament Practice Camp. Because of his station's commitments in the South Atlantic (Falklands) he was asked to assume maintenance supervision of ten additional F-4s and 55 additional personnel and to support the training commitment of two separate operational squadrons.

In 1983 he was assigned to the 1st Tactical Fighter Wing, at Langley AFB, Virginia. While assigned to the 1st Wing, he was a member of the Rapid Deployment Force. He also served as deployed Deputy Commander for Maintenance during exercise Coronet Bengal in Jordan. During his assignment to the 1st Wing, he was responsible for 900 enlisted personnel.

Major Jones attended Squadron Officer School in 1975. Following graduation from ACSC, he will be assigned as Commander of the Component Repair Squadron, 4450th Tactical Group, Tactical Air Command, Nellis AFB, Nevada.

TABLE OF CONTENTS

Preface iii
About the Author vi
Table of Contents vii
List of Illustrations ix
Executive Summary x

CHAPTER ONE--INTRODUCTION 1

CHAPTER TWO--BACKGROUND
- Weighted Airman Promotion System 3
- Enlisted Promotion System 4
- Promotion Fitness Examination/Specialty Knowledge Test 5
- Senior and Chief Master Sergeant Promotion 7

CHAPTER THREE--METHODOLOGY
- ATLAS 13
- Limitation of Study Field 13
- ATLAS Information Used in Study 14
- Data Base 21
- Significance Tests 24
- Grouping Data 25

CHAPTER FOUR--DATA ANALYSIS
- Overall Sample 29
- Avionics Career Field 30
- Maintenance Production Management Career Field 31
- Electronic Systems Career Field 31
- Aircraft Accessory Systems Career Field 32
- Aircraft Maintenance Career Field 33
- Munitions Systems Career Field 33

CHAPTER FIVE--CONCLUSIONS
- Above Average AFQT 35
- Registered CCAF 36
- Education Level/CCAF Associate Degree 37
- Registered CCAF and Early Promotions 37

CONTINUED

CHAPTER SIX--RECOMMENDATIONS
CCAF..... 39
Air Force..... 40
Commanders and Supervisors..... 40
Get the Word Out..... 40

BIBLIOGRAPHY..... 41

LIST OF ILLUSTRATIONS

TABLES

TABLE 1--E-5 TO E-7 Promotion Standards..... 4
TABLE 2--E-6 Promotion Results..... 6
TABLE 3--E-8 and E-9 Promotion Standards..... 8
TABLE 4--E-8 Promotion Results..... 9
TABLE 5--E-9 Promotion Results.....10
TABLE 6--PAFSCs/CCAF Academic Programs.....14
TABLE 7--ATLAS Data Requested.....15
TABLE 8--ACAD-VOC-EDUC-LEVEL.....16
TABLE 9--MIL-SVC-EDUC-PROG.....17
TABLE 10--ASVAB Subtests.....18
TABLE 11--AFQT Categories.....19
TABLE 12--Airman Evaluation Score Components.....20
TABLE 13--CCAF Status.....21
TABLE 14--Sample Entry.....22
TABLE 15--Average Time to Promotion.....23
TABLE 16--Contingency Coefficient Example.....25
TABLE 17--"Either/Or".....26
TABLE 18--PAFSC AFQT GPS.....27
TABLE 19--All PAFSCs in Sample.....29
TABLE 20--PAFSC 32.....30
TABLE 21--PAFSC 39.....31
TABLE 22--PAFSC 40.....32
TABLE 23--PAFSC 42.....32
TABLE 24--PAFSC 43.....33
TABLE 25--PAFSC 46.....34
TABLE 26--Above Average AFQT Versus Early Promotions.....36
TABLE 27--Registered CCAF Versus Early Promotions.....37

EXECUTIVE SUMMARY

Part of our College mission is distribution of the students' problem solving products to DoD sponsors and other interested agencies to enhance insight into contemporary, defense related issues. While the College has accepted this product as meeting academic requirements for graduation, the views and opinions expressed or implied are solely those of the author and should not be construed as carrying official sanction.

"insights into tomorrow"

REPORT NUMBER 86-1310

AUTHOR(S) MAJOR DONNY R. JONES, USAF

TITLE PREPARING TODAY'S MAINTENANCE NCO TO BE A SNCO IN THE 1990S.

I. Purpose: This study was accomplished to determine if Air Force Manpower and Personnel Center (AFMPC) ATLAS data unique to early promotions of maintenance Technical Sergeants (TSgts) can be identified. Furthermore, if this data can be identified, can it be used to determine if the Community College of the Air Force (CCAF) associate degree program will enhance NCO promotions to Senior NCOs in the 1990s?

II. Problem: If AFMPC ATLAS retrieval system data unique to early promotions of maintenance TSgts can be identified, can it be shown that the Community College of the Air Force associate degree program in turn enhances NCO promotions to Senior NCO?

III. Data: In order to reduce the sample size, the project was limited to Technical Sergeants selected for promotion in 1985 in six aircraft maintenance Primary Air Force Specialty Codes. The relationship between early promotions and the following four areas were analyzed: education level, scores on the Armed Forces Qualification Test (AFQT), being registered with CCAF, and having a degree from CCAF. The literary search highlighted the impact of formal education on the Weighted Airman Promotion System and how formal education increased the

subjective value of the "whole-person" as viewed by Senior NCO promotion boards. Of the four areas analyzed, the only areas found to be statistically significant in relation to early promotions were having above average AFQT scores and being registered with CCAF.

IV. Conclusions: This study finds that the relationship between early promotions and being registered with the CCAF is statistically significant. The literary search showed, however, that it is the benefit of the education program and the resulting testing ability which enhances promotion potential, not the mere act of registering with CCAF. Furthermore, the relationship between Above Average AFQT score and early promotions was also statistically significant. In identifying ATLAS data unique to early promotions and in determining if CCAF can enhance NCO promotions to Senior NCOs in the 1990s, the significance of the relationship between being registered with CCAF and early promotions answers both questions posed as the purpose of this project.

V. Recommendations: It is strongly recommended that the Community College of the Air Force sponsor future projects to develop this project over a larger group of PAFSCs as well as developing the data available in greater detail. It is also strongly recommended that the Community College of the Air Force include the results of this study in their General Catalog. Although various Air Force publications speak of the importance of CCAF in developing the "whole-person," the results of this study in relation to promotions should be made available at all levels. Specifically, this information should be identified to Base Education offices and the various Professional Military Education offices. It is also important this information be passed to Commanders, First Sergeants, Unit Career Advisors, and mid-level supervisors.

Chapter One

INTRODUCTION

If the leadership or management potential of Senior NCOs can be enhanced, there are many benefits for the Air Force. (26:82) These benefits include, but are not limited to, effectively using personnel and resources, providing feedback to superiors, and actively encouraging and motivating on- and off-duty education. (36:2-9) The evolving role of the NCO was cited by retired Chief Master Sergeant of the Air Force (CMSAF) Thomas N. Barnes when he stated that the ". . .complexity of today's force. . .demands nothing less than sophisticated leadership capability on the part of those people entrusted with the leadership." (35:143) Furthermore, retired CMSAF James M. McCoy feels that "[h]eavy enrollment in off-duty education programs. . .is an example of how today's NCOs want to become better leaders and want to become better informed of what's going on in the world around them." (18:143)

Stressing the influence of education in developing NCOs, the Commandant of the Air National Guard's Professional Military Education Center, I.G. Brown says, "We're no longer looking for the person who can do the work of ten. Rather, we're developing the person who can motivate ten people to work." (24:30) The increased responsibility of NCOs is clearly shown by the fact that the Air Force now has Senior NCOs as commandants of NCO leadership schools and academies. (26:82)

While this evolving role for Senior NCOs has a great deal of potential, a significant shortfall has been identified. As stated by one senior noncommissioned officer, "The deficiencies of noncommissioned officers in broad background and education limit the effectiveness of their leadership and management abilities." (42:2) The Community College of the Air Force has recognized this shortcoming, though, and is committed to turning it around. The college's primary purpose ". . .is to provide the enlisted men and women of the Air Force community the opportunity to develop themselves through. . . meaningful education programs." (42:3)

This project will identify ways that CCAF can further enhance promotion opportunities, and therefore, the Senior NCOs' contribution to the Air Force, through educational programs.

One way in which the Community College of the Air Force does this is through a program ". . .based on a life-long learning approach to the professional preparation of the non-commissioned [sic] officer--recognizing that NCOs may become specialized technicians but that they must also grow into supervisors and managers." (42:1-2) The CCAF has recognized this shortcoming and is working to increase the effectiveness of NCOs.

In order to help meet the NCOs' needs, the CCAF offers ". . .Air Force enlisted personnel educational opportunities which will provide for increased occupational competence, for personal recognition within the Air Force as evidenced by promotions and increased responsibilities. . . ." (32:1-2) The primary vehicle for this opportunity is the impact education has on the WAPS program. CCAF's effect on WAPS scores and other areas of the enlisted promotion system will be addressed in the next chapter.

Chapter Two

BACKGROUND

This chapter highlights the significance of education and the contribution of the Community College of the Air Force to promotion potential throughout the enlisted ranks. In addition, the enlisted promotion system, including the Weighted Airman Promotion System, Promotion Fitness Exams, and Specialty Knowledge Tests is outlined. Promotion standards and specifics from recent promotion cycles are discussed, as are differences in promotion standards between NCOs and Senior NCOs. Finally, the results of 1985 E-8 and E-9 promotion boards are analyzed.

The initial literary search for information pertaining to distinctive features in individual records which enhance an promotion potential identified the Weighted Airman Promotion System (WAPS) as an important factor. (20:4) The Honorable L. Mendel Rivers set the stage for the formulation of WAPS in 1967 when he stated before the Special Subcommittee on Enlisted Promotion Policy Review, "Nobody has a right to be promoted, but he does have a right to equal consideration with his fellow airmen. He has a right to be told honestly if he is not capable of promotion. He has a right to understand the system he lives by." (17:6)

Weighted Airman Promotion System

The WAPS program is the keystone of the current enlisted promotion system. (17:7) A basic charter of WAPS has been to provide, especially to nonselectees, a visible and objective method of selection for promotion. The objectivity in WAPS is achieved through standardized tests, controlled test administration, and computerized selections. (43:50) The visibility is provided through the Weighted Airman Promotion Score Notice, which includes the score for each factor, total score, score required for promotion, and the individual's relative standing among contemporaries. The individual can readily identify the reasons for nonselection using these scores. (43:51)

This visibility and objectivity eliminated a great many shortcomings of previous promotion systems. (22:3) Now the individual is able to fully understand the reason for his/her

nonselection, but more importantly, also fully understand what needs to be improved to increase his/her chances in the next cycle. (17:7)

Because the ability to test well can certainly affect WAPS scores, the value of any improvement in this ability is clear. One study found that the most valid predictor of future academic performance is previous academic performance. (3:230) The importance of testing should be remembered if one hopes to improve promotion potential.

Enlisted Promotion System

The enlisted promotion system is basically divided into three areas. Those airmen in the category E-1 through E-4, are promoted under the Fully Qualified System. The airman must meet time-in-grade (TIG) and time-in-service (TIS) standards and be recommended by his/her commander for promotion.

For promotion to grades E-5 through E-7, the standards identified in Table 1 are used.

PROMOTION STANDARDS

AREA	MAXIMUM POINTS
1. Specialty Knowledge Test (SKT)	100
2. Promotion Fitness Exam (PFE)	100
3. Time-in-Grade (TIG) (1/2 point per full month in grade)	60
4. Time-in-Service (TIS) (1/6 point per month of active federal military service)	40
5. Decorations (DEC)	25
6. Airman Performance Reports (APR) (add all APRs for last 5 years-- not to exceed 10 APRs--multiply by 15 and divide by the number of APRs used.)	135

(43:46,62)

Table 1. E-5 to E-7 Promotion Standards

Promotion Fitness Examination/Specialty Knowledge Test

The importance of doing well on the PFE and SKT is summarized as being the difference between ". . .advancing through the ranks at a gallop instead of at a snail's pace." (23:44) PFE and SKT scores are keys to success because they allow an individual to directly influence 200 out of a possible 460 points. (42:36) The PFE is designed to measure the individual's ". . .knowledge of Air Force mission, history, customs, and traditions." (42:37) The exam also measures knowledge of leadership principles, ". . .training, management techniques, counseling techniques, responsibilities, and use of authority, use of discipline, principles of rank and precedence, and human relations." (42:37) The SKT, on the other hand, was ". . .designed to measure enlisted personnel job knowledge of a career field at a specific grade." (42:39)

While it could be argued that experience and on-the-job training could affect these areas, these tests cover such a broad area that the only possible way to do well is to know the study material and to test well. The key point to remember is that an aggressive self-study program will enable the individual to score well. (23:46) Table 2 illustrates the average APR score for all Air Force personnel promoted to TSgt from 1983 to 1985 was 133.48 out of a possible 135 points. It is clear that the ability to enhance that 200 point PFE/SKT block is significant (see Table 2). Table 2 also illustrates that during this same time period, the average PFE score was 61.67 out of 100 and the average SKT score was 63.97 out of 100. An individual can improve promotion potential if he or she can improve test taking abilities.

PROMOTION RESULTS

AREA	MAXIMUM POINTS	1983	1984	1985	AV
SKT	100	64.77	63.75	63.39	63.97
PFE	100	59.48	59.51	66.00	61.67
TIG	60	36.4	36.7	37.4	
TIS	40	24.14	24.07	24.31	
DEC	25	3	3	3	
APR	135	133.42	133.42	133.53	133.48
TOTAL	460	315.48	314.93	322.41	
NUMBER ELIGIBLE		68,870	74,617	75,676	
NUMBER SELECTED		10,669	13,519	14,420	

(25:12, 26:27, 27:8, 28:14)

Table 2. E-6 Promotion Results

In a study by Clyde L. Newton titled "A Study of PFE and SKT Perfomance by CCAF Graduates," the relationship between education through CCAF and promotion eligibility becomes clear. Newton's basic premise assumed ". . .that PFE and SKT scores are related to the acquisition of new knowledge or skills as a result of CCAF learning experiences." (42:9) This assumption was proven to be accurate in his study and was shown in his conclusions. The first two results of his study indicated that "(1) the performance on PFEs by CCAF graduates competing for promotion to grades E-5 through E-7 was significantly better than non-graduates; (2) the performance on SKTs by CCAF graduates competing for promotion to grades E-5 through E-7 was significantly better than non-graduates. . . ." (42:62) Newton's study clearly indicates that the education provided through the CCAF can have a direct impact on PFE and SKT scores. This can directly influence an individual's promotion potential, given the closeness of the other components of the WAPS score. Since this study focuses on preparing today's NCO to be a Senior NCO in the 1990s, the importance of education in that selection process must be addressed.

Senior and Chief Master Sergeant Promotion

When one becomes a Senior NCO, he or she becomes a supervisor or manager, not a super-technician. (5:12) Therefore, the USAF Supervisory Examination (USAFSE) was developed to measure ". . .overall knowledge of MSgts and SMSgts concerning supervisory and managerial responsibilities required and desired of SMSgts and CMSgts." (38:1) In E-8 and E-9 promotions, the USAFSE score replaces the PFE and SKT scores.

Furthermore, in order to measure an individual's true promotion potential, a Central Promotion Evaluation board at AFMPC reviews the individual's promotion selection folder using the "whole-person" concept. (34:5) "They consider such factors as performance, job responsibility, breadth of experience, leadership, professional competence, awards and decorations, and education." (34:5) The promotion standards used for E-8s and E-9s are slightly different than those used for E-5 through E-7. The specific promotion standards for promotion to E-8 and E-9 are identified in Table 3.

PROMOTION_STANDARDS	
AREAS	**MAXIMUM_POINTS**
1. USAF Supervisory Exam (USAFSE)	100
2. Professional Military Education (PME) (NCO Academy--15, Senior NCO Academy--20)	35
3. Time-in-Grade (TIG) (same as WAPS)	60
4. Time-in-Service (TIS) (1/12 point per month of active federal military service)	25
5. Decorations (Dec) (same as WAPS)	25
6. APRs (same as WAPS)	135
7. Evaluation Board (Ev Bd) (minimum 270--maximum 450)	450
(43:74,75)	

Table 3. E-8 and E-9 Promotion Standards

Although the results of test taking seem to account for less points in E-8 and E-9 promotions than in E-5 to E-7 promotions, the area over which an individual has direct control is still significantly influenced by education and test taking abilities.

As a case in point, the average APR score for individuals promoted to SMSgt in 1984 and 1985 was 134.96 out of 135. The average PME score was 33.5 out of 35, while the average score on the Supervisory Exam was only 58.82 out of a possible 100. (15:16, 12:21, 13:28, 14:10)

PROMOTION RESULTS

AREA	MAXIMUM POINTS	1984	1985	AV
USAFSE	100	56.65	61.00	58.82
PME	35	33	34	33.5
TIG	60	29.6	30.8	
TIS	25	19.94	19.85	
Dec	25	11	11	
APRs	135	134.97	134.95	134.96
Total Weighted Score	380	285.73	292.54	
Ev Bd	450	403.32	408.26	
Total Score	830	689.05	700.80	
Number Eligible		17,963	19,202	
Number Promoted		2,299	3,356	
		(15:16, 12:L1, 13:28, 14:10)		

Table 4. E-8 Promotion Results

Looking at promotion to Chief Master Sergeant, from Table 5, the average APR score for those selected was 134.99 and, in 1984, was 135 out of a possible 135. PME scores have been 35 out of 35 from 1983 to 1985. The Supervisory Exam, with an average of 59.49 out of 100 possible points, like PFE/SKT scores for TSgts, offered the greatest opportunity for an individual to stand out. (10:26, 9:16, 8:10, 11:34)

PROMOTION RESULTS

AREA	MAXIMUM POINTS	1983	1984	1985	AV
USAFSE	100	55.59	60.6	62.28	59.49
PME	35	35	35	35	
TIG	60	23.4	24.5	26.1	
TIS	25	22.37	22.49	22.33	
Dec	25	16	16	16	
APR	135	134.99	135	134.99	134.99
Total Weighted	380	287.3	293.87	296.91	292.7
Ev Bd	450	402.3	401.96	404.65	402.97
Total Score	830	689.6	695.83	701.56	695.66
Number Eligible		5,484	5,279	5,290	
Number Selected		891	1,195	1,260	
			(10:26, 9:16, 8:10, 11:34)		

Table 5. E-9 Promotion Results

The SMSgt and CMSgt Promotion Evaluation Boards are charged with evaluating the individual from the "whole-person" concept ". . .with consideration to manner of duty performance, job responsibility, experience, supervisory and leadership ability, professional competence, education, and professional development." (41:5) Furthermore, selection rates for CMSgts were higher in past boards for eligibles with some college credits than for those with none. (7:40) The data in Tables 2, 4, and 5 indicate education becomes an important discriminator in promotion to higher ranks.

Given the added importance of the subjective nature of evaluation boards and the closeness of the weighted factors in these promotions, the impact of education in reaching the pinnacle of NCO leadership is clearly shown in Table 5. (11:34)

AFR 50-44 states, an NCO ". . .should continue to increase his/her knowledge level in preparation for further advancement in the NCO ranks." (38:1) This point is reinforced in AFR 39-6, which states that formal education is an integral part in preparing for increased responsibilities and that on- and off-duty education programs are important in improving the individual NCO and in enhancing his or her value to the Air Force. The regulation further states that personnel seeking promotion to Senior NCO status should participate in these formal education programs to the maximum extent. (35:2-2)

One of the ways in which CCAF encourages NCO participation in their associate degree program is to grant four semester hours of credit to NCO leadership school graduates. In a sense, the individual gets "two for one." (16:30)

CCAF's role in Senior NCO development is officially recognized in the Air Force Pamphlet (AFP) 50-34 Volume II, USAF Supervisory Examination (USAFSE) Study Guide, which states, "As a professional, you should take every opportunity to become an expert in your career field and gain a thorough understanding of every aspect of your job. Working through the Community College of the Air Force for an associate degree in your specialty is a very positive step." (39:1-1) AFP 39-19, the Enlisted Career Planner specifically mentions the CCAF as a way to help individuals attain goals. (33:4)

A text on leadership and management used at the Air Force Logistics Command Noncommissioned Officers' Leadership School states, ". . .[a] combination of formal Air Force technical training, on-the-job training and CCAF participation prepares you to better accomplish your Air Force job and accept the added responsibilities of supervision and management." (37:6-5) The importance of education goes beyond promotions, however, as indicated in AFR 39-6, which calls for an individual ". . .to effectively perform as a technician-supervisor, and provide leadership in our ever-changing society." (35:2-3)

In summary, education is extremely important in preparing individuals for Senior NCO positions. Information in this chapter has traced the importance of education through the development of WAPS and its tie with the Enlisted Promotion System. The effect education has on PFE and SKT scores as well as USAFSE scores was discussed. Finally, the impact of

education (including CCAF) on E-8 and E-9 promotion and the development of the "whole-person" was highlighted. In the next chapter, the specific data requested through the ATLAS Inquiry system to prove the importance of education will be discussed.

Chapter Three

METHODOLOGY

This chapter explains how ATLAS Inquiry data was reviewed and used to evaluate the contribution of the current CCAF associate degree program to early promotions. It discusses how the information was obtained and translated.

ATLAS

The ATLAS Inquiry Language is a retrieval system used by the Air Force Manpower and Personnel Center to access data from over 250 personnel data bases resident on the Air Force Manpower and Personnel Center (AFMPC) Honeywell DP 58 computer system. (31:3-1) The specific information used in this report was accessed by transmitting information codes contained in the Data Descriptor Table, which is part of the ATLAS system and contains the ATLAS data code breakdown. This information was requested through the ATLAS system terminal located on Maxwell AFB at the Community College of the Air Force (CCAF). The data codes were selected and actual transmission was accomplished with the assistance of Dr. Ray Lewiski (Personnel Research Psychologist, CCAF/DFR).

Limitation of Study Field

Discussions with the project sponsor, Colonel Rodney V. Cox Jr. (President, CCAF) identified Technical Sergeants (TSgt) as the test group, primarily because the TSgts selected in 1985 will be the Senior NCOs of the 1990s. In these discussions, it was also decided to further limit the field to TSgts with aircraft maintenance Primary Air Force Specialty Codes (PAFSC), as listed in Table 6.

ACADEMIC_PROGRAMS	
AFSC	Academic_Program
32XXX	Avionic Systems Technology Electronic Systems Technology
39XXX	Maintenance Production Management
40XXX	Electronic Systems Technology Avionic Systems Technology
42XXX	Aircraft Accessory Systems Technology Aerospace Ground Equipment Technology Aircraft Powerplant Technology Metals Technology Survival and Rescue Technology
43XXX	Aircraft Maintenance Technology
46XXX	Munitions Systems Technology Aircraft Armament Systems Technology Resource Management

(32:11-12)

Table 6. PAFSCs/CCAF Academic Programs

To insure the study was based upon the most current promotion information, TSgts selected for promotion in 1985 were chosen as the group to be analyzed. Selecting these parameters narrowed the final field to 2,835 records.

ATLAS_Information_Used_in_Study

Because this project was sponsored by the Community College of the Air Force (CCAF), it was decided the primary area of study would center on education and its possible effect on promotion. Reviewing the data available in the Data Descriptor Table, those areas that provided information regarding education and promotion were selected. The information shown in Table 7 was requested for each individual in the test group.

DATA REQUESTED
1. Social Security Number (SSAN)
2. Primary Air Force Specialty Code (PAFSC)
3. Total Active Federal Military Service Date (TAFMSD)
4. Academic Education Information (ACAD-EDUC-INFO)
5. Airman Evaluation Score Administrative (AESA)
6. Airman Evaluation Score Electronics (AESE)
7. Airman Evaluation Score General (AESG)
8. Airman Evaluation Score Mechanical (AESM)
9. Armed Forces Qualification Test (AFQT)
10. Community College of the Air Force (CCAF) status
11. AFQT Score Groups (GPS)
12. Weighted Airman Promotion Score Information (WAPS-INFO)
13. Sex (S)
14. Race (R)
(31:Data Descriptor Table)

Table 7. ATLAS Data Requested

Because the AFQT score was included in the GPS data field and there was no significant or consistent information in the WAPS-INFO, AFQT and WAPS-INFO data field were not used in this study. The fields containing the sex and race information were requested for a study outside this project.

The SSAN was used as a means to cross-check the accuracy of the entries and to separate information within the data base. As mentioned earlier, the PAFSCs were used to narrow the size of the test group. The PAFSCs used for this project were identified in Table 6. The PAFSC was used to group individuals for comparisons because airmen are selected for promotion within their PAFSCs. (42:36)

The Academic Education Information (ACAD-EDUC-INFO) data field was the primary source of information in determining whether education level enhanced promotion opportunity. The data field contains information on the highest academic/vocational education level (ACAD-VOC-EDUC-LEVEL) met and the Military Service Education Program (MIL-SVC-EDUC-PROG) attended. Where applicable, it also contains information on the second highest education level met and how it was accomplished. This information is identified using an alpha/numeric code, described in Data Descriptor tables included in the ATLAS Inquiry system. The codes used in this project are identified in Tables 8 and 9.

EDUCATION LEVEL	
CODE	EDUCATION LEVEL
B	High School GED
C	High School Certificate
D	High School Diploma
E	College less than 1 year (15-29 semester hours)
F	College less than 2 years (30-59 semester hours)
G	College less than 3 years (60-89 semester hours)
H	Associate Degree
J	College less than 4 years (90 semester hours or more)
N	Baccalaureate Degree
O	Baccalaureate Degree plus
P	Master's Degree
1	Air Force Institute of Technology (AFIT), Baccalaureate Degree
	(31:Data Descriptor Table 228)

Table 8. ACAD-VOC-EDUC-LEVEL

EDUCATION_PROGRAM	
CODE	EDUCATION_PROGRAM
A	Military Service Academy
B	Bootstrap
C	AFIT civilian university
D	Command Sponsored
E	Airman Education and Commissioning Program (AECP)
H	Uniformed Services University of the Health Sciences (USUHS)
J	Community College of the Air Force (CCAF)
K	Education Deferment Program
P	Civilian College/University
R	AFIT School of Engineering
T	Tuition Assistance
V	Veterans Education Assistance Program (VEAP)

(31:Data Descriptor Table 102)

Table 9. MIL-SVC-EDUC-PROG

The importance of academic education level met is borne out by the relationship between standardized test scores and the level of formal education. (4:360) While standardized tests may come in many different shapes and sizes, essentially they are made up of the same elements and seem to require the same sorts of mental gymnastics. If one does well on one form of standardized test, he/she would be expected to do well on other standardized tests. (3:190) Since a significant portion of an individual's Weighted Airman Promotion System (WAPS) point value is determined by test scores, the effect of education on test-taking abilities can clearly help one's score. This area will be discussed in detail later in this study.

Education is not only important in increasing an individual's test taking abilities, but is looked on as an indicator of a desire to increase the individual's value to the

Air Force. (29:24) That value to the Air Force is shown in the belief that the quality of tomorrow's Air Force is based on the quality of the people on board today. (21:84)

The Airman Evaluation Scores and Armed Forces Qualification Test (AFQT) scores make up the next data field. Airman Evaluation Scores are divided into four groups: Administrative, Electronics, General, and Mechanical. The Airman Evaluation Scores and AFQT are made up of a combination of subtests introduced in 1976. These subtests were developed for the Armed Services Vocational Aptitude Battery (ASVAB) and were used for two important functions in the enlistment process. "First they help determine an individual's eligibility for enlistment. Second, they are used to establish the individual's qualifications for assignment to specific military jobs [PAFSC]." (30:4) These scores are included because studies have shown significant relationships between ASVAB scores and an individual's trainability and are a good predictor of success in various types of military job training. (30:4,7) The ASVAB is made up of 10 subtests, identified in Table 10.

SUBTESTS	
-Arithmetic Reasoning	-General Science
-Numerical Operations	-Mathematics Knowledge
-Paragraph Comprehension	-Electronics Information
-Word Knowledge	-Mechanical Comprehension
-Coding Speed	-Automotive-Shop Information

(30:4)

Table 10. ASVAB Subtests

Four of the ASVAB subtests are combined to form the AFQT: word knowledge, paragraph comprehension, arithmetic reasoning, and numerical operations. (30:5) AFQT scores are divided into categories, reflecting trainability. (30:6) These categories are identified in Table 11.

CATEGORIES		
GROUP	PERCENTILE	TRAINABILITY
I	93-100	Above average
II	65-92	Above average
III	31-64	Average
IV	21-30	Below average
V	16-20	Below average
VI	10-15	Below average
VII	01-09	Markedly below average

(30:6)

Table 11. AFQT Categories

Studies have shown that while it is not a perfect predictor ". . . the higher the scores attained on ASVAB aptitude composites, the greater the probability that an individual will perform well in training and develop the specific skills needed to be effective on the job." (30:7) Table 12 shows the ASVAB subtests used to make up the Airman Evaluation Scores. As stated earlier, these scores are used in conjunction with AFQT results to predict trainability and determine applicable AFSCs.

ASVAB_SUBTESTS	
AIRMAN_EVALUATION_SCORES	ASVAB_SUBTESTS
Administrative (AESA)	Word Knowledge* Paragraph Composition* Numerical Operations* Coding Speed
Electronics (AESE)	Arithmetic Reasoning* Electronic Information General Science Mathematics Knowledge
General (AESG)	Arithmetic Reasoning* Paragraph Comprehension* Word Knowledge
Mechanical (AESM)	Mechanical Comprehension General Science Automotive-Shop Information

(30:27)
* Subtests comprising AFQT (30:5)

Table 12. Airman Evaluation Score Components

The Airman Evaluation and AFQT are reported in terms of percentile scores. (30:27) The primary purpose for including the Airman Evaluation and AFQT scores in this project is that they are readily attainable achievement test scores. (4:153) On the one hand, as achievement tests, they are an observable indicator of proficiency. (40:1) On the other hand, if an individual does well on one type of standardized test (such as Airman Evaluation or AFQT), one might well expect him or her to perform well on most other forms of standardized tests (PFE, SKT, or USAFSE). (3:190) As discussed in Chapter Two, the ability to test well can significantly enhance promotion potential. (23:44)

The final ATLAS Inquiry data field used in this project is the CCAF status code. The specific codes and their meanings are shown in Table 13. Because one of the CCAF goals is to enable CCAF students to realize their maximum potential through educational opportunities, the author of this study expected to find a significant relationship between CCAF participation and early promotion.

CCAF	
CODE	CCAF STATUS
A	CCAF diploma conferred
B	Two CCAF diplomas conferred
1	Registered--up to 45 semester hours--no degree
2	Advanced standing--45+ semester hours--no degree
3	Degree awarded--First degree
4	Registered--CCAF Degree--up to 45 semester hours current program
5	Advanced standing--CCAF Degree--45+ semester hours applied
6	Degree awarded -Second degree

(31:Data Descriptor Table 650)

Table 13. CCAF Status

Data Base

Because the test group consisted of 2,835 individuals, there was a need to systematically analyze the data and identify significant features in individual records that enabled maintenance NCOs to be selected early to TSgt. The author used an Apple IIc computer and the commercially available database program, Superbase, produced by Precision Software Inc. in these analyses.

In translating the data from the ATLAS Inquiry product to the Superbase program, information not essential to this study was deleted and a means to identify early and late selection was added.

The first entry for each record entered in the Superbase program was a group identifier. The group identifier was a three-digit number for early and late selections (based on Air Force average time for promotion to TSgt), with the first number being a 1 or a 2 respectively and the last two numbers the year of the TAFMSD. (19:10) For those individuals selected who met the average promotion time the identifier is simply the TAFMSD year. Only the last four digits of the SSAN were used, except in cases where there was duplication within a file, in

which case the last six digits were used. Only the first two digits of the PAFSC were used. Education level and how it was accomplished was entered using the alpha/numeric codes listed in Tables 8 and 9 and where applicable, the highest met and second-highest met were entered. The Airman Evaluation Scores were entered as two-digit numbers, and the one-digit alpha/numeric code for CCAF status was also entered. In each record, the final entry used in this project was the three-digit number for AFQT group and score. The individual's sex and race were entered to complete the record although they were not used in this study. An example of a record entry used in this report is shown in Table 14.

SAMPLE	
Group Identifier (GP)	176
Social Security Number (ID)	1725
Primary Air Force Specialty Code (PAFSC)	32
Education Level (EDLVL1)	J
How EDLVL1 accomplished (School1)	J
Education Level (EDLVL2)	H
How EDLVL2 accomplished (School2)	J
Administrative Subtest (AD)	53
Electronics Subtest (EL)	99
General Subtest (GN)	99
Mechanical Subtest (MC)	98
Community College of the Air Force Status (CCAF)	3
AFQT Score Groups (GPS)	271

Table 14. Sample Entry

This entry represents an individual who began his or her career in 1976, was promoted early, and is an avionics technician. He or she has a college level education of less than 4 years through CCAF for the highest education level met and has an associate degree through CCAF for the second highest education level. Furthermore, this individual has an Airman

Evaluation Score of 53 in the Administrative area, 99 in both Electronics and General areas and 98 in the Mechanical area. The individual is participating in the CCAF program and according to the AFQT score and group, is above average in terms of trainability.

Air Force-wide, the average time for promotion for an individual selected for TSgt in 1985 was 11.87 years. (19:10) For the purposes of this project, the year 1973 is used for the average TAFMSD for all Air Force personnel selected for TSgt in 1985. However, the average (mean) time for promotion for the sample used for this project differed from the Air Force average. The specific information is contained in Table 15.

AVERAGE PROMOTION				
GROUP (PAFSC)	NUMBER IN SAMPLE	RANGE (TAFMSD)	MEAN	TAFMSD (Used for Study)
32	486	66-79	74.17	74
39	88	66-77	70.38	70
40	21	70-79	74.10	74
42	890	62-80	73.81	74
43	902	65-80	73.94	74
46	448	66-79	74.72	74
TOTAL	2,835	62-80	73.95	74

Table 15. Average Time to Promotion

Because there was a noticeable difference in average TAFMSD for promotion between the different PAFSCs, the specific averages were used in the study for the separate PAFSCs. For the total sample, the average TAFMSD for the sample (1974) was used.

In order to compare data for those promoted early (Group 1) to those promoted late (Group 2), the matching function of the data base was utilized. In selecting information for matching, the following conditions served as guidelines:

1. The data would be matched within a particular PAFSC. Matching and combining all PAFSCs was used to compare total data for the sample.
2. The matching of Group 1 and Group 2 data would not include the mean or average TAFMSD for the selected PAFSC.

The matching of the data was accomplished in four primary areas. Levels of Education were used as one of the areas because there appeared to be a trend in Levels of Education associated with early and late promotion groups. CCAF Associate Degree and Registered CCAF were selected because they were of particular interest to the project sponsor. AFQT Group, like Level of Education, appeared to stand out in the initial data search. AFQT scores were also chosen because background readings had revealed that as achievement tests, AFQT scores were significant in mapping an individual's proficiency level. (40:1) The other areas included in the ATLAS data request did not stand out in the initial search and were therefore not examined in this study.

Significance Tests

The Chi-square test was chosen as the means to evaluate the data. The Chi-square test is used to ". . .determine the goodness of fit of the actual data to the theoretical distribution. . . ." (1:109) For this study, one degree of freedom was used because degree of freedom is defined as one less than the number of groups used. (1:111) There are two groups for each test, dictated by the nature of the data. For example, Registered CCAF or Not Registered CCAF was paired against early or late promotions.

Examination of a Chi-square distribution table, reveals data arranged by degrees of freedom (this study uses 1) and probabilities. The probabilities indicate ". . .the probability of obtaining a fit [within a distribution curve], due to chance, as poor as or worse than the one obtained. If this probability is small the likelihood that the disparities between the observed and actual data are due to be small." (1:111) If one uses one degree of freedom and wants to be 99% sure that the fit is not due to chance, consultation of the Chi-square table would reveal that a value of 6.64 or higher would be the necessary result of calculating Chi-square. (42:438) For example, if in calculating Chi-square for Registered CCAF or Not Registered CCAF in terms of early or late promotions one arrived at the figure 174.16, one could safely assert that there was a significant relationship. If, on the other hand, the figure was 0.45, no relationship could be claimed.

As a further check to insure the results were indeed related and not just a result of chance, the contingency coefficient was calculated for each of the groups. This is a coefficient of association and ". . .is based upon a comparison of the number of cases actually occurring in a given cell or box and the number of cases which would occur in the cell due to chance or a comparison of the actual distribution and the distribution occurring when there is no association." (1:99) As an example, if the question was "Are greater heights associated with greater weights?" the contingency coefficient is portrayed in Table 16. (1:98)

EXAMPLE

	Short	Tall	Total
Light	a	b	
Heavy	c	d	
Total			N

(1:98)

Table 16. Contingency Coefficient Example

If the relationship in the above example were perfect, all the data would be in two blocks. If all light individuals were short and all heavy individuals were tall, all the data would be in cells a and d. If there was absolutely no relationship, the data would be equal in all four cells. (1:98)

Grouping Data

In order to utilize the Chi-square test and to calculate the contingency coefficient the data was grouped in "either/or" fashion and the groups compared with early or late promotions (Table 15) using the average promotion years discussed earlier. The actual calculations were accomplished with the assistance of Dr. Ray Lewiski on a Radio Shack TRS 80 computer using a utility program.

Table 17 shows how the groups were combined, the number of the earlier table in which the information was contained, and the specific data utilized from the tables.

EITHER/OR		
FROM GROUP	TABLE	UTILIZED
High School	7	B,C,D
High School+	7	E,F,G,H,J,N,O,P,1
CCAF Degree	12	A,B,3,4,5,6
No CCAF Degree	12	1,2, no entry
CCAF Registered	12	A,B,1,2,3,4,5,6
CCAF Not Registered	12	No entry
Above AFQT	10	Above average AFQT Group
Not above AFQT	10	Average plus below average AFQT Group

Table 17. "Either/Or"

Although the first three comparisons are self-explanatory, further explanation of the AFQT Group Score (GPS) measurement is necessary. As mentioned earlier in this chapter, the AFQT score is utilized to determine in which PAFSC an individual is best qualified for assignment. (30:4)

In the case of an advanced technology career field such as avionics versus a mechanically intensive career field such as aircraft maintenance, there could be a bias toward the higher technology career fields. In order to insure this was not the case, a mean GPS score for each PAFSC in this study was determined and the mean for that PAFSC was used for the comparison. The results are shown in Table 18.

	AFQT		
PAFSC	MEAN	ABOVE AFQT	NOT ABOVE AFQT
32	2	1	2,3,4,5,6,7
39	3	1,2	3,4,5,6,7
40	3	1,2	3,4,5,6,7
42	3	1,2	3,4,5,6,7
43	3	1,2	3,4,5,6,7
46	3	1,2	3,4,5,6,7

Table 18. PAFSC AFQT GPS

Table 18 illustrates that avionics technicians (32XXX PAFSC) have a higher average AFQT score than the other five PAFSCs included in this study.

The results and significance of the matching is discussed in Chapter Four. At this point, it is important to remember the purpose of this project is to determine if AFMPC ATLAS Inquiry data unique to maintenance NCOs who have been promoted to TSgt early can be identified. The distinctive features of the record of individuals promoted ahead of their contemporaries will be analyzed in Chapter Four to determine significance. Whether the CCAF associate degree program can enhance promotion potential will be discussed in Chapter Five.

Chapter Four

DATA ANALYSIS

In this chapter the distinctive features in individual records which were identified in Chapter Three are analyzed to determine the significance and the strength of the relationships to early or late promotions for maintenance TSgts. As mentioned in the last chapter, the Chi-square distribution and the contingency coefficient are the tools used to measure these relationships. The information will be displayed by PAFSC and across the entire sample in tables included in this chapter. The Chi-square distribution will show significance using one degree of freedom and the values 3.84 and 6.64 as 5% and 1% levels of significance respectively. (42:438) A contingency coefficient of Ø.2Ø or greater is considered a significant measure of strength of the relationship. (42:339)

Overall Sample

Using the overall sample to explain the relationship between the four areas and early promotions, the strength of the relationships as measured by Chi-square and the contingency coefficient is the deciding factor, as shown in Table 19.

ALL PAFSCs								
	HIGH SCL	HIGH SCL+	CCAF ASSOC DEGREE	NO CCAF ASSOC DEGRE	REGIS CCAF	NOT REGIS CCAF	ABOVE AVG AFQT	NOT ABOVE AVG AFQT
LATE	7Ø8	5Ø7	3Ø	1,185	614	6Ø1	265	9Ø4
EARLY	567	797	116	1,25Ø	1,Ø32	334	666	692
CHI-SQUARE	71.Ø3*		43.71*		174.16*		187.79*	
CONTIN COEFF	Ø.16		Ø.13		Ø.25*		Ø.26*	
*Significant (Chi-square greater than 6.64/contingency coefficient greater than Ø.2Ø)								

Table 19. All PAFSCs in Sample

Having a high School education or higher is significant in explaining early promotions according to the Chi-square test. However, because the contingency coefficient is below Ø.2Ø, the strength of association is less than this study indentified as significant.

Having a CCAF associate degree is significant, but once again, the association is not strong enough.

In the case of Registered CCAF, the relationship between being registered and early promotion is extremely strong (174.16 versus 6.64 required) and in this case the association is strong enough not to be attributable to chance.

Finally, being considered above average in AFQT score is an even better predictor (in significance as well as association) than any of the other three groups.

Avionics Career Field

The first individual PAFSC to be discussed is the 32XXX (Avionics) career field. The specific data is shown in Table 2Ø.

AVIONICS								
	HIGH SCL	HIGH SCL+	CCAF ASSOC DEGREE	NO CCAF ASSOC DEGREE	REGIS CCAF	NOT REGIS CCAF	ABOVE AVG AFQT	NOT ABOVE AVG AFQT
LATE	76	115	14	177	112	69	44	139
EARLY	78	173	33	218	213	38	102	149
CHI-SQUARE	3.63		3.86		26.Ø4*		13.Ø5*	
CONTIN COEFF	Ø.Ø9		Ø.Ø9		Ø.24*		Ø.17	
*Significant								

Table 2Ø. PAFSC 32

For the Avionics career field illustrated in the above sample, Level of Education is not significant in explaining early promotions. While CCAF Associate Degree is significant at the 5% level, given the low contingency coefficient the relationship is neither strong nor significant as a predictor. It should be noted that an individual in the category Registered CCAF is likely to be promoted early. This relationship is both significant and strong as measured by the

Chi-square distribution and the contingency coefficient. Lastly, while Above Average AFQT is significant in early promotion, the contingency coefficient does not show it to be a strong relationship.

Maintenance Production Management Career Field

Table 21 addresses the 39XXX (Maintenance Production Management) career field. However, because of the small sample size, the results are not as significant as in the Avionics career field.

MAINTENANCE PRODUCTION						
	HIGH SC	HIGH SCL+	REGIS CCAF	NOT REGIS CCAF	ABOVE AVG AFQT	NOT ABOVE AVG AFQT
LATE	16	21	28	9	5	26
EARLY	12	23	24	11	13	21
CHI-SQARE	Ø.61		Ø.45		3.96	
CONTIN COEFF	Ø.Ø9		Ø.Ø8		Ø.24*	
*Significant						

Table 21. PAFSC 39

In this population, the data for CCAF Associate Degree or No CCAF Associate Degree is not large enough to compute Chi-square or contingency coefficient. The only area significant in Maintenance Production PAFSC early promotions is Above Average AFQT Group, however, as it is only at the 5% level it is not considered in this study. The primary factor of note in this sample was the small size.

Electronic Systems Career Field

In the case of the 40XXX (Electronic Systems) career field, small sample size again affected the results of the relationships. As can be seen in Table 22, the only area that significantly explains early promotion is Level of Education. However, because the contingency coefficient is extremely low the strength of the relationship reduces its credibility as a predictor.

ELECTRONIC SYSTEMS		
	HIGH SCL	HIGH SCL+
LATE	247	158
EARLY	117	234
CHI-SQUARE	26.25*	
CONTIN COEFF	Ø.Ø3	
*Significant		

Table 22. PAFSC 4Ø

Aircraft Accessory Systems Career Field

In the 42XXX (Aircraft Accessory Systems) career field, the size of the sample makes the relationships or lack thereof much more evident, as shown in Table 23.

AIRCRAFT ACCESSORY SYSTEMS								
	HIGH SCL	HIGH SCL+	CCAF ASSOC DEGREE	NO CCAF ASSOC DEGREE	REGIS CCAF	NOT REGIS CCAF	ABOVE AVG AFQT	NOT ABOVE AVG AFQT
LATE	24	158	3	4Ø2	186	217	72	324
EARLY	17	234	31	38Ø	312	99	184	224
CHI-SQUARE	26.25*		23.63*		74.78*		67.Ø8*	
CONTIN COEFF	Ø.18		Ø.17		Ø.29*		Ø.28*	
*Significant								

Table 23. PAFSC 42

The above table illustrates that all four areas show significance in terms of explaining early promotions to TSgt in the Aircraft Accessory career field. However, only Registered CCAF and Above Average AFQT have a contingency coefficient high enough to show a strong relationship.

Aircraft Maintenance Career Field

In Table 24, which contains the figures for the 43XXX (Aircraft Maintenance) career field, it is again Registered CCAF and Above Average AFQT that pass both the Chi-square and contingency tests in explaining the relationship with early promotions.

AIRCRAFT MAINTENANCE								
	HIGH SCL	HIGH SCL+	CCAF ASSOC DEGREE	NO CCAF ASSOC DEGREE	REGIS CCAF	NOT REGIS CCAF	ABOVE AVG AFQT	NOT ABOVE AVG AFQT
LATE	239	147	10	376	183	203	90	278
EARLY	213	244	26	431	320	137	234	220
CHI-SQUARE	19.72*		4.91		44.46*		62.44*	
CONTIN COEFF	0.15		0.08		0.22*		0.26*	
*Significant								

Table 24. PAFSC 43

As was the case with the Aircraft Accessory career field, the significant, as well as strong, relationships in the Aircraft Maintenance career field are the relationships between Registered CCAF and Above Avg AFQT. While Level of Education is significant the contingency coefficient is not high enough to show a strong relationship.

Munitions Systems Career Field

The final individual PAFSC addressed in this study is the 46XXX (Munitions Systems) career field. As shown in Table 25, there is both significance and strength of relationship in three out of four areas.

MUNITIONS_SYSTEMS								
	HIGH SCL	HIGH SCL+	CCAF ASSOC DEGREE	NO CCAF ASSOC DEGREE	REGIS CCAF	NOT REGIS CCAF	ABOVE AVG AFQT	NOT ABOVE AVG AFQT
LATE	128	58	3	183	84	1Ø2	53	128
EARLY	87	116	23	18Ø	155	48	127	75
CHI-SQUARE	26.46*		14.69*		39.86*		43.24*	
CONTIN COEFF	Ø.25*		Ø.19		Ø.3Ø*		Ø.32*	
*Significant								

Table 25. PAFSC 46

For this sample, Level of Education, Registered CCAF and Above Avg AFQT all display significant and strong relationships with early promotions.

In this chapter the four areas (Level of Education, CCAF Associate Degree, Registered CCAF, and Above Average AFQT) were analyzed using the Chi-square distribution and contingency coefficient to measure the strength of the relationships to early promotions. Using data from across the sample, Registered CCAF and Above Average AFQT proved to be significant. The results varied with the individual career fields, but tended to support the overall sample. The bearing this data has on this study will be discussed in Chapter Five. Recommendations for expansion of this data will be discussed in Chapter Six.

Chapter Five

CONCLUSIONS

The analyses in Chapter Four demonstrate that of the four areas identified in this study, the two areas significant in early promotion to TSgt were Above Average AFQT and Registered CCAF (see Table 19).

Let us return to the two basic questions of this study (1) Can AFMPC ATLAS data unique to early promotions of maintenance TSgts be identified? (2) If this data can be identified, can it be used to determine if the CCAF associate degree program will enhance NCO promotions to Senior NCOs in the 1990s? These questions will be addressed separately in this chapter. It is important to emphasize that this study was conducted to identify features which enhance early promotions for Senior NCOs and was not limited to TSgts. TSgts were used as the study group because in terms of years, they will be the Senior NCOs of the 1990s. (19:10) Furthermore, the features of the individuals promoted early to TSgt were assumed to be the features most likely to be found in individuals promoted to the higher NCO ranks.

Above_Average_AFQT

The validity of the Above Average AFQT Group in its relationship to early promotions lies in the manner in which it is used by the Air Force. The AFQT scores are used for two important functions in the enlistment process. "First they help determine an individual's eligibility for enlistment. Second, they are used to establish the individual's qualifications for assignment to specific military jobs [PAFSC]." (30:4)

It is important to remember that AFQT scores are composed of ASVAB subtests (Word Knowledge, Paragraph Composition, Numerical Operations, and Arithmetic Reasoning) and these subtests were developed to measure an individual's trainability. (2:4,7) It has also been shown that if an individual can perform well on one type of achievement test (such as ASVAB subtests) one might well expect him or her to perform well on most other forms of standardized tests. (3:190) For TSgts this impacts PFE and SKT scores. More importantly for E-8 and E-9 promotions, this applies to USAFSE scores

(see Tables 4 and 5). Therefore, within the constraints of this study, it can be said that individuals who are in the Above Average AFQT Group tend to be promoted early, as shown in Table 26.

ABOVE AVERAGE AFQT

	ALL PAFSC	32	39	40	42	43	46
CHI-SQUARE	187.79*	13.05*	3.9	**	67.08*	62.44*	43.24*
CONTIN COEFF	0.26*	0.17	0.24	**	0.28*	0.26*	0.32*

*Significant **Sample too small

Table 26. Above Average AFQT Versus Early Promotions

This information is of limited value, however, in that these tests are given as part of an individual's entry requirements into the service and, as such, simply set the stage for that person's career. Because individuals are grouped into PAFSCs according to AFQT scores and are then promoted within those PAFSCs, one would expect those who scored approximately the same to have the same promotability, all else being equal. Let us turn now to an area over which each individual has direct control after embarking upon his or her career.

Registered CCAF

The second area (Registered CCAF) that proved significant in this study not only answers, in part, the first question, "Can features distinctive to individuals promoted ahead of contemporaries be identified?" It also speaks directly to the second question, "Can the CCAF associate degree program enhance Senior NCO promotion in the 1990s?" The data from Chapter Four, condensed in Table 27, clearly shows the relationship between Registered CCAF and early promotions for maintenance TSgts selected for promotion in 1985.

The ATLAS retrieval system does not differentiate between an individual who is simply registered with CCAF and an individual actively pursuing a CCAF associate degree. The literary search, however, revealed that it is the education and heightened testing ability gained from active participation in an educational program which enhances promotion potential (see Chapter 2). It should be noted, therefore, that for the purposes of this study, a person who is registered with CCAF is

defined as one who is registered and actively pursuing an associate degree with CCAF.

	REGISTERED CCAF						
	ALL PAFSC	32	39	40	42	43	46
CHI-SQUARE	174.16*	26.04*	0.45	26.25*	74.78*	44.46*	39.86*
CONTIN COEFF	0.25*	0.24*	0.08	0.03	0.29*	0.22*	0.30*
*Significant							

Table 27. Registered CCAF Versus Early Promotions

This information impacts the second question posed in this study because of the considerable attention promotion boards pay to formal education in E-8 and E-9 promotions. (7:40) The average USAFSE score from the 1984 and 1985 E-8 promotion boards was 58.82 (Table 4) and the average score from the 1983 to 1985 E-9 promotion boards was 59.49 (Table 5). The ability to increase an individual's USAFSE score could significantly impact promotion potential. (4:360)

Education Level/CCAF Associate Degree

Even though Education Level and CCAF Associate Degree did not prove to be significant in relation to early promotions to TSgt, their impact should not be discounted in promotions to E-8 and E-9. This dichotomy is caused by the difference in promotion systems. As mentioned earlier, while TSgts do not meet promotion boards, E-8s and E-9s do. These promotion ". . .boards pay considerable attention to formal education . . ." (including a CCAF associate degree) and "[s]election rates were much higher for. . .eligibles with some college than for those without. . .higher still for those with degrees." (7:40) Furthermore, education is also perceived to be an indicator of a desire to increase an individual's value to the Air Force. This is a positive factor in the eyes of promotion boards, who consider the "whole-person." (29:24)

Registered CCAF and Early Promotions

For the purpose of this study the relationship between being registered with CCAF and early promotions is significant because it is a feature of individual records in AFMPC ATLAS data which is unique to early promotions of maintenance TSgts. It also proves that the CCAF associate degree program can, in fact, enhance the promotion of NCOs to Senior NCO in the 1990s.

As stated earlier, the primary purpose of CCAF

> . . .is to provide the enlisted men and women of the Air Force community the opportunity to develop themselves through. . .meaningful education programs. They are afforded the means and incentive not only to attain skilled craftmanship, but also to broaden their education sufficiently to sustain continuing career growth in a changing, highly technological society. (42:3)

Furthermore, research has shown increased education level (including CCAF associate degree) can enhance testing ability as well as promotion board results.

The data analysis in Chapter Four (as condensed in Table 27) clearly illustrates the strength of the relationship between CCAF and early promotion. The challenge for officers, supervisors, commanders, and leaders will be to motivate individuals to take advantage of this opportunity in order to improve themselves and build a better Air Force of tomorrow.

Chapter Six

RECOMMENDATIONS

CCAF

The author strongly recommends CCAF sponsor further studies expanding the scope from the six PAFSCs covered in this study to all PAFSCs in the Air Force. The format established in this study, outlined in the sample entry, (Table 14) and data available through ATLAS could be applied to all PAFSCs. Because the selection criteria differs for PAFSCs and because individuals are promoted against their contemporaries within those PAFSCs, criteria important to promotion in one career field may not be significant for all fields. Such studies could determine whether there are distinctive features common to those individuals promoted ahead of their contemporaries in all fields and, if there are not, which areas are important for each career field.

The data analysis in this study demonstrated that increasing the size of the sample can affect the significance of the predictor. It stands to reason that increasing the study sample size to incorporate all Air Force PAFSCs could enhance the value of the product.

The author also strongly recommends CCAF sponsor follow-on studies using the framework of this study and the information available through ATLAS, to determine whether proficiency in a specific area is related to early promotion. One could use the information gained in such studies to address the CCAF program in greater detail to determine whether more emphasis in certain fields could further enhance promotion potential. For example, if high scores in Administrative and Mechanical subtests (see Table 12) were significantly related to early promotions in the 43XXX (Aircraft Maintenance) career field, a future study could review the course material for the Aircraft Maintenance Technology Associate Degree to determine if it provided the information necessary to better prepare individuals in that career field. Because the CCAF degree programs encompass all enlisted specialties, such studies would have applications across all PAFSCs and should not be limited to the six PAFSCs addressed in this study.

Finally, the author recommends the findings of this project be included in the CCAF General Catalog.

Air Force

Although a significant number of Air Force regulations, pamphlets, and study guides speak to the importance of CCAF in further developing the "whole-person," the results of this study in relation to early promotions and being registered with CCAF should be made available at all levels. Specifically, this information should be identified to Base Education offices and Professional Military Education schools, particularly NCO leadership schools. The Air Force Policy Letter for Commanders is a particularly effective vehicle for relaying this information to those concerned.

Commanders and Supervisors

Because they have a particular responsibility to their people, it is especially important that the relationship between early promotions and being registered with CCAF be passed to Commanders, First Sergeants, Unit Career Advisors, and mid-level supervisors. When a new individual is processed into a unit, his or her status with CCAF should be determined. Any individual who intends to be a career NCO should have the relationship between an education from CCAF and promotability explained clearly and in detail.

Get the Word Out

To better prepare today's NCO to fulfill his or her role as a Senior NCO in the future, the relationship between early promotions and the Community College of the Air Force should be identified to all personnel at all levels.

BIBLIOGRAPHY

REFERENCES CITED

Books

1. Arkin, Herbert and Raymond R. Coulton. Statistical Methods. New York: Barnes and Noble, Inc., 1957.

2. Freund, John E. Mathematical Statistics. New Jersey: Prentice-Hall, Inc., 1971.

3. Strenio, Andrew J. Jr. The Testing Trap. New York: Rawson, Wade Publishers, Inc., 1981.

4. Wigdor, Alexandra K. and Wendell R. Garner. Editors. Ability Testing: Uses, Consequences, and Controversies. Washington, D.C.: National Academy Press, 1982.

Articles and Periodicals

5. "AFLC to Test Assigning Senior NCOs as Assistant Weapons Managers." AF Journal of Logistics, Vol. 5 (Summer 1981), p. 12.

6. Andrews, Arthur L., CMSAF. "NCOs Must Display Leadership and Professionalism." Air Force Magazine, Vol. 65 (May 1982), pp. 81-82.

7. Callender, Bruce. "Analyzing the Factors in E-9 Promotion." Air Force Times, Vol. 38, No. 42 (15 May 1982), pp. 36-40.

8. "Chief Promotions." Air Force Times, Vol. 42, No. 36 (29 March 1982), p. 10.

9. "Chief Promotions." Air Force Times, Vol. 44, No. 20 (5 December 1983), p. 16.

10. "Chief Promotions." Air Force Times, Vol. 45, No. 19 (26 November 1984), p. 26.

11. "Chief Promotions." Air Force Times, Vol. 46, No. 16 (4 November 1985), p. 34.

CONTINUED

12. "E-8 Promotions." Air Force Times, Vol. 42, No. 47 (14 June 1982), p. L1.

13. "E-8 Promotions." Air Force Times, Vol. 43, No. 42 (9 May 1983), p. 28.

14. "E-8 Promotions." Air Force Times, Vol. 44, No. 42 (7 May 1984), p. 10.

15. "E-8 Promotions." Air Force Times, Vol. 45, No. 46 (3 June 1985), p. 16.

16. Golden, Ron, Sergeant, USAF. "A Path to Leadership (the Langley NCO Leadership School)." Sergeants, Vol. 23 (August 1984), pp. 29-32.

17. Kustelski, Thomas A., Maj, USAF. "Our Goal: Promote the Best with the Best System." Air University Reveiw, Vol. 21, No. 6 (September-October 1970), pp. 6-13.

18. Lucas, Charles E., CMSgt, USAF, Retired. "Evolving Role of the NCO." Air Force Magazine, Vol. 68 (June 1985), p. 143.

19. "NCO Promotion Pace Expected to Remain Stable." Air Force Times, Vol. 45, No. 28 (28 January 1985), p. 10.

20. "Non Commissioned Officer (NCO) Promotions-AU." TIG Brief, Vol. XXXVI, No. 11 (25 June 1984), p. 4.

21. Parish, Sam E., CMSAF. "Building Quality (a "stockholders report" on the enlisted force)." Air Force Magazine, Vol. 67 (May 1984), P. 84.

22. "Point-Board OK for E-8, 9." Air Force Times, Vol. 37, No. 1 (2 August 1976), p. 30.

23. Prochoroff, Alan, MSgt, USAF. "By the New Book." AIRMAN, Vol. XXVIII, No. 7 (July 1980), pp. 44-48.

24. Sheffield, Dick, Capt, USAF. "License to Lead." AIRMAN, Vol. 24 (July 1980), pp. 30-34.

CONTINUED

25. "TSgt Promotions." Air Force Times. Vol. 42, No. 50 (5 July 1982), p. 12.

26. "TSgt Promotions." Air Force Times. Vol. 43, No. 50 (4 July 1983), p. 27.

27. "TSgt Promotions." Air Force Times. Vol. 44, No. 51 (9 July 1984), p. 8.

28. "TSgt Promotions." Air Force Times. Vol. 45, No. 51 (8 July 1985), p. 14.

Official Documents

29. Davis, B.L., Gen, USAF. "An NCO's Job is Tougher than You Think." A.F. Policy Letter for Commanders. Sup. Washington D.C.: Government Printing Office (August 1981), pp. 24-28.

30. Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics). PROFILE OF AMERICAN YOUTH: 1980 Nationwide Administration of the Armed Services Vocational Aptitude Battery. Washington D.C.: Government Printing Office, March 1982.

31. U.S. Department of the Air Force. ATLAS Inquiry Language. Programmed Learning Text (PLT) Book One Instructional Guidance. DATA SYSTEMS TRAINING AFMPC/MPC DET. Randolph Air Force Base, Texas, 1 June 1983.

32. U.S. Department of the Air Force. Community College of the Air Force General Catalog. No. 9, Washington D.C.: Government Printing Office, 1984-1986.

33. U.S. Department of the Air Force. Enlisted Career Planner. AF Pamphlet 39-19. Washington D.C.: Government Printing Office, 14 September 1982.

34. U.S. Department of the Air Force. Promotion of Airmen. AF Regulation 39-29. Washington D.C.: Government Printing Office, 3 January 1984.

CONTINUED

35. U.S. Department of the Air Force. The Enlisted Force Organization. AF Regulation 39-6. Washington D.C.: Government Printing Office, 12 August 1977.

36. U.S. Department of the Air Force. The Enlisted Force Organization. AF Regulation 39-6M. Washington D.C.: Government Printing Office, 12 August 1977.

37. U.S. Department of the Air Force: Air Force Logistics Command. Leadership and Management. Non-commissioned Officers Leadership School. Hill AFB, Utah, 1984.

38. U.S. Department of the Air Force. The Military Training Standard System. AF Regulation 5Ø-44. Washington D.C.: Government Printing Office, 1 September 1984.

39. U.S. Department of the Air Force. USAF Supervisory Examination (USAFSE) Study Guide. AF Pamphlet 5Ø-34 Vol. 2. Washington D.C.: Government Printing Office, 1 March 1985.

Unpublished Materials

4Ø. Bejar, Isaac I., David J. Weiss, and Kathleen A. Gialluca. "AN INFORMATION COMPARISON OF CONVENTIONAL AND ADAPTIVE TESTS IN THE MEASUREMENT OF CLASSROOM ACHIEVEMENT." Research Report 77-7. Psychometric Methods Program. Department of Psychology. University of Minnesota, Minneapolis, Minnesota, October 1977.

41. Koplyay, Janos B., et al. "Development of a Senior NCO Promotion System." Report. Computational Sciences Division, Air Force Human Resources Laboratory. Lackland AFB, Texas, July 1976.

CONTINUED

42. Newton, Clyde L. "A Study of Promotion Fitness Examination and Specialty Knowledge Test Performance by Community College of the Air Force Graduates." A Dissertation submitted to the Faculty of the School of Education and Human Development of the George Washington University in partial satisfaction of the requirements for the degree of Doctor of Education. 30 September 1978.

43. Richards, Robert C., Maj, USAF. "History of USAF Airman Promotions (1947 to 1976)." A Research Study Submitted to the Faculty, Air Command and Staff College. Maxwell AFB, Alabama, May 1977.

END

FILMED

5-86

DTIC