

AVIATION WARRANT OFFICER PROGRAM
&
ENLISTED AVIATOR STUDY (12)

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)		
Charter Areas of Interest Include: (a) Warrant Officer Promotion Policies; (b) Grading of Warrant Officer Positions; (c) Evaluate Expected Performance of Aviation Warrant Officer; (d) Warrant Officer Management/Career Patterns; (e) Requirements for Additional Aircraft Qualification; (f) Officer/Warrant Officer Force Structure; (g) Desirability/Feasibility of Enlisted Aviators/Weapons Systems Operators.		

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In-depth analysis along with additional documentation and bibliography are filed in the Warrant Officer Division, Officer Personnel Management Directorate, USA Military Personnel Center (DAPC-OPW), 200 Stovall St., Alexandria, Va. 22332



DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS
WASHINGTON, D.C. 20310

REPLY TO
ATTENTION OF: DAMO-RQ

5 JUL 1977

MEMORANDUM THRU: ~~DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS~~ MCM/STJ

FOR: VICE CHIEF OF STAFF

SUBJECT: Proposed Charter for Special Task Force (STF) to Study the
Aviation Warrant Officer Program, Enlisted Aviators and
Aviation Specialty 15--DECISION MEMORANDUM

1. PURPOSE. To forward, for approval, the proposed charter establishing
a STF to review the Aviation Warrant Officer Program, Enlisted Aviators
and Aviation Specialty 15.

2. DISCUSSION.

a. On 16 June 1977, VCSA approved the STF to study the Aviation
Specialty 15 and the Warrant Officer Aviation problems and directed that
a charter be established, (Tab B).

b. The proposed charter for STF is at Tab A.

c. OSA (M&RA), OCSA, ODCSPER, MILPERCEN, and ODCSLOG concur.

3. RECOMMENDATION. Approve proposed charter at Tab A.

2 Incls
as

Charles E. Canedy
CHARLES E. CANEDY
Brigadier General, GS
Acting Director of Requirements
and Army Aviation Officer

6 JUL 1977

APPROVED - OCSA

ACCESSION FOR	
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ROBERT B. FRANKLIN, JR.
MAJ, GS
Assistant to the Director
of the Army Staff



CHARTER OF THE SPECIAL TASK FORCE

1. PURPOSE: This Department of the Army Charter establishes the Aviation Warrant Officer Program and Aviation Specialty 15, Special Task Force (STF) and specifies the mission, authority and responsibilities of the group.

2. SPECIAL TASK FORCE: Effective 22 June 1977, the Special Task Force is established within the Office of the Deputy Chief of Staff for Operations. The Co-Directors of this group are: BG Charles E. Canedy, Acting Director of Requirements and Army Aviation Officer; BG Richard S. Sweet, Deputy Director of Military Personnel Management, ODCSPER. The Study Group is located in Augmentation Room Number 1, BF 727, Army Operations Center, the Pentagon.

3. MISSION:

a. Evaluate the Aviation Warrant Officer Program and Aviation Specialty 15, and provide findings and recommendations at the conclusion of the evaluation to the VCSA for approval.

b. Within the capabilities and tenure of the Special Task Force, Aviation Warrant Officer recommendations will be reviewed for application to the entire Warrant Officer Corps.

c. Efforts are directed toward but not limited to the following issues:

(1) Warrant Officer promotion policies:

(a) Best qualified versus fully qualified or alternatives.

(b) Promotion forecasts, grade allocations, and separate promotion boards for Aviation and Non-Aviation Warrant Officers.

(2) The desirability of specifying Warrant Officer grades within authorization documents. If so, what positions?

(3) Criteria to evaluate expected performance of duty.

(4) Initial qualifications for initial entry into flight training to include:

(a) Physical/mental aptitudes and educational requirements.

(b) Retention policy upon graduation.

(5) Management and effectiveness of developing the required skill and career patterns. Review present policy and requirements to qualify in "advanced aircraft."

(6) Should the Warrant Officer continue to be included in the total officer force structure?

(7) Desirability/feasibility of enlisted aviators/weapons systems operators.

(8) Management of Specialty 15 to include:

(a) Effectiveness in developing officer career patterns.

(b) Selection criteria.

(c) Initial qualification and optimum percentage of total Officer Corps.

(d) Career patterns, grade structure, Aviation Career Incentive Act, and officer requirements.

d. The study order of priority will be: Aviation Warrant Officer Program, Enlisted Aviator and Aviation Specialty 15.

4. AUTHORITY AND FUNCTIONS:

a. The STF will be organized under the Co-Directors. These Co-Directors are authorized to task commands and agencies through respective members for specific inputs.

b. A study group will be formed using personnel from HQDA, FORSCOM, DARCOM, TRADOC and other commands as required. This study group chairman will be COL James R. Hill.

c. The Steering Group will include the two co-directors, study group chairman, and representatives from ODCSPER, ODCSLOG, ODCSOPS and MILPERCEN.

d. All findings and recommendation of the STF will be coordinated with the OPMS Steering Committee and/or appropriate functional manager(s) at MILPERCEN.

5. RELATIONSHIPS:

a. The STF co-directors will operate under the general staff supervision of the DCSOPS.

b. Establishment of this STF does not relieve the Army Staff and/or MACOMS of their assigned authorities and responsibilities.

c. Coordination/interface: The study group will coordinate and draw from all known on-going studies/staff actions affecting the STF areas of interest to include:

(1) Determination of Officer Requirements, CSM 3 Dec 1976, Short Term Initiative 5, Warrant Officer conversion. This includes:

- (a) EM Aviator Management Study (DCSPER).
 - (b) WO/EM/CIV Position Review (DCSPER).
 - (c) Army Research Institute Study of Enlisted Aviation Feasibility (DCSPER).
- (2) Officer Education Review (CofS Directed Study).
- (3) Officer Systems Analysis Group (OPMD).
- (4) Army Research Institute Study of Performance Based Aviator Selection (DCSOPS).
- (5) TOE Grading of Aviation Warrant Officer positions (DCSOPS).
- (6) Specialty 15 Advance Course Tasking (DCSPER).

6. EXPIRATION: This charter terminates with submission of the TF report to DCSOPS, ~~within 90 days~~.



DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF STAFF
WASHINGTON, D.C. 20310

16 June 1977

SUBJECT: Letter of Instruction for Co-Directors, Special Task Force (STF)
to Study the Aviation Specialty 15 and the Warrant Officer
Aviator Problems

Brigadier General Charles E. Canedy
Acting Director of Requirements
and Army Aviation Officer
HQDA, ODCSOPS
Washington, D. C. 20310

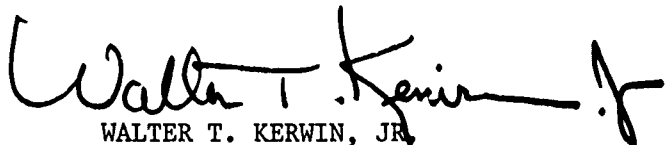
Brigadier General Richard S. Sweet
Deputy Director of Military Personnel Management
HQDA, ODCSPER
Washington, D. C. 20310

1. You are designated Co-Directors of a STF to conduct a study of the Aviation Warrant Officer Program and Aviation Specialty 15. In your capacity as STF Directors, you will operate under the general staff supervision of the DCSOPS. The STF will function in accordance with the instructions contained within this letter.
2. The missions of the STF are:
 - a. To study and evaluate the Aviation Warrant Officer Program with emphasis on promotion, position requirements, and expected performance of duty.
 - b. To evaluate the management of Specialty 15 and the effectiveness of the specialty in developing officer career patterns. Also, consider in the review the timing, or best time for an officer to enroll in the aviation program.
 - c. To determine the grade structure, validity of staffing guides and other manning criteria for Aviation Warrant and Commissioned Officers.
 - d. Examine/determine the feasibility of enlisted aviators.
 - e. To provide findings and recommendations at the conclusion of the evaluation.

SUBJECT: Letter of Instruction for Co-Directors, Special Task Force (STF)
to Study the Aviation Specialty 15 and the Warrant Officer
Aviator Problems

3. The study group will be organized under the Co-Directors and will be chaired by a designated O-6. The STF will be staffed using personnel from HQDA, FORSCOM, TRADOC, DARCOM and other commands as required.
(Incl 1) The STF will operate under the direction of a steering group.
(Incl 2)
4. As Co-Directors of the STF, you are authorized to task commands and agencies through their respective members for specific input supporting your efforts.
5. The STF will become operational 22 June 77 and will be disestablished upon the completion of the tasks specified in the Task Force Charter.
6. The STF will be provided space at the Pentagon.
7. The STF will, upon activation, develop and present their charter to the Steering Committee for approval within six working days.
8. MILESTONES AND ADMINISTRATIVE INSTRUCTIONS. See Incl 3.

3 Incl
as


WALTER T. KERWIN, JR.
General, United States Army
Vice Chief of Staff

STF DIRECTORS

BG CANEDY, DAMO-RQ and BG SWEET, DAPE-MP

MEMBERS

<u>COMMAND/AGENCY</u>	<u>NUMBER</u>	<u>GRADE</u>
DAMO	1	06 (Chairman)
TRADOC	2	05 (Member)
DAMO-RQ*	1	05 (Member)
FORSCOM	1	05 (Member)
DAMO-FD*	1	05 (Member)
DALO*	1	05 (Member)
DAPE	1	05 (Member)
MILPERCEN	1	05 (Member)
DARCOM	1	05 (Member)
DASG*	1	05 (Member)

*Participation as required by STF Director or as desired by parent agency.

COMPOSITION OF STEERING GROUP

DAMO-RQ	BG C. E. CANEDY
DAPE-MP	BG R. S. SWEET
DAMO	CHAIRMAN, STF
MILPERCEN	BG BEN DOTY
DALO-AV	MR. J. P. CRIBBINS
DAMO-FD	MR. WILLIAM I. KING
DAMO-RQ	COL R. F. MOLINELLI
DAPE-MP	COL J. L. ZORN

MILESTONES

22 JUN 1977

STF Becomes Operational

1 JUL 1977

STF Charter Submitted to ODCSOPS

Subsequent milestones for the study effort will be designated by the Steering Group.

ADMINISTRATION

ADMIN INSTRUCTIONS. Funds for travel, per diem and overtime as required, will be provided by parent organizations of task force representatives concerned.

AVIATION SPECIAL TASK FORCE (STF)

STEERING GROUP

BG C. E. Canedy	ODCSOPS
BG B. E. Doty	USAMILPERCEN
BG R.S. Sweet	ODCSPER
COL J. R. Hill	ODCSRDA
COL R. F. Molinelli	ODCSOPS
COL J. L. Zorn	ODCSPER
MR. J. P. Cribbins	ODCSLOG
MR. W. I. King	ODCSOPS

AVIATION SPECIAL TASK FORCE (STF)

CO - DIRECTORS

BG Charles E. Canedy	HQDA, ODCSOPS
BG Richard S. Sweet	HQDA, ODCSPER

CHAIRMAN

Colonel James R. Hill, ODCSRDA

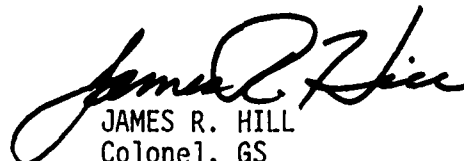
MEMBERS

LTC William E. Bacon	FORSCOM
LTC Robert M. Furney	TRADOC
LTC Glenn Greenlee	TRADOC
LTC Arthur J. Hall	DARCOM
MAJ John R. Francis	FORSCOM
MAJ George D. Fuller	FORSCOM
CW4 Ellis P. Walker	MILPERCEN

Acknowledgement

The members of the Aviation Special Task Force would like to thank the many people that provided information in developing the findings and recommendations made by the study group.

We offer a special thanks for the final typing of this report to Mrs. Bennie J. Hayes and her supervisor Mrs. Helen Arensdorf of the Word Processing Center, USA Military Personnel Center. Your cooperation and help have been given in the highest traditions of the Army and is deeply appreciated.


JAMES R. HILL
Colonel, GS
Chairman

SUMMARY

1. Introduction

On 16 June 77, the Vice Chief of Staff of the Army directed the formation of a Special Task Force (STF) under the co-directorship of Brigadier General Canedy, ODCSOPS, and Brigadier General Sweet, ODCSPER; to study enlisted aviator feasibility, the aviation warrant officer program, and aviation specialty code 15. A priority of effort was established with the warrant officer program/enlisted aviator proposal being studied first, followed by the commissioned officer aviation specialty code 15. This report addresses the findings and recommendations pertaining only to the warrant officers and enlisted aviator. The aviation specialty code 15 for commissioned officers will be addressed in a separate report. This summary provides only a synopsis. Detailed findings and recommendations can be found within each section of the report.

2. Mission

The STF overall mission was to:

(1) Evaluate the aviation warrant officer program and aviation specialty code 15, and provide findings and recommendations at the conclusion.

(2) Review aviation warrant officer recommendations, within the capabilities and tenure of the task force, for application to the entire warrant officer corps.

Charter Areas of Specific Interest:

(1) Warrant Officer promotion policies.

(2) The desirability of specifying warrant officer grades with authorization documents.

(3) Criteria to evaluate expected performances of aviation warrant officer duty.

(4) Initial qualifications for entry into flight training and retention.

(5) Management and effectiveness of developing required aviation warrant officer skills and career patterns. Review the present policy and requirements to qualify in advanced aircraft.

(6) Should the aviation warrant officer continue to be included in the total officer force structure?

(7) Desirability/feasibility of enlisted aviators/weapons systems operators.

3. Findings/Recommendations

(1) Warrant Officer Promotion Policies: Based on current Army policy, warrant officer technicians are being released because of non-selection (twice) for AUS promotion. There are a greater number of AUS warrant officers (on managed tenure) than RA warrant officers, serving beyond 20 years.

Recommend: An AUS system that will promote a number not less than 80 percent of warrant officers who are being considered for first time promotion to CW3 or CW4; provide selected continuation for specialties which may be critically short, while purging the system of non-performers; eliminate the managed tenure program in FY 81. (Sec I).

(2) Grading of Warrant Officer Positions: Field commands stated, grading of warrant officer positions in authorization documents was not desirable. Grading criteria could not be established that was equitable for all warrant officers.

Recommend: Warrant Officer positions not be graded. (Sec II).

(3) Expected Performance of Duty: The measure of warrant officer performance can be improved by educating new warrant officer's and the officer corps concerning the principles and objectives of the warrant officer program.

Recommend: A formal program to orient new warrant officer's on their expected duties, conduct, and standards; warrant officer's by regulation, be included on warrant officer AUS promotion selection boards; training on preparation of OER's in officer basic, advanced, and specialty/technical courses. (Sec III).

(4) Flight School Selection: Initial prerequisites/qualifications for entry into flight school have become outmoded.

Recommend: Army Research Institute (ARI) and Surgeon General's Office continue development and implement a preselection evaluation program based on total system/mission operational requirements in October 1978. (Sec IV).

(5) Management/Mission Track System: Existing undergraduate flight training can be improved by instituting a system of early aircraft specialization. Mission tracked training will save flight training dollars over the present flight training system.

Recommend: the "Attack Track" in FY 79 and the "Cargo Track" in FY 80 (budget permitting) with supporting management and distribution plans. (Sec V).

(6) Retention Policy: In view of rising training costs and marketability of Warrant Officer Aviators, retention must be improved.

Recommend: Initial flight training obligation be increased from three to four years; obligation for additional training be revised based on course length and cost; service obligations should be additive up to four years. (Sec VI).

(7) Aviation Warrant Officer Requirement: The actual aviation warrant officer requirement (crew staffing) is not properly justified, nor presented. Authorization changes are approved without timely submission of supporting TAADS documents and over allocated, if not within budgeted ceilings. By the time the aviation warrant officer's budgeted strengths are determined in December, the OMA flying hour and training dollars are fixed.

Recommend: MACOM requests for authorization changes be accompanied by proposed MTOE documents. This will allow for expeditious execution of MTOE and force structure changes when approved by HQ DA. Execute TOE and force structure changes when the budget allows; determine firm warrant officer aviation requirements at the beginning of the budget cycle for submission in the Army POM. (Sec VII).

(8) Aircraft Crew Staffing: Current aircraft crew staffing of one pilot per pilot seat does not support doctrine or aircraft availability.

Recommend: Aviation TO&E's be revised to reflect the crew ratio required by aircraft, unit, and mission; revise current Reserve component training and policies regarding unit and individual replacements to support M Day requirements; consider staffing all active attack helicopter companies at 100% of present required TO&E strength with additional staffing based on adjusted requirements and subject to program budget review. (Sec VIII).

(9) Aircraft Qualification Training: The term "advanced aircraft transition policy", e.g., 500 hours, and 3 years experience, is not Army policy in the true sense of the word. (Evolved from requirements contained in DA pam 600-11 and TC 1-34).

Recommend: Phase out the 3 year/500 hour requirement policy over several years; begin no later than FY 80 to implement mission tracked (attack, cargo, utility and scout) initial flight training and develop management/assignment distribution plan in the POM years. (Sec IX).

(10) Warrant Officer Force Structure Management: Title 10, USC, places warrant officer's by definition, in the total officer force structure. The STF can identify no advantage to change Warrant Officer accounting.

Recommend: The Army continue the present officer/warrant officer accounting system. (Sec X).

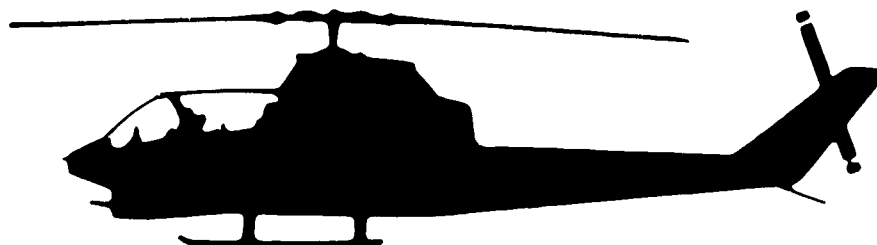
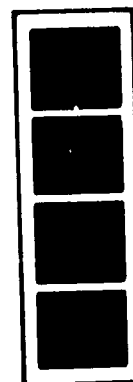
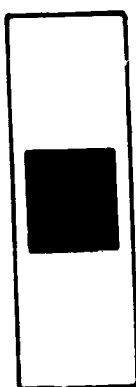
(11) Enlisted Aviator/Gunner: The enlisted aviator proposal is undesirable because of morale implication and lack of acceptance by Army personnel of all grades. Field responses cite pay, command relationships, enlisted versus officer duties and sociological factors as problem areas. Lower enlisted retention rates can be anticipated. A substantial training dollar increase per year would be required to overcome the lower enlisted retention. All services data show that officers are more career oriented than enlisted.

Recommend: Enlisted aviators be dropped from further consideration. The feasibility of enlisted gunners should be deferred until completion of the ARI/Surgeon General Task Analysis of the flight position and total mission requirement. (Chapter II, Sec I).

4. The Vice Chief of Staff of the Army approved the above recommendations on 2 Nov 77 with one exception. The recommendation to provide additional training in officer courses on the preparation of officer efficiency reports, was not approved.

CHAPTER I

AVIATION WARRANT OFFICER PROGRAM



SECTION I

WARRANT OFFICER PROMOTION POLICIES

A. REQUIREMENT:

To review the Army's present warrant officer promotion policies.

B. BACKGROUND:

1. The principal reference pertaining to warrant officer promotion is AR 624-100, Promotion of Officers on Active Duty. This regulation prescribes policies and procedures for temporary promotion in the Army of the United States (AUS) of commissioned officers and warrant officers on active duty under the provisions of 10 USC 3442, 3447, and 3449; and for the promotion of Regular Army officers in their permanent grades.

2. Upon adjournment of the 24 February 1977 AUS promotion board, major concerns were expressed by senior Army field commanders to General Kerwin, the Army Vice Chief of Staff; regarding the impact of second time nonselection of warrant officers on field units as a result of present warrant officer promotion policies.

C. DISCUSSION:

1. Promotion policies for warrant officers are the same as those for commissioned officers.

a. Promotion policies for both warrant officers and commissioned officers employ a "best qualified" - "up or out" method for selecting only the very best officers to serve in the top positions of responsibility throughout the Army. Yet, goals and objectives for utilization of both commissioned and warrant officers are different. Commissioned officers are groomed for top management while warrant officers are procured to serve in positions that require a high degree of military and technical skill (in one of 85 designated primary MOS), where repetitive assignments and stability in positions are expected.

b. What are the positive and negative aspects of the present "best qualified" - "up or out" promotion policy? Listed below are those factors considered most important:

FOR

Maintains a top quality WO force structure.

Provides for steady procurement of new WO accessions.

Stabilizes the age of the WO force structure.

Assures full promotion capability.

Provides a high degree of motivation to achieve top performance.

Reduces long range retirement costs.

AGAINST

High dollar cost to operate because of forced talent/experience/training investment loss.

Eliminates "fully qualified" WO's that can still make a valuable contribution to the Army.

Places WO promotion selection on a parallel with commissioned officer selection when end goals and career progression are different.

Sometimes driven by unrealistic number of promotion quotas.

Major civilian industries do not use or subscribe to an "up or out" policy because of the training and experience waste this policy would cause in their firms.

c. Placing the above considerations in balance, there is little to support continuation of the present temporary (AUS) promotion policy for warrant officers. When determining whether warrant officers should be promoted or continued on active duty; one must analyze why a warrant officer was created and base decisions on how well they perform their missions within each specific MOS.

d. Further illustration of warrant officer promotion policy being tied to those considerations necessary for commissioned officers (but not applicable to warrant officers) are the instructions published in the Letter of Instruction to the calendar 1977 promotion board dated, 27 January 1977. The LOI states in paragraph 3c that, "The Department of the Army's basic concept of fully qualified is: In determining whether a warrant officer under consideration is fully qualified for promotion, selection boards should satisfy themselves that the warrant officer is qualified professionally and morally, has demonstrated integrity and is capable of performing the duties expected of him in the next higher grade." Yet, in most cases there will be no change of

duty or responsibility for those warrant officers promoted from CW02 to CW03 and CW03 to CW04. However, it is recognized that promotion does indicate an ability to assume increased responsibility based upon experience, training and maturity. There is a consensus among the study group that future LOI's should more clearly reflect the purpose of promoting warrant officers; for example, recognizing potential for future service, maturity and technical competence. Additional comments by DCSPER are provided in ANNEX B, Section III concerning factors affecting warrant officer promotions.

2. CW03/CW04 Promotion Statistics (1960-1977). The statistics below illustrate how inconsistent AUS warrant officer promotions have been since 1960. *

a. CW03/CW04

<u>YEAR</u>	<u>PREVIOUS CONSIDERED</u>	<u>FIRST TIME CONSIDERED</u>	<u>TIG (YRS)</u>
1977	35.9%	58.1%	6.0
1976	35.1%	59.5%	6.0
1975	13.9%	51.1%	6.3
1974	17.1%	53.3%	5.8
1973	NO BOARD SCHEDULED		
1972	27.0%	51.5%	5.0
1971	25.0%	69.4%	4.0
1970	26.0%	71.4%	4.1
1965-69 (Rvn Avg)	31.2%	72.7%	4.8
1960-64 (Pre-Rvn Avg)	12.2%	53.8%	5.5

b. CW02/CW03

1977	50.5%	73.9%	6.7
1976	45.0%	69.5%	6.9
1975	16.6%	60.7%	6.8
1974	23.2%	59.3%	6.9
1973	NO BOARD SCHEDULED		
1972	20.5%	69.8%	4.3
1971	45.2%	75.5%	3.1
1970	16.0%	70.6%	3.1
1965-69 (RVN Avg)	33.2%	81.6%	4.4
1960-64 (Pre-RVN Avg)	18.5%	63.3%	6.6

*SOURCE: TAB B, DECISION MEMORANDUM, from DAPE-MPO-C, SUBJECT: Zones of Consideration and Selection Rates for Promotion to CW3/4, AUS, dated 21 Jan 1977. Above figures do not include promotions made from the secondary zone authorized for warrant officers since 1967.

c. The calendar years 1972, 1974 and 1975 are particularly significant relative to warrant officer promotions to grades CW03 and CW04. Essentially, one out of two warrant officers were selected for promotion to CW04; thereby causing an inordinate number of highly skilled and experienced warrant officers to leave the Army because of second time AUS promotion nonselection. The quality found in this population can be measured by comparing the high previously considered selection rate for both warrant officer grades CW03 and CW04 in calendar years 1976 (35.1% to CW04 and 45.0% to CW03) and 1977 (35.9% to CW04 and 50.5 % to CW03). These promotion results positively support the need to change present warrant officer promotion policies to reduce the unacceptable "loss rate" of experienced warrant officers (in 1977, 152 aviators and 129 non-aviators were released from active duty because of a second time promotion nonselection). Also important, is the build up of a one time nonselect backlog of 410, CW02's, of which, 278 are rated aviators and 132 are non-aviators. Also - 181, CW03's are in nonselect status; of which, 70 are rated aviators and 111 are non-aviators as of 24 February 1977.

3 The previously one-time nonselected warrant officer backlog problem.

a. Increasing first time considered selection rates only solves part of the problem. The calendar year 1976 and 1977 boards, for the first time since 1971, did show improved selection rates for temporary AUS promotions. However, it is evident that while selection rates improved, a long range solution for the warrant officer promotion problem had not been resolved. Warrant officers deserving of promotion would still be released from active duty. While it is recognized that all warrant officers should not be guaranteed promotion and the promotion system must serve to "purge" non-performers from the ranks, the backlog of previously considered warrant officers continues and because of the "up or out" policy - so do forced losses because of second time nonselections.

b. If the same promotion percentages resulting from the February 1977 board selection were continued in a new board that would be held in 1978, the following projected losses would occur:

	<u>Total Projected Loss</u>	<u>Aviators</u>	<u>Non Aviation</u>
(1) CW3	358	153	205
(2) CW4	<u>239</u>	<u>92</u>	<u>147</u>
(3) TOTAL	597	245	252

The above aviation losses would represent 53% of the FY78 initial aviation training output.

c. Beginning in FY 1978, the upper two warrant officer grades will be maintained at 40% of the total authorized warrant officer force as opposed to 37% in FY 1977 and 35% in FY 1976. The FY 1978 increased warrant officer grade structure will contain an authorization of 10.5% in grade CW04 and 29.5% in grade CW03. These grade restrictions are imposed by Army policy and maintained as a budget constraint in management of the warrant officer force. However, there appears to be a possible disconnect between the consequences when the forced training/experience and human cost is considered as opposed to allowing a greater number of warrant officers to continue on active duty.

4. Convening the October 1977, CW03/CW04 promotion board.

a. Convening a promotion board in less than nine months since adjournment of the last board allows normal promotion to take place under current Army AUS promotion policies.

b. The impact of having convened an early board will:

(1) Tend to stabilize the warrant officer corps against promotion nonselection losses over the next 12 to 22 months, but without loss of any warrant officers due to a second time nonselection.

(2) Will assist in reducing the backlog problem.

5. Separate promotion boards for aviators and non-aviators.

a. Due to the number of aviators being released from active duty because of nonselection for promotion, the question of convening a separate promotion board for aviators has been raised as a possible solution. However, this does not appear either necessary or desirable. First, by DCSPER policy, an adequate spread of both officer and warrant specialties/MOS are represented on the promotion selection board. For example, a typical board would be composed of commissioned officers and warrant officers having the following background:*

- (1) One AG commissioned officer
- (2) One SC " "
- (3) One MI " "
- (4) One OD " "
- (5) One EN " "
- (6) One QM " "
- (7) One FA
- (8) One MC " "
- (9) One AR w/Bn Cmd Experience
- (10) Three warrant officers as follows:

- (a) One AV
- (b) One OD
- (c) One QM

b. Among the commissioned officers serving on a promotion board, at least four must be rated aviators, one a minority member, one female and two must be reserve officers. Among the warrant officer members, one must be a reserve warrant officer and one a minority representative. The specific composition may vary with each board but a similiar cross section of skills and special qualifications are maintained.

* SOURCE: ODCSPER (DAPE-MPO-C) policy file.

c. Selection board composition insures a fair evaluation of aviators within the parameters of present promotion board constraints, as all warrant officers are evaluated by the same group of officers. The board simply functions within the parameters established in the Letter of Instruction (LOI) provided by the convening authority. Therefore, convening a separate promotion board for aviators and non-aviators would not enhance promotion opportunities for either group without a change to the present promotion policy which appears to be the most appropriate resolution for this problem.

6. Comparing Army and Navy warrant officer temporary promotion policies.

a. ARMY

- Limit of 40% of corps serving in grade CW3/4
- Varying first time considered rate year by year.
- TIG varies by year

Navy

- No limit
- Established minimum first time considered selection rate of 80%.
- Minimum TIG for each grade established.

<u>Year</u>	<u>CW02 To CW03 (Yrs)</u>	<u>CW03 to CW04 (Yrs)</u>	
1977	6.7	6.0	-From W2 to W3
1976	6.9	6.0	- 4 years in
1975	6.8	6.3	grade W2.
1974	6.9	5.8	
1973	No Board Scheduled		-From W3 to W4
1972	4.3	5.0	- 4 years in
1971	3.1	4.0	grade W3.
1970	3.1	4.1	
1965-69 (RVN Avg)	4.4	4.8	
1960-64 (PRE-RVN Avg)	6.6	5.5	

b. Selecting the Navy for comparison in evaluating Army warrant officer promotion provides the best base because the Navy warrant officer population of between 2900 - 3100 represents the second largest user of warrant officers behind the Army.

c. Background for the Navy program is found in The Warrant Officer Manual (NAVPERS Publication 18455B, dtd 28 May 1976).

7. The "up or out" question posed to major civilian industry personnal managers in the 1967 DCSPER study.

a. The review of comments from civilian industry appear as valid today as they were ten years ago. While additional contact was not made with these firms during this study, they still support the requirement to provide for an alternate method of avoiding the continued sole use of the "up or out" policy.

b. Detailed "up or out" responses from industry are located at Annex A.

8. Why promote warrant officers?

a. General. During the first 20+ years of warrant officer utilization in the Army, there was only one single pay grade. In 1939, Congress, through the initiative of Senator Shepard, requested the War Department comment upon a proposal to establish two pay grades.

b. The Act of 1941 (Public Law 230) authorized two warrant officer grades, Chief Warrant Officer (CW0) and Warrant Officer Junior Grade (WOJG). Also, at this time, flight pay was authorized at a rate of 50% of pay when required to participate regularly in aerial flights.

c. Opportunity. Recognizing the principle of providing promotion opportunity from one pay grade to another, tends to eliminate stagnation and create incentive by allowing those best qualified to advance to a higher pay grade within the warrant officer corps.

Granted, upon reaching CW4 there is no where to go, but pay does increase each two years up to 22 years with a final pay increase at 26 years. As for the question of continued incentive/motivation for the CW4; insure these officers have a meaningful mission and you will have a well motivated officer - "ready to serve".

d. In summary, the warrant officer corps has gone from a single grade structure in 1918 to two grades in 1941; to four pay grades established by the Career Compensation Act of 1949 to it's present four grades of rank established by the Warrant Officer Act of 1954. Promotion recognizes maturity, experience gained by past performance and prevents stagnation. Supplementing the limited four - grade promotion opportunities for warrant officers are the following important fringe benefits:

- (1) 20 or 30 year retirement at 50 or 75 percent of base pay, with semi-annual Consumer Price Index (CPI) adjustments.
- (2) Up to \$20,000 insurance (SGLI) at a small cost
- (3) Commissary & PX privileges
- (4) Medical care for member and dependents
- (5) Dependency and Indemnity Compensation for Service - Connected Deaths
- (6) Social security coverage
- (7) Housing
- (8) Civil education assistance
- (9) Yearly pay adjustments
- (10) Survivor benefit program
- (11) Disability benefits

e. Overall, the Army has a good compensation package to offer warrant officers; however, young warrant officers must be convinced that through dedicated service, a career of at least 20 years can be reasonably assured.

9. Below the zone promotion for CW03/CW04.

a. Present promotion policies contained in AR 624-100 permit up to a 7.5% selection of outstanding warrant officers to both grades CW03 and CW04. However, The Secretary of The Army may authorize deviation from these rates.

b. With such a wide latitude for use, it is the consensus of the study group that no change be proposed concerning below the zone promotions for warrant officer grades CW03 and CW04, but monitor closely what is happening with primary zone promotion rates and be prepared to reduce secondary zone promotion rates, if considered necessary to conserve primary zone allocations.

10. Managed Tenure Program. (Impacts on both promotion and retention)

a. There are three programs that have an impact on the retention of warrant officers beyond 20 years active Federal service: Regular Army Warrant Officer Program (RAWOP); Long Range Active Duty Program (LRADP); and the Managed Tenure Program (MTP). A review of each program is at (ANNEX B-D).

b. Prior to FY 59 all warrant officers (OTRA or RA) could remain on active duty until attaining 30 years AFS or age 62, whichever occurred first. On 6 October 1958, the Secretary of the Army approved a program to release OTRA warrant officers upon attaining 20 years AFS. Retention beyond 20 years AFS was offered only on a "selected" basis. This became the Long Range Active Duty Program with retention to 30 years AFS based on DA board selection. In FY 76 a modified LRADP known as the Managed Tenure Program was instituted (see Annex E for background).

c. A viable Regular Army Program for warrant officers did not exist until 1968. In 1948 a Regular Army program was initiated in the form of competitive examinations for warrant officers interested in a more career oriented category. As a result of this program, approximately 5,000 individuals were appointed RA. Another RA program was initiated in 1964. On this occasion, the DA RA selection board acted upon recommendations submitted by the career branches. The individual could not apply and normally, never knew if he had even been recommended. By end FY 68 RA WO strength was at 604. The current RA Warrant Officer Program (RAWOP) was approved in January 1968 and implemented on 1 July 1968. For the first time, the program was based on individuals applying for acceptance.

d. The lack of a viable RA program, and the policy to release OTRA WO at 20 years AFS created the need for a LRADP (later the MTP) to provide a level of experience in the 20-30 year AFS range. Of the 2349 WO's presently serving on active duty as of September 1977, with 20 years or more, 1063 are RA while 1286 are OTRA with Managed Tenure.

e. Title 10, section 3213 authorizes 9,000 Regular Army warrant officers. Paragraph 1-1, AR 601-100 states that the Regular Army will be maintained at its authorized strength. The current RAWOP is proving somewhat successful with a current strength of 2853 as of 30 June 1977; however, the Managed Tenure Program is proving to be a detractor from a totally successful RA program.

f. The MTP offers about the same advantages as, but none of the disadvantages of, the RAWOP. By law, RA WO's who obtain employment with the Federal government after retirement have a salary "dual com-

pensation" restriction while those OTRA WO's who elect to remain on active duty under the Managed Tenure Program are not penalized. The MTP gives a quasi-RA status (i.e. guaranteed tenure) without any "dual compensation" restriction. Finally, if not selected for the MTP, the WO still has the option of applying for the RAWOP (Annex F).

g. Aside from the adverse impact on the RA program, the MTP has several other shortcomings:

(1) WO must be considered three times at approximately three year intervals for retention. This places the WO in a limbo status thus causing problems for the assignment officer, local commander, and the individual.

(2) Detracts from long term professional development training and planning.

(3) Cost of administering is more than that of RAWOP (e.g. three times considered vis-a-vis one).

(4) Limits assignment availability to serve overseas.

h. Eliminations of the MTP and reliance on the RAWOP would resolve the problems cited in above paragraphs. However, the possibility exists that the RAWOP may not provide enough applicants over the long term to meet the Army's 20-30 year AFS requirements (now set at 25 percent of the total WO strength while allowing a steady 5-15 percent input to new procurement). While the MTP is now designed to compensate for the shortfall from the RAWOP, the RAWOP can be utilized in a similar fashion as the MTP by causing all OTRA officers to be reviewed at a given time of AFS for possible integration into the RA. The selected OTRA WO would be offered RA status with the right to decline (similar to MTP). Nothing in law or policy precludes such action. This would provide a RAWOP that permits individuals to apply for RA at anytime and offers RA status to the individual who has not decided by a certain time of AFS. This proposed use of the RAWOP parallels the DOPMA RA proposal for commissioned officers and makes retention on active duty beyond 20 years of active Federal service the same for both commissioned and warrant officers.

D. FINDINGS.

1. A change to AUS warrant officer promotion policies is needed.

2. Current Army policy limits the number of WO's to 40% serving in the grades of CW03 and CW04.

3. The RA WO program by law (10 USC 560) requires a minimum of 80% first time considered be promoted to grades CW03 to CW04.

4. WO's do not consider the RA WO program attractive - open since 1968, there were 2853 RA WO's on active duty as of 30 June 1977, against an authorized strength of 9,000 established by law (10 USC 3213).

5. Of the 2349 WO's presently serving on active duty with 20 years or more, 1063 are RA while 1286 are OTRA with managed tenure.

6. Based on current AUS promotion policies, quality WO technicians are being released from active duty because of the "up or out" provision and insufficient promotion allocations to grades CW03 and CW04. As a result the Army is experiencing an unacceptable "loss rate".

7. Convening an AUS promotion board in October 1977, with less than 9 months from the previous board, will stabilize the Army WO force for a period of 12 to 22 months.

8. A separate promotion board for AVN WO's is not considered necessary or desirable.

9. Comparison of Army and Navy current temporary WO promotion systems reveal significant differences:

ARMY

* Limit of 40% of corps serving in grade CW03/4.

* First time considered rate varies a great deal from year to year.

NAVY

* No limit imposed

* Has established a minimum first time considered rate of not less than 80%.

10. A policy allowing for selected continuation of OTRA warrant officers on active duty with critically short MOS is needed to reduce losses due to second time promotion nonselection when promotion allocations are not adequate.

E. RECOMMENDATIONS:

1. Implement an AUS promotion policy that promotes a number that is not less than 80% of those considered the first time to grade CW03/CW04.
2. Institute selected continuation in FY 1979 for critically short MOS.
3. Purge the system of nonperformers.
4. Eliminate the Managed Tenure Program starting in FY 1981.

ANNEX A

1967 "Up or Out" Responses From Industry

Firm	Experience W/Such a Policy	Would Recommend Such a Policy	Extract of Pertinent Comments	
			No	Yes
Brown & Root Inc. (J.H. Davenport Gen. Manager Personnel Services)	No	No	1. A lot of people realize their limitations and are content to remain at a relative level for rest of their career. 2. Passing over a captain represents time and training investment; such personnel are still learning and gaining experience.	
Ford Motor Co. (E.D. O'Leary Vice President Personnel & Organization)	No	No	1. A satisfactory performer is still an asset. 2. Good personnel management militates against an "up or out" policy. 3. Some individuals now holding important jobs at one time were judged to have leveled off. Individuals can change with different responsibilities. 4. "Up or out" policy is black and white thinking.	
Lockheed Aircraft Corp. (J.P. Lydon Vice President Industrial Relations)	No	No	1. Military is in a "seller's market" and must lay heavy emphasis on retention at all levels. 2. Military and industry are both dependent on specialists and must realize their scarcity, time required to develop, and their attitude towards careers in either military or industry. 3. "Up or out" policy is not in accord with the times. The challenge is to do the best with what we have.	
Penna. RR Co. (G.W. Knight Vice President Labor Relations & Personnel)	No	No	1. Both (Army & Penna RR) must maintain readiness to meet variable and often unpredictable conditions over widespread territory. 2. Could not afford an "up or out" policy which would lose the competence and experience of middle managers.	
Sears Roebuck & Co. (W.W. Tudor Vice President Personnel & Employee Relations)	No	No	1. People progress to various levels, each according to ability, not all become chairman. 2. As long as individuals perform, we would consider it a waste of training and experience to force them out. 3. "Up or out" system would be a tremendous waste of talent in Sears and the Army	
Standard Oil of Calif. (W.L. Ingraham Vice President)	No	No	1. Hard to understand why individuals - fully trained and adequately competent - are separated because they are not promotable. 2. Release of nonpromotable would be wasteful of talent and harmful to human and public relations. 3. Ability to attract or recruit talent would be weakened. 4. Most people are realistic enough to know that somewhere up the ladder they will reach their ceiling. They continue to perform in a most satisfactory manner for us and derive satisfaction for themselves.	

Firm	Experience W/Such a Policy	Would Recommend Such a Policy	Extract of Pertinent Comments	
			1.	They may face the same problem in the future and request we furnish results of our findings to them.
American Tobacco Co. (D.H. Seitz, Manager Personnel Adminis- tration)	No	No	1.	
du Pont Corp. (G. Perry Personnel Director)	No	No	1.	Make a real effort to retain those who have reached their "ceiling" - they provide a solid base of management experiences
			2.	Encourage those who have reached their peak to specialize. Pointed out that some people are early starters and others are late starters. Each group should be handled differently.

ANNEX B

Regular Army Warrant Officer Program (RAWOP)

In 1948, the Regular Army Warrant Officer Program (RAWOP) was conducted in the form of competitive examinations. NCO's (E5,6,7), all active WO's and all OTRA commissioned officers were eligible to participate. Subsequently, approximately 5,000, including many OTRA commissioned officers on active duty were appointed as RA WO's. During the years following the Korean conflict, the Army underwent a reduction in force (RIF). The OTRA commissioned officer, holding an appointment in the Regular Army as a WO and who found himself caught in the RIF, was required to get out of the service or revert to another status, i.e., RA WO on active duty or seek an enlisted grade determination. This had an adverse impact on the WO Corps primarily because it caused stagnation in the ranks or a relative freeze with regard to AUS promotions.

Another RAWOP was initiated in 1964. On this occasion, the DA RA Selection Board acted upon the recommendations submitted by the career branches. Selection resulted in tender of appointment with an option to decline. It was an impersonal process conducted without the knowledge of the individual being considered, until notified of selection. At that time, eligibility requirements stipulated a minimum of six years WO service and not more than 18 years AFS. The program was not effective, for the RA WO strength declined during subsequent years to a low of approximately 550 RA WO in 1969.

The current RAWOP was approved in January 1968, announced to the field during March 1968, and implemented on 1 July 1968. The procedure involved is, for the first time, based upon individual application. Eligibility requirements are:

- a. Be able to complete 30 years' active Federal service by age 62.
- b. Be a high school graduate or equivalent.
- c. Meet educational requirement of the MOS in which appointment is to be made if the specialty requires more than a high school level education. (Two years of college or equivalent is the desired goal for Regular Army warrant officers.)
- d. Have completed a minimum of 1 year of active service as a warrant officer in the Army at the time of application.

Selections are made by the DA RA Selection Board.

ANNEX C

Long Range Active Duty Program (LRADP)

Prior to FY 59, all warrant officers could remain on active duty until attainment of 30 years AFS or maximum age 62, whichever occurred first. This resulted in a top-heavy force structure, accumulation of surpluses in MOS, and stagnation of procurement.

On 6 October 1958, the Secretary of the Army approved a program to release OTRA warrant officers upon attainment of 20 years AFS. Under this program, retention beyond the 20th year of AFS is offered only to warrant officers who meet the following criteria:

- a. Must have an authorized MOS.
- b. Must be qualified and serving in a shortage or critical MOS;
or--
- c. If in an overstrength MOS, must be enrolled in a retraining program which, upon completion, will qualify him in a shortage or critical MOS.

The program was operated by referring to a DA Active Duty Board (temporary panel) the files of all OTRA warrant officers scheduled to complete 20 years AFS in the second subsequent fiscal year (i.e., upon completion of 18 1/2 years service). The board ranked these personnel in merit sequence, and invitations to remain on active duty under the LRADP were issued starting at the top of the list to the number needed to meet the strength requirements in each MOS. This number may vary from zero in one MOS to all personnel on the list in another MOS.

The LRADP has provided the means for selective retention of OTRA warrant officers during half of the 20 year period that the RA wasn't open to warrant officer applicants. RA was reopened to WO in 1968.

ANNEX D

Managed Tenure Program

The MTP is the system by which warrant officers of the nonregular components are selected to remain on active duty for periods beyond their 20th year of service of active Federal service (AFS). This function was formerly preformed under the Long Range Active Duty Program (LRADP), but beginning in Fiscal Year 1976, the MTP replaced the LRADP. The foundation of the MTP is Title 10, U.S. Code. Under sections 672(d) and 3448(b) of Title 10, United States Code, and paragraph 3-31b, AR 635-100, other than Regular Army (OTRA) warrant officers who are serving on extended active duty, will be mandatorily released from active duty on the last day of the month following the month in which they complete 20 years AFS, unless they are selected by HQDA for retention on active duty.

Based on the 1972 DA study "Review of the Army Warrant Officer Career Program," announcement was made in March 1973 that a new policy of managed tenure would replace the LRADP. The MTP, is used to more intensively manage the nonregular warrant officers who will be retained past 20 years AFS, and was first applied to the individuals scheduled to complete 20 years AFS in FY 1976. Personnel who previously accepted membership in the LRADP are not affected by the MTP. The primary change from the LRADP is that personnel under the MTP will be subject to periodic review for renewal of tenure. Whereas the LRADP conducted one review to offer selected individuals an additional ten years of tenure, the MTP will involve three reviews to offer selected personnel tenure in increments of three, three, and four years, respectively. In essence, individuals selected for retention under the MTP will be entering short term renewable contracts. Initial selection into the MTP will afford tenure to 23 years AFS; second increment selection will provide tenure to 26 years AFS; and final selection will offer tenure to 30 years AFS.

ANNEX E

Background for LRADP and MTP

Since its inception in 1957, the LRADP has served as the means by which HQDA selected OTRA warrant officers for retention on active duty beyond 20 years AFS, thus compensating for the fact that the Regular Army (RA) program was closed to warrant officer applicants until its reactivation in 1968.

The LRADP was operated by referring to an annual Department of the Army Active Duty Board the records of OTRA warrant officers who would complete 20 years AFS in the second subsequent fiscal year. Individuals who were selected were then sent letters inviting them to remain on active duty up to completion of the legally permissible maximum service or maximum age, whichever occurred earlier, but there was no obligation attached to the invitation. Individuals who accept retention could voluntarily retire at any earlier point.

Warrant officers who accepted this invitation then became LRADP members with tenure similar to Regular Army members. Those who decline the invitation, and those not offered retention, were given a release date requiring their release from active duty.

Based on the 1972 DA study "Review of the Army Warrant Officer Career Program," announcement was made in March 1973 that a new policy of managed tenure would replace the LRADP.

The principal changes from the LRADP are that personnel under the MTP will be subject to periodic review for renewal of tenure and will incur a service obligation as a result of accepting additional tenure. Whereas the LRADP conducted one review to offer selected individuals an additional 10 years of tenure without imposing a service obligation (in effect creating a one way contract), the MTP will involve three reviews to offer retained personnel tenure in increment of tenure of 3, 3, and 4 years, respectively, and for each increment of tenure accepted, the individual will be required to fulfill a one year service obligation in return. In essence, warrant officers accepting membership in the MTP will be entering short term renewable contracts which will afford the individual the opportunity to stay on active duty for the full period of tenure but requiring his active service for at least the obligated period prior to voluntary retirement.

ANNEX F

MTP Versus RAWOP

The MTP offers the same advantages as, but none of the disadvantages of, the Regular Army Warrant Officer Program (RAWOP). While it is true that the MTP provides an excellent supplement to procurement by retaining experienced technicians, it is also true that the principal purpose of the RAWOP is to provide the proper number and type of highly qualified technicians essential to the mission of the Active Army. Yet, the MTP is one of the primary inhibitors to the maintenance of a viable RAWOP. In the past, particularly during recent years, tenure under the LRADP could be fairly well taken for granted. Those now serving under the LRADP/MTP do not in all instances represent the best qualified individuals. However, they have been placed in a "quasi-RA" status without the requirement to meet the same exacting standards required of the successful applicant for RA appointment. "Dual compensation" restrictions coupled with no apparent advantage other than tenure militated against applications for appointment in the Regular army, particularly from among those who anticipate post-retirement Federal employment. Since the LRADP was initiated in FY 59, the Regular Army warrant officer strength continued to decline to a low of 553 in December 1969. As of 30 June 1977, the strength rose to 2,853 compared to 9,000 authorized, the highest the strength has been in the past decade. In view of the 1972 WO RIF, constant reductions in overall WO authorizations, and the marked decrease in the size of the total Army, it is believed that job security is the primary motivating factor behind this increase. The practical impact of these generalities has been the creation of a "squeeze" between fewer total requirements for WO and the growing RA strength to fill those requirements, there is developing less and less room for nonregular WO and is shown by the following statistical summary of the LRADP and MTP.

LRADP and MTP Selection Rates

		<u>Considered</u>	<u>Selected</u>	<u>Percentage</u>
MT	FY 77	1456 (-)	839 (-)	58%
MT	FY 76	779	156	20%
LRADP	FY 75	1013	374	37%
	FY 74	1800	900	50%
	FY 73	955	598	63%
	FY 72	757	641	85%
	FY 71	1074	950	88%
	FY 70	1075	958	89%
	FY 69	844	698	83%
	FY 68	820	629	77%
	FY 67	873	633	73%

SECTION II
GRADING OF POSITIONS

A. REQUIREMENT:

To determine if warrant officer positions should be graded in TOE and TDA documents.

B. BACKGROUND:

1. TO&E and TDA documents do not specify warrant officer grades. All warrant officer positions are specified for fill by a (WO) with no mention of grade or whether or not a specific position requires a junior or senior warrant officer. Non grading of warrant officer positions is not a recent happening but has been in effect since warrant officer grades were first established.

2. Because positions are not graded, distribution of warrant officers is dependent on the commander and personnel manager. Aviation units with their high density of warrant officers, are particularly sensitive to the equitable distribution of senior warrant officers. Because combat and combat support aviation units often have comparatively low numbers of senior aviators assigned, it became evident that a need existed to determine if grading would provide more equitable distribution of available warrant officer resources.

C. DISCUSSION:

1. General. Warrant officer positions are precluded from grading by AR 310-49 and AR 611-112. These regulations establish Army policy for management of warrant officers. No legal implications are applicable because of the policies in the cited regulations. Warrant officers are promoted to provide career incentive rather than to fill specific graded positions. Promotion opportunity also encourages warrant officers to keep current in their technical skill area and purges the force of poor performers. Since warrant officers are primarily technicians, it is required that all requisite technical skills to perform in a given MOS be held at the time of appointment.

2. Favorable aspects of grading positions for warrant officers.

a. If positions are graded, each requisitioning authority would have a firm base for requisitioning. Currently, commanders are authorized to requisition by specific grade if considered appropriate.

b. There would be added pressure on commanders to utilize personnel in positions requiring a particular grade.

3. Experience and grade.

a. To say that grading of positions would provide needed experience in combat aviation units is speculative. For this to be a true statement it must be assumed that grading will increase the number of senior warrant officers assigned to combat aviation units and that senior warrant officers will possess the type of flying experience needed in those units. Grading will not insure an increase in senior warrants at company level if shortages of senior warrants continue. There will most likely be sufficient senior positions identified outside of company level that will preclude line units from improving their posture. According to a Headquarters, TRADOC review of TO&E Aviation units completed in August 1977, positions identified to be graded CW3 or CW4 were as follows:

- (1) Rotary wing/fixed wing instrument examiner
- (2) Flight safety technician
- (3) Rotary wing instructor pilot
- (4) Standardization instructor pilot
- (5) Aircraft repair technician
- (6) Production control technician
- (7) Aircraft armament maintenance technician
- (8) Quality control technician

The above positions represent approximately 35% of the total warrant officer aviation requirements. However, these same type positions represent approximately 15% of company/troop strength.

b. It cannot be assumed that warrant officers in senior grades will possess the specific type flying experience needed to perform in a given unit. Although there are no Army criteria established which would define experience in aviation, it is the consensus of this study group that experience cannot be defined by flying hours alone. However, flying hours and time-in-service are two qualifications that higher grade will assure. Yet, there is no assurance that senior warrant officers will have mission related experience for all specific flying assignments. For example, an aviator in grade CW2 with three

years recent experience in an attack helicopter flying assignment may be considered more experienced in an attack helicopter assignment than an aviator in grade CW4 with 16 years service with flying experience in fixed wing aircraft. Currently the aviation MOS with the greatest number of CW4's assigned is MOS 100C (Cargo Helicopter Pilot); however, none of these CW4's have qualifications to fly attack helicopters (Cobra-TOW). Consequently, these aviators would not provide a source of experience for attack helicopter units. Most senior aviators have some experience in observation helicopters, but most senior aviators are not experienced scout pilots. Lack of training or experience in Nap-of-the Earth (NOE) flying and tactics would eliminate many senior aviators from consideration for these assignments.

c. Many factors influence attainment of grade that are not related to experience of any type, e.g., funding constraints reduce numbers of promotions and leave a wealth of flying experience at lower grades or possible loss to the Army because of a second time promotion non-selection and the "up or out" policy. Also, aviation warrant officers may be promoted based on expertise in an additional duty area but have only minimum experience in a primary rated MOS.

d. To attain and maintain specified experience levels in combat aviation units it is necessary to assign personnel to type units and maintain repetitive assignments in the same type units. A mission track system of training and management is one method of accomplishing this goal. This management system is described in Section V.

4. Promotion considerations.

a. When positions are graded, good management practices and budgetary pressures dictate that only those personnel needed to fill vacancies are promoted. To promote more or less would cause surpluses and shortages which would have an adverse affect on personnel management. This fact has been borne out in officer management, particularly in higher grades. Even though the Officer Grade Limitation Act will allow promotions, if the force structure cannot support the promotions with requirements, promotions would probably not be allowed.

b. Although there are no legal restrictions controlling the numbers for promotion to each WO grade, the Army has limited the number of senior warrant officers (CW3 and CW4) to 40% of the total warrant officer force through FY 78. It must be assumed that this or a similar restriction will continue in effect. Therefore, it would be necessary to structure warrant officer grades with these limitations applying to each MOS to match promotion objectives.

c. An equitable system of promotion would also require similar graded positions in each MOS. Three separate Department of Army studies conducted in 1966, 1971 and 1972 have concluded that such a grade structure is impractical.

d. A partial solution for the problem of grading positions would be to grade only warrant officer aviator positions but leave other warrant officer positions ungraded. However, two separate promotion systems would probably be required. If aviators and non-aviators were promoted by the same board, using the same criteria, any aviator promotions that did not match grade vacancies would cause surplus and shortage situations to occur. On the other hand, if separate boards were held, promotion rates between the two boards could continually be unequal. This would almost certainly provide a higher promotion rate for the aviator because of higher voluntary attrition rates at the lower grades. From the standpoint of aviation this would be a plus in that they would have a greater number of senior grade warrants. However, there are morale implications for the non-rated warrant officers and this proposal does not solve the problem of distribution and experience of Army aviators.

5. Grading obstacles.

a. There has been no grading criteria developed for determining grade levels for warrant officer positions. Traditional criteria such as rising along the echelons of command and increased responsibility do not necessarily match technical skill requirements and cannot be applied equally to all warrant officer MOS. Common problems are:

(1) No common patterns of positions by echelons of command. There is no consistency at all in the career patterns by which warrant officer positions are distributed. Many MOS have positions distributed at every level of command while other MOS are located at only one level of command. Variations also occur in the percentages of positions at each level. Examples:

<u>MOSC</u>	<u>TITLE</u>	<u>CO</u>	<u>BN</u>	<u>DIV</u>	<u>DA or HIGHER</u>
911A	Physician's Assistant		75%		
100B	UH-1 Helicopter Pilot	80%			
713A	Legal Admin Technician			79%	
961A	Attache' Technician				100%

(2) No consistency within MOS or career fields concerning advanced and entry level MOS. Normally in a graded structure there are developmental positions associated with lower grades and advanced positions associated with higher grades. Although warrant officer MOS have such positions, they are considerably different in all MOS and career fields.

Examples:

(a) 712A (GENERAL STAFF ADMIN TECHNICIAN)

Advanced MOS. No direct appointment into this MOS.

(b) 961A (ATTACHE TECHNICIAN)

Entry and advanced MOS.

(c) 221B (NIKE MISSILE ASSEMBLY TECHNICIAN)

Entry MOS. Advanced level is MOS, 251B (Air Defense Missile System Repair Technician, NIKE)

(d) 963A (INTERROGATION TECHNICIAN)

Entry and advanced MOS, but duties are the same throughout career.

The above MOS illustrate the vast inconsistencies in structure of warrant officer MOS and raise questions on how to apply grading. For example, do senior grades apply only to MOS 712A and all grades to MOS 961A? Junior grades only to MOS 221B and senior grades to MOS 251B but all grades to MOS 963A?

(3) No equitable measure of responsibility levels by MOS. Below are examples of different gauges that may be utilized in various MOS.

High Equipment Value - MOS 631A (Motor Maintenance)

Number of Personnel Supervised - MOS 951A (Criminal Investigation)

Volume of Business - 021A (Club Manager)

Line Items - 762A (Support Supply Technician)

Security Sensitivity - 962A (Image Interpretation Technician)

There is no logical method to compare levels of responsibilities in the above MOS. The responsibility criterion that applies to one MOS does not exist for another MOS.

(4) No method to measure skill levels by MOS. Common criteria for measuring skills such as cost of training, education level, certification, apprenticeships, social skills, and managerial skills vary greatly. Cross comparison of skill levels between MOS would be nearly impossible to evaluate.

b. The number of warrant officers in a specific MOS could cause grading of positions to be overly restrictive. There are 60 MOS with less than 100 officers assigned, 11 MOS with less than 200 officers assigned, and 7 MOS with less than 500 assigned. There are only 6 MOS with over 500 assigned and 3 of these are in the aviation career field. In low density, MOS grading of positions would tend to "shackle" the assignment system. A simplified example is shown below:

	<u>PERSONNEL ASSETS</u>	<u>VACANCY</u>	<u>ASSETS AVAILABLE FOR FILL</u>
Case 1	4 WO's (Grades 1 thru 4)	1 (ungraded)	4
Case 2	4 WO's (Grades 1 thru 4)	1 (WO-1)	1

The simple example shown above shows how the base can be greatly reduced merely by associating a grade with a position. When added to other restrictions such as Special Qualification Identifiers, Language Identification Codes, Additional Skill Identifiers, Oversea assignment policies and PCS restrictions, grading would require personnel managers to use grade substitutions to fill vacancies. Extensive grade substitutions would completely defeat the purpose of grading as well as introduce morale problems for personnel assigned to improper grades.

c. Transition to a graded system would be difficult. Because there has never been a requirement to balance grades between MOS there are considerable differences in the percentage assigned by grade in each MOS. Grading authorization documents would identify surpluses or shortages by grade in each MOS. Examples:

(1)	<u>Specialty</u>	<u>CW04</u>	<u>CW03</u>	<u>CW02</u>	<u>W01</u>
	Aviation	8.4%	23.6%	51.9%	16.1%
	Weapons and Utili- ties	17.9%	27.4%	32.7%	22.0%

(2)	<u>MOS</u>	<u>CW04 AUTH * AS OF 30 SEP 77</u>	<u>CW04 ON HAND AS OF 30 SEP 77</u>
	021A - Club Manager	9	2
	222B - AD MSL Fire Tech, Nike	13	39

*Authorization equals 10.0% of the assigned strength for FY 77.

To make a transition to a graded system, decisions would be required on how to overcome grade imbalances. Alternatives such as freezing or accelerating promotions by MOS would create serious promotion problems.

d. Warrant officer procurement is geared to projected losses by MOS and causes peaks and valleys in accessions that would not be compatible with graded authorizations. Budget limitations, requirements, and ability to procure cause great fluctuations in the number of accessions into an MOS in any given year. New MOS may be filled rapidly if the budget permits, requirements exist, and personnel are available who possess skills needed without further training. Other MOS may fill slowly because opposite conditions exist. For example, when the Army identified a requirement for warrant officer club managers, the MOS filled rapidly. On the other hand, physician's assistant filled slowly because of long training requirements and limitations on the number that could be trained at one time. The unequal accession flow would result in additional promotion controls to insure that grades would match actual graded authorizations under a graded system.

6. Training/Personnel Management Policies for Warrant Officer Aviators

a. Currently the greatest number of senior warrant officers are assigned in MOS for cargo and fixed wing aircraft. MOS code percentages are shown below:

<u>MOSC</u>	<u>TITLE</u>	<u>% CW3/CW4 IN MOS</u>
100B	Pilot, UH-1/OH-58	15.1%
100C	Pilot, CH -47	55.5%
100D	Pilot, CH-54	82.1%
100E	Pilot, AH 1G	30.9%
100P	Pilot, U-8	72.4%
100Q	Pilot, U-21	69.2%
100R	Pilot, OV-1	69.4%

Under a graded system each MOS would need approximately the same proportion of senior warrant officers to fill graded requirements. Consequently, grade shortages would exist in MOS 100B/100E and large surpluses would exist in other MOS. To solve grade imbalances without massive reclassification actions, certain training/personnel management policies would be required. Warrant officers would have to be fed into each MOS early in their career and retained in a specific MOS until regular promotion and attrition would bring each MOS in balance.

b. Current aircraft transition and training policies and practices that contribute to grade imbalance are discussed in Section V of this study. In general, only aviators with over 500 hours and three years service are allowed to transition into cargo helicopters. Additionally, aviators consider these aircraft to be "advanced aircraft" and aspire to transition into them.

c. A tracked system, of early training and management would not only distribute experience but would also tend to bring grades in balance. In the absence of such a training and management plan, position grading alone would merely force personnel managers to allow multiple aircraft qualifications per individual and make assignment on the basis of grade rather than primary MOS. Multiple training is costly and could force senior aviators back into aircraft they are least experienced to fly. Morale and safety problems could also develop.

7. Major Command Considerations

a. This study group requested concurrence/nonconcurrence and comments from FORSCOM, TRADOC, and DARCOM on grading warrant officer positions by message HQDA DAMO-RQD, 152055Z Jul 77. Comments from those headquarters are shown below:

(1) FORSCOM did not consider it appropriate or desirable to grade warrant officer positions in authorization documents for aviators or non-aviators for the following reasons:

(a) Personnel management not enhanced because of relatively small population in non-aviator warrant officer MOS.

(b) Grade substitution would cause dissatisfaction.

(c) Senior grades could be evenly distributed using current system if personnel managers would enforce policy of equal distribution.

(d) Detailed analysis of comments. (Annex A and B)

(2) DARCOM did not consider it feasible or desirable to grade warrant officer positions in authorization documents for the following reasons:

(a) Grading would detract from commander/management capability and necessary flexibility to implement the best utilization of warrant officer resources.

(b) Grading would create a continuous motivation to upgrade TDA positions on the basis of the incumbents grade.

(c) Since a change in WO MOS is a DA controlled action per AR 310-49 & AR 611-112, upgrading of WO positions would probably be similarly controlled.

(d) The small percent of WO positions in a typical TDA document precludes any management advantages to introduction of further limitations or restrictions on utilization of WO resources.

(3) TRADOC nonconcurs in the grading of warrant officer positions; however, detailed comments were not provided.

D. FINDINGS:

a. Major Commands (FORSCOM, DARCOM, and TRADOC) do not support grading warrant officer positions.

b. A grading criteria equitable for all warrant officers is not feasible.

c. Grading positions would not guarantee experienced warrant officer aviators are assigned to unit level.

d. Grading positions would require promotions to match the grade structure, causing inequality of promotion in different MOS.

e. Experience at unit level, MOS and grade imbalances for warrant officer aviators can be solved by early mission tracked training supported by distribution and management systems.

E. RECOMMENDATION: The present procedure of not grading positions should be continued.

ANNEX A

FORSCOM SUBORDINATE COMMAND POSITIONS ON GRADING

<u>COMMAND</u>	<u>REPLYING STAFF OFFICER</u>	<u>FOR</u>	<u>AGAINST</u>	<u>NON COM</u>
USA ONE Ft Meade, MD	Force Dev		X	
USA FIVE FT. S. Houston, TX	Avn OFF	X		
USA SIX P of SF. CA	Avn OFF		X	
III Corps, Ft Hood, TX	Force Dev		X	
XVIII Abn Corps, Ft Bragg, NC	Force Dev		X	
101st Abn Div (AASLT) Ft Campbell, KY	Force Dev		X	
1st Inf Div and Ft Riley, KY	G-1		X	
24th Inf Div and Ft Stewart, GA	G-1		X	
4th Inf Div (Mech) Ft Carson, CO	C/S		X	
5th Inf Div (Mech Ft Polk, LA	Force Dev		X	
7th Inf Div, Ft Ord, CA	G-1		X	
9th Inf Div, Ft Lewis, WA	Force Dev	X		
11th ADA Gp, Ft Bliss, TX	OPNS	X		
172d Inf Bde, Ft Richardson, AK	AG	X		
193d Inf Bde, Ft Amador, CZ	Force Dev	X		
31st ADA Bde, Homestead AFB, FL	AG	X		
Ft Devens, MA	CDR		X	
Ft Drum, NY	Force Dev		X	
Ft. Indiantown Gap, PA	CDP	X		
Ft McCoy, WI	Force Dev			X
Ft McPherson, GA	Force Dev	X		
Ft. George G. Meade, MD	Force Dev		X	
Ft Sam Houston, TX	Force Dev		X	
Presidio of San Francisco, CA	Force Dev		X	
USAFAC and Ft S'11, OK	DPCA		X	
USATC and Ft Jackson, SC	AG		X	
USAIC and Ft Benning, GA	Force Dev	X		
ARRV, Ft Sheridan, IL	Force Dev		X	
USRASCH, Ft Shafter, HI	Force Dev			X
282d Med Det, Ft Bliss, TX	CDR	X		
156th Avn, Ft Bliss, TX	CDR	X		
1st ASA Avn Co. Ft Bliss, TX	CDR		X	
TOTAL		11	19	2

ANNEX B
FORSCOM SUBORDINATE
COMMANDS ON
EFFECTS OF GRADING

<u>COMMENTS AGAINST GRADING</u>	<u>OCCURRENCES</u>
1. Grade not as important a management consideration as qualifications.	5
2. Reduce personnel manager/ CDR's flexibility.	8
3. Aviation the only group who would benefit.	1
4. Difficult to grade documents to insure equitable distribution.	7
5. Too restrictive; identify junior and senior positions.	3
6. Complicate requisitioning.	1
7. Delay fill of key positions.	1
8. Complicate housing programming.	1
9. Decrease number of senior warrants assigned to division and lower.	6
10. Would complicate personnel management.	6
11. Aircraft qualification more important than rank.	1
12. Present distribution of grades adequate.	7
13. Shortages in grade would cause grade substitutions.	3
14. Create rank-conscious structure; degrade esprit de corps.	2

COMMENTS AGAINST GRADINGOCCURRENCES

15. Present system provides experience at all levels.
16. Would force reserve WO's out of units because of promotion.

2

1

COMMENTS IN FAVOR OF GRADINGOCCURRENCES

1. Provide visible career progression.
2. Enhance warrant officer management.
3. Increased grade in aviation units would increase survivability rate.
4. Grading would place experience where needed.
5. Grading would enhance prestige.

2

6

1

9

1

SECTION III

EXPECTED PERFORMANCE OF DUTIES FOR WARRANT OFFICERS

A. REQUIREMENT:

To determine whether the criteria to evaluate the expected performance of duty for warrant officers is adequate and understood by evaluating commissioned officer personnel, promotion boards, and school selection boards.

B. BACKGROUND:

1. After release of the CY 77, CW 3/4 AUS promotion list, field commanders voiced concern that a shortage MOS, the 100 series, was being further depleted by the Army's "up or out" policy. This loss of skilled warrant officers impacts on the Army in a variety of ways addressed in other parts of this report.
2. In answer to the field commanders, the Vice Chief of Staff states, "while I believe that other personal and professional characteristics which impact on the value of any individual to the Army must be considered in personnel actions, I am not sure that the template that we use in measuring warrant officers is the correct one. In short, we need to determine what is to be expected of warrant officers, in addition to flying, that is of paramount importance to the Army".
3. A search of available publications, documents, and previous studies was conducted. Of prime importance to this requirement, the following were discovered and are considered supplemental to this discussion.
 - a. DA Pamphlet 600-11, Warrant Officer Professional Development, July 1977.
 - b. AR 623-105, Officer Evaluation Reporting System, June 1976.
 - c. Information Paper, DAPC-OPW-D, Subject: Reactivation of Orientation Course, dated 9 February, 1977.
 - d. Memorandum For: Director of Military Personnel Management, ODCSPER, Subject: After - Action Report, 1977 Chief Warrant Officer W3 and W4, AUS, Selection Board dated 25 February 1977 (FOUO).
 - e. Review of the Warrant Officer Career Program, ODCSPER, dated November, 1972.

4. Of central importance to a discussion of warrant officer duties and responsibilities are the following extracts from DA Pam 600-11.

a. "The warrant officer is a highly skilled technician who is provided to fill those positions above the enlisted level which are too specialized in scope to permit the effective development and continued utilization of broadly-trained, branch-qualified commissioned officers".

b. "Whereas a commissioned officer is trained to be a commander or a multifunctional manager and is primarily dual-specialty qualified, a warrant officer is trained in depth to be an operating technician, a technical administrator or middle manager and is primarily MOS qualified. It is important that the three developmental authorities recognize that development for warrant officers differs from that for commissioned officers and must be viewed in the context of the individual specialty."

c. "All warrant officers have equal opportunity for favorable selection actions (i.e., promotion, retention, significant assignments) on the basis of demonstrated merit and occupational proficiency." (Emphasis added).

C. DISCUSSION:

1. The Special Task Force directed a series of questions to the Training and Doctrine Command (Annex A) and to DCSPER (Annex B). These questions were considered essential elements of analysis to address the requirement.

2. As part of the overall study group effort, close contact was maintained with the other services and where possible, policies, procedures, utilization, and training of those warrant officers were compared to those in effect for Army warrant officers. It was discovered during one such contact that both the U.S. Navy and the U.S. Marine Corps operate training programs for their newly appointed warrant officer. The Marine Corps course closely parallels that given to aviation warrant officer candidates at Fort Rucker and is similar in scope to one of the Army's advanced courses (Annex C). Previous warrant officer studies recommended a course of this nature that was established for newly appointed warrant officers. However, this course lasted about seven years and was dropped in January 1975 because of expense and administrative difficulties. Since that time, new developments in teaching aids such as TV, TEQ, programmed texts, and other devices may have made these expenses acceptable. There is little doubt surrounding the need for or desirability of the course.

3. The below listed findings are supported by information found at Annex A and Annex B.

D. FINDINGS:

1. Officer efficiency reports reflect the technical competence of warrant officers. It is other officer duties and standards that are causes for nonselection.
2. Newly appointed warrant officers, aviators and a few non aviator MOS excepted, receive no formal instruction on the responsibilities of being an officer.
3. Raters and indorsers do not receive any training or instruction on preparation of officer efficiency reports or on the expected performance of duty of warrant officers at basic, advanced, or specialty/technical courses.
4. Aviation warrant officer early appointment is often reflected in OER's by immature actions, lack of leadership, maturity, and experience demonstrated when compared to mid-career selection of non-aviation warrants.
5. Letters of Instruction to warrant officer selection boards need to stress the value of the technical competence of warrant officers. Demonstrated merit and occupational proficiency should be emphasized for warrant officers. This is in contrast to commissioned officer selection which is predicated on demonstrated ability to assume responsibilities of the next higher grade.
6. Warrant Officer representation is not required by regulation on AUS selection boards.

E. RECOMMENDATIONS:

1. Institute a formal training program to orient new warrant officers as to the expected performance of duty, additional duties and acceptable conduct of an officer.
2. Army schools add training on preparation of OER's in officer basic, advanced, and specialty/technical courses.
3. AR 624-100, Promotion of Officers on Active Duty be modified to require a warrant officer to serve on AUS promotion boards.
4. Instructions to board members be further modified to insure differences of duty patterns, assignments, and expected performance of duties are explained and that there is no expected change in duties at the next higher grade.

ANNEX A



DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR MILITARY OPERATIONS
WASHINGTON, D.C. 20310

REPLY TO
ATTENTION OF: DAMO-RQD

SUBJECT: Training on Warrant Officer Duties, Responsibilities, Authority
and Expected Performance of Duties.

Commander
TRADOC
ATTN: ATTNG-ITG
Fort Monroe, Virginia

1. A Special Task Force and Study Group has been organized under the direction of the VCSA to review the warrant officer program including promotion policies, selection criteria, and associated problems. Definitive essential elements of analysis have been developed and approved by the steering group of this task force. Answers to several questions listed below are required to allow for completion of a portion of this study effort.

2. Request information on training being conducted regarding warrant officers:

a. What training is being presented concerning the responsibilities, authority, expected performance of technical duties, standards of conduct, additional duties, and responsibilities as an officer of the United States Army to students of:

- (1) Officer basic courses?
- (2) Officer advanced courses?
- (3) Specialty courses; i.e., maintenance officer courses, aviation maintenance officer courses, initial entry rotary wing training, target acquisition courses, and other similar courses?

b. What training, either institutional or exportable is presented to warrant officer candidates and newly designated warrant officers, as to their expected performance of duties, standards of conduct, expected additional duties, authority, responsibilities and obligations as an officer in the United States Army?

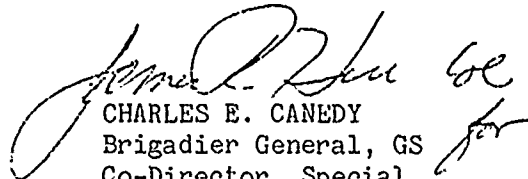
DAMO-RQD

SUBJECT: Training on Warrant Officer Duties, Responsibilities, Authority and Expected Performance of Duties.

c. Are any exportable training packages or institutional programs in these subject areas planned for implementation?

d. What presentations and training is presented to officers in their professional development courses as to the proper preparation of warrant officer efficiency reports, expected performance of duties, standards of conducts, and differences in assignment policies, and differences between commissioned officers and warrant officers?

3. Provide data by TRADOC service school and course name, and approximate training time presented. This data is needed by 1 September 1977. The point of contact is LTC Robert M. Furney at Autocon 225-3189/0894.


CHARLES E. CANEDY
Brigadier General, GS
Co-Director, Special
Task Force



DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY TRAINING AND DOCTRINE COMMAND
FORT MONROE, VIRGINIA 23651

ATTNG-OES

19 SEP 1977

SUBJECT: Training on Warrant Officer Duties, Responsibilities, Authority
and Expected Performance of Duties

HQDA (DAMO-RQD)
WASH DC 20310

1. Reference letter, HQDA, DAMO-RQD, 15 August 1977, subject as above.
2. In response to request contained in above reference, a review was conducted of training documents to determine scope of instruction provided on the duties and responsibilities of warrant officers. Results of the review, keyed to areas listed in paragraph 2, above reference, are as follows:
 - a. There are no standard instructional segments conducted in officer basic or advanced courses regarding the authority, responsibilities, and duties of warrant officers. Specific elements addressing officer personnel management and leadership skills are contained in the training programs with the objective of providing an understanding of the relationship between subordinates and superiors. Specialty courses, by nature, are designed to provide training in job skills required for immediate use upon duty assignment. Current specialty course training documents contain little or no reference to officer personnel management procedures.
 - b. Warrant officer entry level courses do contain instructional elements covering the role of warrant officers in the Army structure; however, they are not standard throughout the training programs. For the most part, the entry level courses are job oriented in nature and therefore provide the knowledge and skills required to perform technical duties. The courses further reinforce previous training and experience that might have been gained by individuals who have had enlisted service. Examples of such instructional segments are attached at inclosure 1.
 - c. No exportable training packets are currently under development which support warrant officers duties. There are various correspondence subcourses available in the area of officer personnel management, officer efficiency report system, and the enlisted personnel management system. In many instances these correspondence subcourses are included in non-resident courses available through the correspondence course program.

ATTNG-OES

SUBJECT: Training on Warrant Officer Duties, Responsibilities, Authority
and Expected Performance of Duties

d. A limited amount of training on preparation of officer efficiency reports is contained in both officer basic and advanced courses. However, these instructions are not standard elements. Officer personnel management is sprinkled throughout the officer advanced courses but specific relationships between duties and responsibilities of officers versus warrant officers is nonexistent on a uniform basis. The several warrant officer advanced courses do include the areas of both enlisted and officer personnel management; again, to different degrees within each training program. Overall, coverage of the subject area is scarce and nonstandard at best.

3. At present, for warrant officer training there is no system of standard requirements. Although it is recognized from the above review that specific training designed to provide warrant officers an understanding of their duties and responsibilities early in their career is inadequate, the current practice of allowing most non-aviator warrants to bypass entry level training contributes directly to the development and implementation of such standardized program.

4. As a result of above the overall management of Warrant Officer Education System has been assigned to the recently established TRADOC Officer Education System Task Group. This group is engaged in reviewing the current commissioned officer structure and its associated training/education programs with the goal of designing a system to meet Army requirements and satisfy the individual career goals for the out-years, FY 80-85. A like rationalization of the warrant officer program is to be included. Within the officer group, the point of contact for matters concerning warrant officers is Mr. William Kidd, 680-3556/3211.

FOR THE COMMANDER:

1 Incl
as



ARTHUR L. Y. RK
CPT, AGC
Asst. AG

Training On The Duties And Responsibilities Of Warrant Officers
Excerpts From Training Documents

Warrant Officer Entry Level Courses

<u>Hours</u>	<u>Instructional Segment</u>	<u>Purpose</u>
1	Warrant Officer Program	To provide an understanding of the historical development, role, rank, and precedence of warrant officers.
2	Code of Conduct of an Officer	To gain a working knowledge of the proper conduct of an officer; the responsibilities, obligations, and privileges of an officer.
1	Wearing of the Uniform	To understand the established standards of appearance, appropriate occasions for wear of various military uniforms, and the importance of bearing and appearances.
1	Duty Assignments	To understand the expectations of the warrant officer; primary and additional duties; responsibilities when reporting for first duty assignment.
2	Officer Personnel Management	Policies and programs for procurement, classification, evaluation, promotion, and retention of warrant officers. Purpose and techniques of performance counseling. Preparation of officer efficiency reports.
4	Leadership Problem Solving	Problem solving process. Practical exercise to include problems of senior/subordinate relationships, staff officer relations, and social relations.

Warrant Officer Advanced Courses

<u>Hours</u>	<u>Instructional Segment</u>	<u>Purpose</u>
4	Enlisted Personnel Management	Procedures for enlisted personnel classification, assignment, evaluation, promotion. Preparation of EER.
4	Officer Personnel Management	Programs for classifications, assignment, evaluation, and preparation of OER.
6	Military Personnel Management	Policies and procedures for recruitment assignment, promotion, and evaluation of officers, warrant officers, and enlisted.
4	Personnel Management	Procedures and responsibilities of managing personnel assets to include preparation of OER/EER.
2	Warrant Officer Development	Provide a general knowledge of basic military information designed to facilitate adjustment to officer status.

ANNEX B

DAPE-MPO-C (12 Aug 77) 1st Ind
SUBJECT: Warrant Officer Promotions

DA, ODCSPER, Washington, DC 20310 17 OCT 1977

TO: HQDA, ATTN: DAMO-RQD, Washington, DC . 20310

Per your request, the following comments are provided:

a. Reference para 2a. No single reason can be given for nonselection of warrant officers for promotion to CW3 or CW4. However, two independent evaluations of warrant officer files offer the following observations:

(1) Nonselection appears to be based on rater/indorser comments not related to technical competence; i.e., inability to relate to superiors, poor appearance, adaptability, tact, etc.

(2) Repeated "cuts" in the areas listed below:

- (a) ambition
- (b) enthusiasm
- (c) force
- (d) integrity
- (e) loyalty
- (f) non-duty conduct
- (g) self-discipline
- (h) selflessness
- (i) emotionally unstable under stress
- (j) judgment unreliable
- (k) personal conduct

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SUBJECT: Warrant Officer Promotions

(3) Repeated "cuts" in potential and generally falls in the "promote along with contemporaries" as opposed to "promote ahead of" or "immediately" category.

(4) No photograph in file (specifically aviators) or a photograph indicating:

- (a) poorly fitting or unpressed uniform
- (b) a "bush" mustache
- (c) a poor physical appearance
- (5) Is considered technically competent.

(6) Some incomplete or inaccurate entries on the Officer Record Brief.

b. Reference para 2b. For the most part--there are inconsistencies, however, which are not peculiar to warrant officers. Inflated scores are often not supported by the narrative, and there tends to be a failure on the part of reviewing officers to significantly clarify differences stated between raters and indorsers. The last revision (June 1976) of AR 623-105 (Officer Evaluation Reporting System) included a separate chapter to address warrant officer evaluations. If these instructions are read by raters, indorsers, and reviewers, this should be of further assistance. On this subject, a "pet peeve" of warrant officers is a comment that the individual has the potential to perform at the next higher grade rather than a comment that the individual has potential for attaining an increased skill level.

c. Reference para 2c. Reviewing results of the past four promotion boards conducted in calendar years 1974 through 1977, the non-aviator appears to have an edge on promotion opportunity to both grade CW3 and CW4 (Incl 1). Since aviators are currently appointed to warrant officer status at approximately 3.3 years of active Federal service and non-aviators at 10.7 years, it is fairly obvious that the non-aviator has had more time to "live down" any mistakes he made early in his career. Also, among aviators,

DAPE-MPO-C

SUBJECT: Warrant Officer Promotions

there tend to be large numbers of warrant officers clustered together in units, while the non-aviator is likely to be the only warrant officer in an organization.

d. Reference para 2d. Yes. The basic letter of instruction is different and the DCSPER briefing to the board is different. In addition, commissioned officer boards receive a MILPERCEN briefing on OPMS, while warrant officer boards are briefed by a representative from Warrant Officer Division, MILPERCEN.

e. Reference para 2e. Warrant officers are assigned to all AUS warrant officer boards. Section 558a, Title 10, USC, directs board membership for warrant officer boards--". . . Each board shall be composed of at least five officers of the armed force concerned who hold a permanent regular grade above major or lieutenant commander." It would be appropriate to require, by regulation, warrant officer participation on warrant officer AUS promotion boards.

f. Reference para 2f.

(1) General. The following is based upon a review of 1,112 active duty gains during the period 1 October 1975 through 30 September 1976 (Incl 2).

(a) Rated aviators. Seventy-seven percent are accessed with less than six years of active Federal service. The overall current rated aviator community is accessed with an average of 3.3 years of active Federal service.

(b) Non-aviators. Seventy-three percent are accessed with more than eight years of active Federal service. The overall current non-aviator population is accessed with an average of 10.7 years of active Federal service.

(2) Other. A review of 1,756 active duty gains (739 aviators and 1,017 non-aviators) during the period 1 July 1976 through 30 June 1977, indicates the following profile information concerning age and education.

17 OCT 1977

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SUBJECT: Warrant Officer Promotions

(a) Average age -

Rated aviator - 27.0 years
Non-aviator - 33.2 years

(b) Marital status -

Rated aviator - 74% married
Non-aviator - 95% married

(c) Civilian education -

<u>Level</u>	<u>Aviator</u>	<u>Non-Aviator</u>	<u>Overall</u>
Master's Degree	0%	2%	1.6%
Bachelor's Degree	10%	9%	9.3%
2 yrs coll/AA			
degree or 2-yr			
equiv	20%	29%	24.7%
Less than 2 yrs coll	17%	19%	18.1%
High School Grad	53%	41%	46.3%
	100%	100%	100.0%

g. Reference para 2g. There are no specific profiles that single out a warrant officer for promotion selection or non-selection. However, those warrant officers selected for promotion have generally been able to do each assigned task well and received OERs reflecting this manner of performance. The warrant officer who has been nonselected for promotion has received OERs that reflect faults in manner of performance, personal and professional attributes, as discussed in paragraph a above.

h. Reference para 2h. It would appear that, for aviators, the recruiting effort should be directed to in-service personnel who already have an investment of time in military service and whose motivation and quality of performance have been measured. For non-aviators, a senior warrant officer in the candidate's MOS should be a member of the board. As long as the civilian community is the major source for aviator warrants, there will be attrition and nonselection for promotion, just as there is for enlisted personnel, or officers appointed from civilian life. There are ample means of testing what an individual "can do"--there is no valid measure of what an individual "will do" except judgment based on past performance.

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SUBJECT: Warrant Officer Promotions

For non-aviator selection, there is ample evidence available to make such a judgment.

i. Reference para 2i. Any military experience gained prior to attendance at flight school would tend to support a better chance for potential promotion selection. A possible source of warrant officer aviators would be young men and women nearing completion of their first enlistment. Warrant officer flight training could be offered as a reenlistment option. This would, at the very least, ensure applicants who know what military life is like and who want to stay. The option could also be made available to prior service personnel who are applying for reenlistment through USAREC. The in-service application flow, both quantitatively and qualitatively, experienced in the past indicates all aviation warrant officer flight training input could be supported from this source without the need to utilize the initial enlistment option. Input and rate of output from the program for the period 1 July 1976 through 30 June 1977 is:

<u>Source</u>	<u>% Input</u>	<u>% Output</u>
In-service applicants	59	59
Recruiting option	41	41

Beginning in June 1978, no more than 25 percent of WOFT quotas will be given to USAREC. The success rate is virtually the same for both categories of students. There are no data to compare their active duty success/failure rates.

j. Reference para 2j. There have been no formal programs since January 1975 to provide orientation training for non-aviator warrants. Warrant officer aviators do have training regarding officer responsibilities. A MILPERCEN survey of non-aviators indicated that as a group they desire an orientation course. In addition to officer responsibilities, newly appointed warrant officers need training geared toward management. Though selection/nonselection for promotion cannot be tied to lack of an orientation course, the areas in which

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SUBJECT: Warrant Officer Promotions

they receive "cuts" on their OERs (paragraph a) would indicate that such training might be helpful. There is a viewpoint that newly commissioned officers often don't understand the role of the warrant officer. Perhaps consideration should be given to sending newly appointed warrant officers to the officer basic courses with 2LTs. While there might be hours of instruction not pertinent to warrant officer duties/responsibilities, additional hours of instruction in management could be developed solely for the warrant officer.

k. Reference para 2k. The 1976 CW3/4 board indicated it would have selected more (74 to CW3, 36 to CW4) if it had not been constrained. The 1977 board's only comment on quality was that the quality of the secondary zone to CW3 was such that secondary zone selection was considerably less than authorized.

FOR THE DEPUTY CHIEF OF STAFF FOR PERSONNEL:

1 Incl
wd incl 1
Added 1 incl
2. as

Theodore S. Silva, LTC
JACK L. ZORN
Colonel, GS
Chief, Officer Division

LTC THEODORE S. SILVA
DAPE-MPO-C

YEAR	BOARD	% SELECTED			% SELECTED			SZ			TOTAL % SELECTED
		NON	AV		NON	AV		NON	AV		
1977	CW4 AUS	37.0	35.9	34.4	61.6	58.1	50.5	8.6	6.9	2.6	53.1
								Promotion Opportunity			56.9
											75.0
											77.9
1976	CW4 Aus	32.5	35.1	37.6	58.0	59.5	63.2	4.6	3.2	1.0	49.8
								Promotion Opportunity			50.4
											74.6
											72.9
1975	CW4 AUS	9.4	13.9	21.1	52.9	51.1	48.6	11.7	7.4	1.0	45.5
								Promotion Opportunity			44.8
											61.1
											62.3
1974	CW4 AUS	20.0	17.1	0	54.2	53.2	51.7	8.3	7.3	5.1	45.4
								Promotion Opportunity			44.8
											66.3
											66.4
1977	CW3 AUS	36.9	50.5	57.6	88.2	73.9	66.8	2.5	2.5	2.5	68.8
								Promotion Opportunity			75.9
											87.5
											95.0
1976	CW3 AUS	53.3	45.0	35.7	65.7	69.5	72.2	4.4	2.5	1.0	65.3
								Promotion Opportunity			64.1
											83.6
											84.6
1975	CW3 AUS	13.6	16.6	23.7	62.8	60.7	57.7	7.9	7.5	6.9	54.1
								Promotion Opportunity			53.8
											69.6
											70.3
1974	CW3 AUS	23.7	23.2	16.6	64.3	59.2	49.4	6.8	7.4	9.1	49.7
								Promotion Opportunity			50.1
											70.9
											74.6



DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR MILITARY OPERATIONS
WASHINGTON, D.C. 20310

REPLY TO
ATTENTION OF: DAMO-RQD

SUBJECT: Warrant Officer Promotions.

12 August 1977

Deputy Chief of Staff for Personnel
ATTN: DAPE-MPO
Washington, D.C. 20310

1. A special task force with an associated study group has been formed to review the warrant officer program to include promotion policies. Formation of the task force resulted because of questions raised by the field subsequent to the publication of the last CW3 and CW4 promotion list. Tasking letter and charter of this group is at inclosure 1.

2. Several essential elements of analysis approved by the steering group at the last IPR need to be addressed. Request detailed information on the following:

a. What has been the reason for non-selection of aviation and non-aviation warrant officers to CW3 to CW4? Has it been based upon or can it be identified with a lack of technical competence, military leadership, personal conduct, educational levels or what appears to be the causative factor(s)?

b. Do OER's submitted on warrant officers reflect a knowledge by raters and indorsers, of the expected performance of duty and levels of competence of a warrant officer?

c. Does non-selection correlate with time of appointment as a warrant officer? Does early appointment such as in the case of an aviation warrant cause a higher non-selection rate than the mid-career appointments of many other warrant officer fields?

d. Are instructions given to promotion selection boards different for warrant officers and commissioned officers?

SUBJECT: Warrant Officer Promotions.

e. What is the policy regarding assignment of warrant officers to promotion boards? Would it be appropriate to require by regulation, warrant officer participation on AUS promotion boards? RA Boards?

f. What is the general profile, (i.e., age, service, education and marital status) of those selected for designation as warrant officers for both aviation and non-aviation warrants?

g. Provide profiles and explanation of the differences between selectees and non-selectees for aviator and non-aviator warrant officers.

h. Are changes needed in warrant officer accession programs or appointment criteria and procedures to improve performance and selection potential for aviator and non-aviator warrant officers?

i. Commissioned officers are required by policy, to serve a tour with their basic branch prior to selection and attendance at flight school. Would a similar requirement provide a better military base for leadership as a warrant officer and provide a higher level of promotion selection for the aviation warrant officer? Is it desirable or feasible to fill all Army AV WO candidate requirements from in-service applicants?

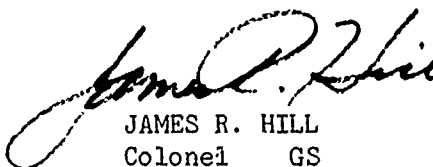
j. Initial review indicated no formalized training program for newly appointed warrant officers except for the aviation warrant officers regarding their new accountability, responsibilities and required expectations of an officer of the United States Army. Does this appear to be a deficiency as reflected in OER's and non-selection? AV has this training. (WOC)

k. Was there a concern expressed by members of the last CW3/4 promotion board, that those nonselected for promotion for the second time were of such a quality that a professional loss would result to the officer corps? (Both before and after recall of the board).

3. Request information be provided to the study group NLT 25 August 1977. The point of contact for these questions is LTC Robert M. Furney, 53189/50894, Room BF 727, Pentagon.

1/10/77

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JAMES R. HILL
Colonel GS
Chairman

ANNEX C

PROGRAM OF INSTRUCTION
WARRANT OFFICER BASIC COURSE

EFFECTIVE
FY 1977
(REVISED FY 7-T)

UNITED STATES MARINE CORPS
THE BASIC SCHOOL
MARINE CORPS DEVELOPMENT AND EDUCATION COMMAND
QUANTICO, VIRGINIA 22134

SECTION I - PREFACE

- A. Course Title: Warrant Officer, Basic
- B. Location: The Basic School, Marine Corps Base,
Marine Corps Development and Education Command, Quantico, Virginia 22134
- C. Length: 15 Weeks
- D. MOS for which trained: None
- E. Purpose: To educate newly appointed warrant officers in the high standards of professional knowledge, esprit de corps and leadership traditional in the Marine Corps for duty in Fleet Marine Force and non-Fleet Marine Force billets.
- F. Scope: Instruction is designed to broaden the general military proficiency of the students by indoctrinating and familiarizing the newly appointed Warrant Officer's with military subjects, the knowledge of which is required by all Warrant Officers in the Marine Corps. The Course includes instruction in leadership techniques, physical training, map and aerial photograph reading, scouting and patrolling, communications, infantry, tactics on the small unit level, weapons logistics, aviation, supporting arms, field engineering, organization and staff functioning, military law, personnel administration, drill, command, ceremonies, data processing application, first aid and counterinsurgency. Approximately one quarter of the course is conducted in the field. Practical leadership and tactical skills are developed by assigning students to leadership billets on a rotational basis.
- G. Prerequisites: Warrant Officer
- H. Feeder Patterns: From Fleet Marine Force
- I. Ammunition Requirements: MCO P8011.4 - Marine Corps Table of Allowances for Class V (W) Material

SECTION II - SUMMARY

WARRANT OFFICER BASIC

SUBJECT DESIGNATOR	SUBJECT	HOURS P M
A. ACADEMIC SUBJECTS*		
00	Evaluation	29.0
01	Personnel/General Administration	44.5
02	Intelligence	1.0
03	Tactics	6 .0
04	Logistics	12.0
05	Organization & Staff Functioning	11.0
06	Leadership	116.5
09	Supporting Arms	3.0
14	Map Reading and Land Navigation	47.5
21	Infantry Weapons	15.0
25	Communications/ Electronic Warfare	5.5
40	Data Processing Application	1.0
43	Contemporary Operations	2.0
44	Military Law	16.0
52	Counterinsurgency	5.5
75	Aviation	9.5
84	Physical Training and Conditioning	99.0
85	Drill, Command and Ceremonies	25.5
86	First Aid	1.0

99.	Amphibious Operations	5.0
	SUBTOTAL	509.5
B. NONACADEMIC SUBJECTS		
	Administrative Time	40.0
	Special Events	6.0
	Company Commander's Time	60.0
	SUBTOTAL	106.0
	GRAND TOTAL	615.5

SECTION IV

FLIGHT SCHOOL SELECTION

A. REQUIREMENT:

To determine whether qualifications for initial entry into the U.S. Army flight training program are currently valid.

B. BACKGROUND:

1. The principal document governing aviation selection criteria is AR 611-85, Selection of Enlisted Volunteers for Training as Aviation Warrant Officer. This regulation establishes a variety of administrative qualifications such as past conduct and availability for training. The central requirements, however, settle onto three main areas.

a. Successful completion of a Class I flight physical as outlined in AR 40-501, Standards of Medical Fitness.

b. A score of 110 or higher on the General Technical Aptitude Test (GT Test).

c. A score of 300 or higher on the Flight Aptitude Selection Test, Warrant Officer Candidate Battery (FAST-WOCB).

2. While these are the current requirements, Army managers have found it convenient in the past to internally vary these requirements to meet buildups or drawdowns in aviator strength. At one time, for example, the required GT score was 115 and the FAST score 250 (AR 611-85 dated 7 June 1966). In the same fashion, physical requirements have been varied but in ways which do not seriously impact on the pool of available candidates. In general, these requirements have served the Army fairly well. In the past few years, the spectrum of requirements have not been systematically reviewed to keep pace with changing tactics and techniques for the employment of Army Aviation in mid-intensity environments. It is of particular concern that such a review be accomplished in light of new and more sophisticated aircraft systems scheduled to enter the inventory in the 1980's. New aircraft include the Advanced Attack Helicopter (AAH) and Utility Tactical Transport System (UTTAS). The greater sophistication of these aircraft combined with a more complex doctrine for their employment suggest an increase in the number of pilot, copilot, and crew coordinated cockpit chores to be performed in a typical tactical scenario. New systems include the Target Acquisition Designation System (TADS), and Pilot Night Vision System (PNVS). These systems suggest greater stresses and de-

mands on flight crew performance and raise the concern that current selection procedures may not be adequate for future needs. These new equipments may in turn require more technically oriented or differently qualified people.

C. DISCUSSION:

1. A full report on the history of selection procedures is contained in a document entitled Prediction of Success in Army Aviation Training, dated June, 1965, by Harry Kaplan. This is Technical Research Report 1142, catalogued with the Defense Documentation Center as document number AD 623046. The report covers a nine year test period, 1955-1964, during which time a myriad of data was assembled on successful and unsuccessful flight school trainees. Such factors as age, education, rank and scores on a variety of tests were statistically examined for validity. The result of this research was development of the present FAST test, and other selection criteria, now incorporated into AR 611-85. The FAST tests themselves have undergone considerable revision since 1964. Since then, the mean score of volunteers for the WOC flight training program has stabilized at a score of 339 with a standard deviation of 29 (Annex A). The FAST test departed from Air Force and Navy selection criteria in that the FAST attempted to identify personal and leadership characteristics in its candidates that the Army expected of warrant officers. This Army research outpaced Air Force and Navy efforts at reducing flight school attrition. Recently, those services have begun experimenting with various performance - based tests including stick and rudder tests and a variety of others. The Air Force hopes to implement such testing in the near future. They expect to effectively halve attrition by doing so. A similar performance - based system was considered during development of the FAST test. While it was recognized as a valuable adjunct to the test, it was never incorporated because of expense factors and perceived administrative difficulties. The recent acquisition of realistic synthetic flight trainer systems such as the UH-1FS may have fostered an atmosphere where this type of test is now practical. The U.S. Army Research Institute (ARI) field unit at Fort Rucker is conducting a test designed to determine learning aptitudes for aviator skills. It will use the UH-1FS and will be fully functional in January, 1978 (ANNEX B).

2. The Kaplan report also evaluates the GT as a tool in predicting performance. This test, given to all EM upon entering the service was found to be effective for predicting academic success in flight training. Current overall GT mean is 100 with a standard deviation of 15. WOC's are drawn from the upper 20 percentile of the general population as are candidates for officer candidate school.

Physical qualification for flight school has played a relatively important role in the total selection process. The FAST and GT tests focus on predicting short term success i.e., completion of training. The Class I flight physicals focus on the long term goal of identifying individuals who will have a high probability of remaining physically qualified for flight duties throughout a career in aviation. Class I criteria are very high and take into consideration the physical deterioration associated with the normal aging process. The reasonable expectation is that requiring high initial standards will insure that deterioration will not occur before a return on the training investment is realized. One example of how new equipment may demand adjustment of physical standards has recently been recognized by the U.S. Army Aeromedical Research Laboratory at Fort Rucker. A warrant officer reported excessive fatigue after night flying with the AN/PVS-5 night vision goggles. Testing showed that the aviator had developed a stigmatism to the value of 1.5 diopters. The AN/PVS-5 eyepiece corrects to 1.0 diopter. Initial entry requirements call for no more than 3/4 diopters astigmatism. The Aeromedical Research Laboratory is considering changes to medical fitness standards as a result of new equipment.

D. FINDINGS:

1. While current selection procedures have served the Army fairly well, they have become outmoded and are now only a partial predictor. Improvements must be made to the selection process (ANNEX C). Performance tests as an adjunct to pencil and paper tests can be used to further reduce flight school attrition. Such reductions would obviously lower training costs while providing a better product to the field. Physical criteria can be adjusted to reflect changing demands as a result of new equipment. Beyond these relatively "quick fixes", however, lies the more complex philosophical question of whether the selection process goes far enough. As implied above, the thrust of the selection process has been to identify candidates with a high probability of successfully completing flight training. This is a short term goal. On the other hand, the Aviation Center takes the otherwise qualified candidates and attempts to train in a way that will provide "aircraft qualified" aviators to operational units. The units would then conduct unit training to support whatever geographic and mission-related activities were perceived as necessary by the unit commander. While there has not necessarily been a dichotomy between the school product and unit need, it has long been recognized that a "grey area" exists. This area has been addressed in terms of flight hours the Aviation School has been willing to devote to tactical training as opposed to individual training. In any event, the selection process was never designed to start with operational need or successful mission accomplishment and work backwards through the flight training process to the initial screening of candidates.

2. The effort to identify suitable candidates for flight training has never been fully coordinated. It is well known, for example, that some individuals lack the upper body strength to lower the collective pitch control in a UH-1 with hydraulic assist servos turned off. The amount of strength required has never been determined though, or applied to the selection process. This is not the only area in which there is a lack of information. Aptitudes and interests which may distinguish scout from attack pilots are now unknown. Reliable information in this regard would support a mission tracked flight training system and/or subsequent assignment and career development of Army Aviators.

E. RECOMMENDATIONS:

1. The ARI field unit at Fort Rucker should continue their task analysis to determine the minimum operationally-oriented requirements for initial qualification. The analysis should include a determination of all requirements needed to both pilot and employ all Army aircraft to include the AAH and UTTAS. This analysis should be operationally oriented in terms of mission, equipment, individual/crew position training, and should define necessary differential testing criteria through a system-approach method. While this task analysis should be conducted by ARI under the staff supervision of the Deputy Chief of Staff for Personnel, it will require the participation of other agencies, principally the Surgeon General. This staff agency should determine physical (anthropometric, strength, weight, size) and perceptual requirements i.e., visual and auditory acuity. This effort should be continuing and designed to keep pace with the development of new technology/equipment. It is recognized that an effort of this nature would be unique. This concept would represent an advancement of the state of the art in aviator candidate screening and be most valuable to the Army.

2. ARI should continue development of an operationally oriented preselection testing system for implementation in October 1978. (ANNEX D).

ANNEX A

THE CURRENT PREDICTIVE VALIDITY OF THE FLIGHT APTITUDE SELECTION TESTS

R. F. Eastman and R. L. McMullen

U. S. Army Research Institute Field Unit
Fort Rucker, Alabama 36362

The Flight Aptitude Selection Tests (FAST), the Army's flight training selection instruments for Warrant and Commissioned Officers, were made operational in 1966. These tests have proven to be effective selection instruments. The pre and post-FAST Flight Training success rates shown in TABLE 1 indicate a sizeable increase following implementation of the batteries. However, because of intervening changes in flight training programs and in the population of aviation trainees, a revision of the FAST is underway. This study was designed to assess the current predictive validity of the operational battery.

TABLE 2 identifies the tests which comprise the two operational composite batteries, the Warrant Officer Candidate Battery (WOCB) and the Officer Battery (OB). The Rotary Wing and Fixed Wing Component batteries are not used operationally because the Army no longer conducts initial entry fixed wing training.

The FAST battery encompasses four content areas: (1) Personality and Leadership, (2) Spatial Ability, (3) Mechanical Ability, and (4) Aviation Information. In general, the Self-Description materials obtain their validity by predicting preflight success, and cognitive items predict flying and academic success. In addition to the FAST battery, a cutting score on the General Technical Aptitude Area (GT) of the ACB is used to screen applicants for the Warrant Officer Candidate (WOC) program. Failure for academic reasons is a minor cause of attrition in training.

METHOD

Samples:

The grades and training dispositions of 557 students in Initial Entry Rotary Wing (IERW) classes 74-18 through 74-50 were provided by the Aviation School. (There were 50 classes in 1974 and approximately the last two-thirds of the input was sampled.) FAST answer sheets from the years 1971-1974 were searched and 264 matches with trainee grades indentified. FAST scores for less than 50% of the population

were available because 60% of the 373 officer trainees were ROTC, many of whom are admitted to the IERW Program without taking the FAST OB if they have already had fixed-wing training in ROTC. Additionally, not all FAST answer sheets are sent to ARI from AFEES and Posts.

Predictor and Criterion Valuables:

FAST OB and WOCB composite scores were the predictor variables of interest. The IERW grades and course dispositions were the criterion measures. Trainees were categorized as attritees if eliminated from training for any reason other than those which were clearly not an effect on the training program, such as administrative or medical reasons. For purposes of analyses, all attritees were assigned a failing grade of 68, slightly less than one standard deviation below the minimum passing score. The practice of assigning failing grades has been demonstrated to be an unbiased method of including failures in a validity analysis while retaining linearity of regression of criterion grades on a valid predictor (Maier, 1968).

RESULTS

The means and standard deviations of FAST scores attained by aviator trainees during the original validation studies (Kaplan, 1966; Rosenberg, Martinek and Anderson, 1959) are presented in TABLE 3 with test scores of WOC and Officer current trainees. It is apparent that the test scores of current warrant officer trainees are generally higher than those of the original validation groups. A probable explanation of this effect is the high cutting scores currently used.

TABLE 4 contains the means and standard deviations of FAST scores for successful and attrited trainees. Successful officer trainees obtained significantly higher FAST composite scores than attrited officers ($t = 2.39$; $p .05$). The FAST score difference between successful and attrited WOCs was not statistically significant. The more restrictive cutting score imposed on this sample may have attenuated the effect.

The attrition rates for the samples of WOCs and officers used in this study (TABLE 4) differ from those shown in TABLE 2. The rates for these samples may be chance fluctuations or reflect changing relative proportions of WOCs and officers in the program (from 2:1 in favor of WOCs during the VN period to the present ratio of about 1:1).

The means and standard deviations of flight training grades for successful WOCs and officers are presented in TABLE 5. The successful officers attained a nonsignificantly higher mean final grade than suc-

cessful WOCs. The standard deviations for both successful groups fall between 2 and 3 points, indicating a narrow distribution of passing scores.

TABLE 6 contains the means and standard deviations of the FAST scores and final grades for all WOC and officer trainees. In this table and later analyses, attrited trainees were assigned final grades of 68. It is apparent from TABLES 5 and 6 that officers attain higher final flight training grades than WOCs. This may be attributable, in part, to the military development WOCs receive concurrently with flight and academic training.

The original validities for the FAST batteries shown in TABLE 7 were calculated for fixed-wing and rotary-wing composites separately. The Army no longer has an initial entry fixed-wing program and operational practice is to use composite scores to select Initial Entry Rotary Wing (IERW) trainees. When the current validities for the WOCB and OB composites are compared with the original validities, it appears that the predictive validity of the battery has attenuated somewhat since implementation. (Current validities have been corrected for restriction in range resulting from the FAST cutting scores.)

The two samples were divided into setback (students who repeat a part of the program) and nonsetback groups. Separate validity coefficients were then computed for the two groups (TABLE 8). The contrast between commissioned and warrant officers is striking. The WOC setbacks and nonsetbacks have essentially identical FAST scores and Flight Training grades. However, the validity coefficient for nonsetbacks is .58 and that for setbacks is .03. This is a highly significant difference ($z = 3.30$; $p = .001$). For the officer group a quite different relationship was obtained with setbacks demonstrating a non-significantly higher validity than nonsetbacks.

CONCLUSIONS

1. FAST scores obtained by current WOC trainees are higher than scores of trainees involved in the original validation studies (Kaplan, 1966; Rosenberg, Martinek and Anderson, 1959). The inconsistent results for the officer group suggests that this is due to the present high cutting score for WOCs.
2. In general, officers achieve higher flight training grades than WOCs, even though the FAST OB cutting score is very low, about 7th percentile while the FAST WOCB has a cutting score at about the 50th percentile. Several factors which may contribute to this disparity include: (a) military development training of the WOCs, (b) better

academic preparation of officers, (c) a halo effect enjoyed by commissioned officers, and (d) the career consequences of failure for an officer. The validity coefficient obtained for officers indicates that a higher cutting score should reduce attrition.

3. The predictive validity of the WOCB has attenuated somewhat when compared with the original validation studies; however, validities obtained in this study indicate that the present battery continues to be a useful selection instrument until a revision is available for operational use.

4. Data comparing setbacks and nonsetbacks showed marked differences between the officer and WOC samples. WOC setbacks and nonsetbacks had highly similar FST scores and flight grades, while officers displayed the more predictable pattern, i.e., higher test scores and grades for the nonsetbacks. The absence of correlation between FAST scores and flight training grades for the WOC setbacks is difficult to interpret. A possible explanation for the disparity in validity coefficients between these groups may be attributable to the military development training required of WOCs.

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- Maier, M. H. Procedures for Assigning Criterion Grades to Failure and Turnbacks in Army School Courses. USABESRL Technical Research Note 197, April 1968.
- Rosenberg, N., Martinek, H. and Anderson, A. A. Development of a Provisional Battery for Selecting Army Helicopter Pilots. PRB Technical Research Note 104, June 1959.

TABLE 1

SUCCESS RATE IN FLIGHT TRAINING

<u>OFFICERS</u>		<u>FAIL RATE</u>
PRIOR TO IMPLEMENTATION	FAST	75%
CURRENT		90%
<u>NO CANDIDATES</u>		
PRIOR TO IMPLEMENTATION	FAST	50%
CURRENT		65%

A-6

TABLE 2

COMPOSITION OF FAST BATTERIES

<u>TEST</u>	<u>OFFICERS</u>	<u>WARRANT OFFICER</u>
BIOGRAPHICAL INFORMATION	X	
MECHANICAL PRINCIPLES	X	
FLIGHT ORIENTATION		
AVIATION INFORMATION	X	X
HELICOPTER INFORMATION	X	X
MECHANICAL INFORMATION	X	X
MECHANICAL FUNCTIONS	X	X
VISUALIZATIONS OF MANEUVERS	X	X
INSTRUMENT COMPREHENSION	X	X
COMPLEX MOVEMENTS	X	X
STICK AND RUDDER ORIENTATION	X	X
SELF-DESCRIPTION		X

TABLE 3

MEAN AND STANDARD DEVIATION OF WOC AND OFFICER TRAINEE'
FAST SCORES

TEST	ORIGINAL VALIDATION		CURRENT VALUES			
	MEAN	S.D.	WOCB		OB	
			MEAN	S.D.	MEAN	S.D.
BIOGRAPHICAL INFORMATION	23.7	6.3	NA	NA	34.8	6.1
SELF DESCRIPTION	71.9	8.6	81.4	6.2	NA	NA
MECHANICAL PRINCIPLES	15.0	6.6	NA	NA	12.7	6.3
FLIGHT ORIENTATION	30.5	17.5	NA	NA	32.2	16.6
INSTRUMENT COMPREHENSION	15.6	8.4	21.8	7.2	20.1	7.9
MECHANICAL INFORMATION	15.9	6.9	16.3	6.1	11.9	5.8
COMPLEX MOVEMENTS	28.8	8.9	26.6	9.6	27.2	12.2
VISUALIZATION OF MANEUVERS	15.1	7.1	20.0	5.4	19.1	6.5
HELICOPTER KNOWLEDGE	8.7	4.3	12.3	4.2	10.9	3.9
STICK AND RUDDER ORIENTATION	22.1	9.7	29.7	6.9	26.4	8.8
AVIATION INFORMATION	10.2	7.6	11.3	6.0	9.0	5.7
MECHANICAL FUNCTIONS	12.2	7.6	18.2	6.6	15.1	7.4

TABLE 4

MEANS, STANDARD DEVIATIONS OF FAST SCORES BY TRAINING DISPOSITION
AND % ATTRITION WITHIN SAMPLE

	FAST COMPOSITE SCORES			
	<u>WOC</u>		<u>OFFICER</u>	
	<u>SUCCESSFUL</u>	<u>ATTRITED</u>	<u>SUCCESSFUL</u>	<u>ATTRITED</u>
X	<u>342.6</u>	<u>333.7</u>	<u>273</u>	<u>244</u>
S	28.0	28.3	58.5	64.8
N	79	34	127	24
% ATTRITION		30.0		15.9

TABLE 5

MEANS AND STANDARD DEVIATIONS OF FLIGHT TRAINING GRADES
FOR SUCCESSFUL WOC AND OFFICER TRAINEES

	<u>WOCs</u>	<u>OFFICERS</u>
X	82.7	85.4
S	2.3	2.9
N	79	127

TABLE 6

MEANS AND STANDARD DEVIATIONS OF FAST SCORES AND FINAL FLIGHT
TRAINING GRADES OF WOCs AND OFFICERS

	<u>WOC</u>		<u>OFFICERS</u>	
	FAST-WOCB COMPOSITE SCORES	FLIGHT TRAINING GRADES	FAST-OB COMPOSITE SCORES	FLIGHT TRAINING GRADES
X	339.7	78.4	273.2	82.8
S	28.6	7.0	58.7	6.7
N		113		151

TABLE 7

ORIGINAL AND CURRENT PREDICTIVE VALIDITIES OF FLIGHT APTITUDE

SELECTION TESTS				
ORIGINAL VALIDITY ESTIMATES				
FAST	WOCB	FAST	OB	
FIXED WING	ROTARY WING	FIXED WING	ROTARY WING	
.46	.48	.39	42	
CURRENT PREDICTIVE VALIDITY ROTARY-WING ONLY				
FAST	WOCB	FAST	OB	
38			.44	

TABLE 8

MEANS, STANDARD DEVIATIONS AND VALIDITIES OF SETBACKS AND NONSETBACKS

<u>WOCS</u>				<u>OFFICERS</u>			
<u>SETBACKS</u>		<u>NONSETBACKS</u>		<u>SETBACKS</u>		<u>NONSETBACKS</u>	
FAST	GRADES	FAST	GRADES	FAST	GRADES	FAST	GRADES
X	339.7	78.1	339.9	78.6	78.1	284.2	85.1
s	29.8	6.2	28.1	7.6	8.1	60.9	4.3
N	47		65			99	
r		03	.58	.47		.35	

A-13

ANNEX B

A PROPOSED PERFORMANCE-BASED SELECTION SYSTEM TO TEST LEARNING APTITUDE FOR AVIATOR SKILLS

This performance based system will utilize the Army's UH-1 flight training simulator, two Honeywell 516 computers with disc and tape storage units and a number of associated audio/visual devices, including a VOTRAX ML-1 voice synthesizer and a CRT display to administer a five-hour learning sample of rotary wing flight tasks to IERW candidates. All instruction and feedback on performance required for learning and the measurement of performance will be accomplished automatically. The learning sample will be administered to flight-naive candidates prior to flight training.

A potential problem in any testing program is the possibility of racial or sex bias with a resultant impact on effective manpower utilization. The proposed learning sample testing device will be totally automated testing system. That is, training candidate orientation and training will be accomplished by means of control/instrument motion and audio instruction. The training candidate will be alone in the simulator during the testing session. All performance evaluation will be done online by computer to minimize feedback delay and maximize objectivity. These features combine to provide an extremely culture-fair, unbiased, performance-oriented testing system. Because the system will be composed of an optimum mix of criterion-related performance measures, no question of irrelevant content can be raised.

In previous research, a learning sample test was designed to discriminate within a population already selected with paper and pencil testing methods. Such a population is consistent with the Army's use of the FAST tests as a preselection tool.

In data from the previous Air Force research, of each 100 students who passed the paper and pencil tests, 18 failed to complete training. Of each 100 who passed both the paper and pencil tests and the learning sample tests, only 7 would have failed to complete training. This change from 18 to 7 failures represents a 61% reduction in attrition.

Generalizing from the previous research and projecting IERW attrition rates after improvements to the FAST, reductions of 50% in residual IERW attrition rates with a performance-based learning sample test seem justified.

PERFORMANCE BASED ROTARY WING
AVIATOR SELECTION SYSTEM

(PROPOSED TO ARMY)

ADAPT APAMS CONCEPT TO HELICOPTER OPERATIONS

USE ARMY SFTS (UH-1 SIMULATOR) AT FORT RUCKER, ALABAMA

MODIFY APAMS SYLLABUS (AS REQUIRED) TO ACCOMMODATE DIFFERENCES IN FLIGHT
TRAINING REQUIREMENTS

USE EXISTING COMPUTER AND AUDIO VISUAL CAPABILITIES OF UH-1 SIMULATOR

ADD VOTRAX FOR AUDITORY FEEDBACK

DEVELOP SOFTWARE PROGRAMS REQUIRED TO IMPLEMENT LEARNING SAMPLE IN UH-1
SIMULATOR

DEVELOP SOFTWARE PROGRAM FOR ON LINE COMPUTATION OF SUBJECT SCORES

ADD MAGNETIC TAPE RECORDER FOR RAW DATA STORAGE FOR FURTHER RESEARCH

PERFORMANCE-BASED AVIATOR SELECTION SYSTEM

PURPOSE: ° DEVELOPMENT OF A PERFORMANCE-BASED SELECTION SYSTEM FOR IMPLEMENTATION ON THE UH-1 FS

APPROACH: ° IMPLEMENTATION ON UH-1 FS
 ° COMPOSED OF FIVE ONE HOUR SESSIONS
 ° PROFILE SCORE AT CONCLUSION OF ALL SESSIONS

BENEFITS: ° TEST TRAINING PERFORMANCE ON A SAMPLE SELECTED OF FLIGHT TASKS
 ° MEASURE PERFORMANCE OF COMPLEX PSYCHOMOTOR TASKS
 ° DETERMINE INDIVIDUAL LEARNING RATES
 ° AUTOMATED AND OBJECTIVE MEASUREMENT OF FLIGHT SKILLS
 ° ARMY-WIDE TESTING CAPABILITY

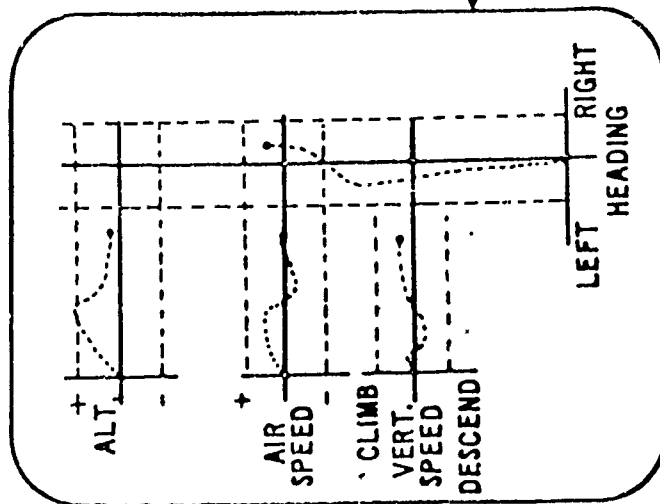
STATUS: ° WORK COMPLETED SINCE START OF CONTRACT: (15 FEB 77)
 ° SYLLABUS DESCRIPTION
 ° UH-1 FS CAPABILITIES ANALYSIS
 ° DEFINITION OF SOFTWARE

 ° WORK IN PROGRESS AND SCHEDULED
 ° DEVELOPMENT OF AUDIO SCRIPTS AND SYNTHETIC VOICE COMMANDS
 ° DEVELOPMENT OF MEASUREMENT ROUTINES
 ° INSTALLATION OF SYLLABUS ON UH-1 FS
 ° DEVELOPMENT AND VALIDATION OF SELECTION CRITERIA

'APAMS'

Distress version of the Bell & Howell 756

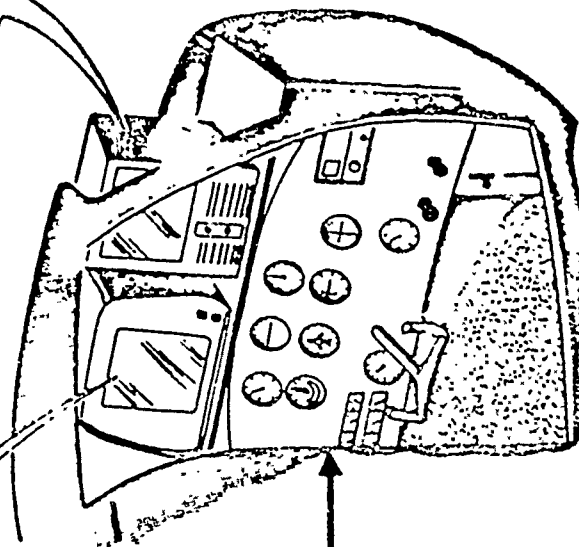
FEEDBACK DISPLAY



TEKTRONIX 813

PREPROGRAMMED SAMPLE INSTRUCTIONS
TASK 16 FLY STRAIGHT AND LEVEL FOR 1 MINUTE
ALTITUDE: 4500 FT
HEADING: 035 DEG
AIRSPEED: 120 MPH
<u>PERFORMANCE LIMITS</u>
ALTITUDE: ± 100 FT
HEADING: ± 5 DEG
AIRSPEED: ± 5 MPH

BELL & HOWELL 756



VARIAN 620/1-104
MINICOMPUTER

RECORDS VARIATIONS IN:
ALTITUDE
HEADING
AIRSPEED
ROLL
PITCH
CLIMB

NO. 2 GAT 1
NO. 3 GAT 1
NO. 4 GAT 1

APAMS

PASS VS ELIMINATION

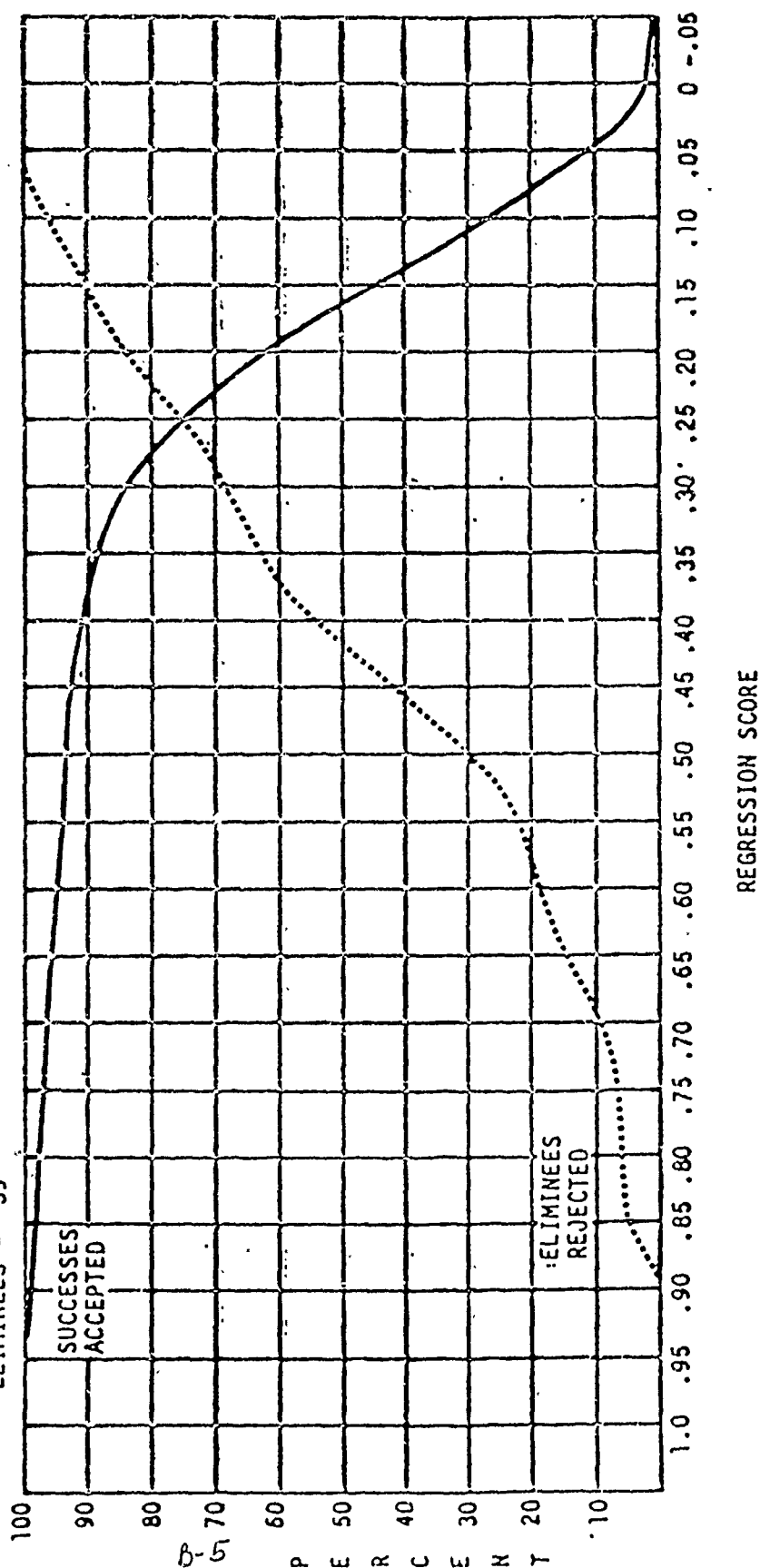
REGRESSION EQUATION DERIVED FROM ALL FACTORS

$$(X = .274 + .146 F7 - .117 F19)$$

N = 143

SUCCESSSES = 104

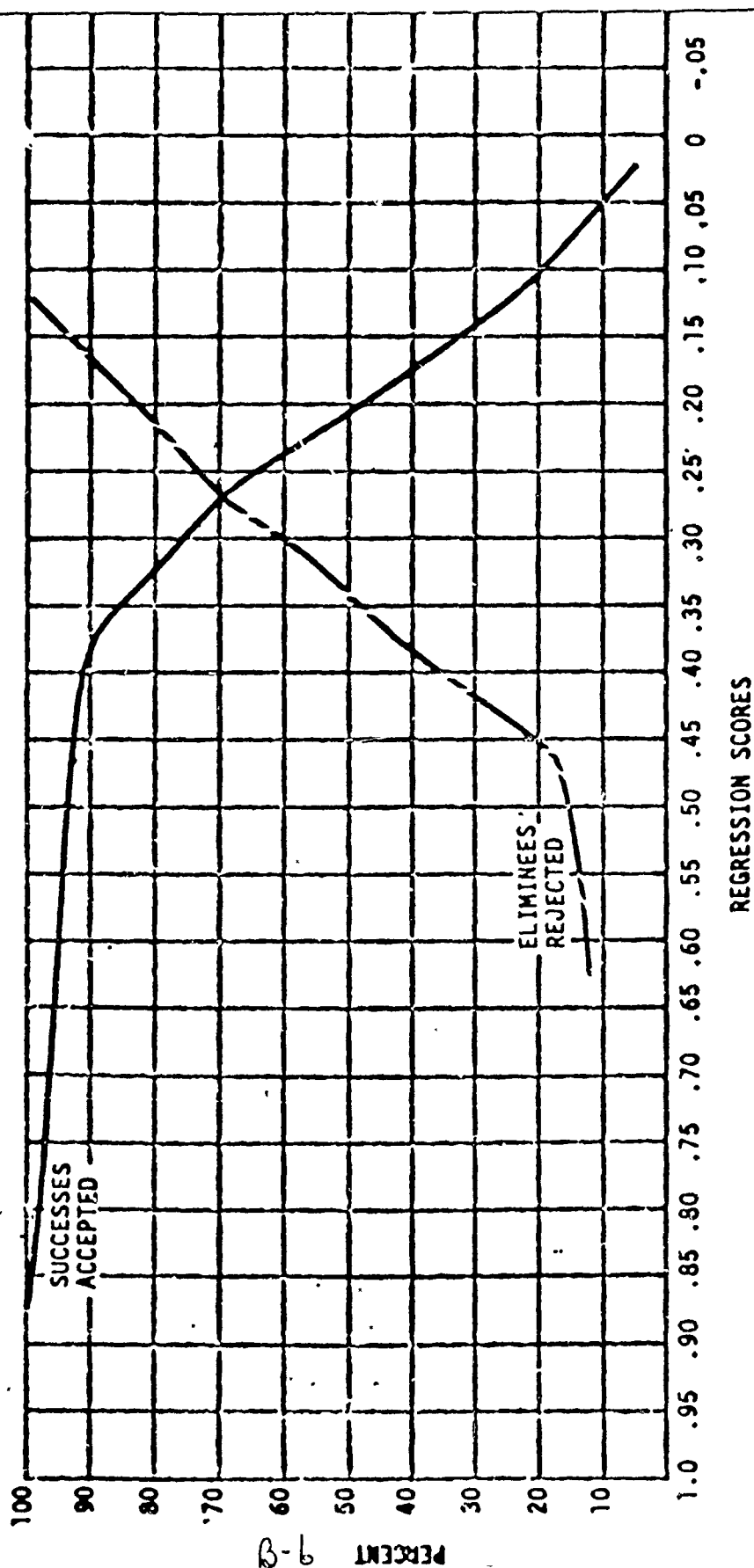
ELIMINEES = 39



APAMS CROSS - VALIDATION DATA PASS VS ELIMINATION

($X = .274 + .146 F 7 - .117 F 19$)

N = 68
SUCSESSES = 44
ELIMINEES = 24



APAMS
PROPOSED ARMY STUDY

UNSOLICITED PROPOSAL SUBMITTED TO
THE ARI TO ADAPT THE APAMS CONCEPT
TO A HELICOPTER SIMULATOR AND EVAL-
UATE ITS EFFECTIVENESS FOR THE SELEC-
TION OF ROTARY WING AVIATORS.

[illegible]

ANNEX C



DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 20310

Office of the Deputy
Chief of Staff for
Operations and Plans

Office of the Deputy
Chief of Staff for
Personnel

SUBJECT: Determination of Minimum Requirements for an Aviator

Chief
Army Research Institute Field Unit
ATTN: Mr. Charles A. Gainer
Fort Rucker, Alabama 36362

1. The Vice Chief of Staff, Army, established a special task force to review and make recommendations pertaining to the aviation warrant officer program, enlisted aviator/weapons systems operator and the commissioned officer aviation specialty 15 (Incl 1). One area to be reviewed is the initial requirements for entry into undergraduate flight training. The immediate problem posed to the study group is to determine the minimum requirements actually necessary to pilot and operate Army aircraft.
2. The task force has reviewed the publications available in the Army Library and the Defense Documentation Center. There are many listings of studies which have been completed in the past. These pertain to the probability of success of flight candidates, correlation in various categories with successful completion of flight training and analysis of specific medical problems. It is evident that there is not a systems approach to the total minimum requirements necessary to operate an aircraft. Therefore, it is requested that your field unit undertake the study to determine the minimum required, definable, measurable requirements that must be possessed by an applicant to pilot and employ an Army aircraft. These should include but not be limited to the following:

Intellectual/educational requirements
Psychomotor abilities
Physiological requirements
Eye-hand coordination
Physical dexterity and strength requirements
Vision requirements

C-2



SUBJECT: Determination of Minimum Requirements for an Aviator

3. The determination of these minimum requirements will require a thorough job analysis by flight position (pilot, co-pilot, co-pilot/weapons system operator, by specific type aircraft), to include the OH-58, UH-1 and UH-60, AH-1 and AH-64, CH-47, CH-54, U-21 and OV-1. These criteria should be based upon both normal and emergency situations. It should encompass such criteria as the physical strength requirements required to pilot and land an aircraft with servo system inoperative. It also requires the physical requirements to operate the new items of equipment under consideration for procurement, such as the night vision goggles, the forward looking infra-red systems (FLIR), and other subsystems associated with the new family of helicopters and associated equipment being bought for the 1980's, such as TADS and PNVIS. Such a thorough analysis, particularly in regard to visual acuity required to operate visionics systems, does not appear to have been accomplished.

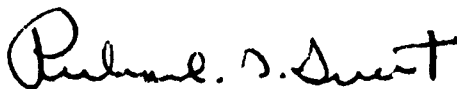
4. The results of such an analysis and resulting minimum criteria will greatly benefit the Army. It will establish minimum measurable standards as a departure point for selection of personnel for entry into the program. It will also provide differential selection criteria for assignment into a multi-tracked initial entry flight course program. These data will also provide floor criteria for mobilization.

5. Request your organization review this tasking and develop an estimate of manpower requirements and milestones for completion. Additionally, plan to meet with the co-directors of this special task force prior to initiating the study to insure the whole-man systems concept is fully covered in your analysis. A similar tasking has been provided to the Office of the Surgeon General as this tasking will and must cross organizational lines to fully develop the criteria.

6. This has become a priority action with results required for inclusion in FY 79 budget cycle. Therefore, data are required by 1 November 1977.



CHARLES E. CANEDY
Brigadier General, GS
Deputy Director of Requirements
and Army Aviation Officer



RICHARD S. SWEET
Brigadier General, GS
Deputy Director of Military
Personnel Management

1 Incl
as

RESEARCH PLAN FOR DETERMINATION OF MINIMUM REQUIREMENTS
FOR AN AVIATOR

BACKGROUND:

VCSA ESTABLISHES SPECIAL TASK FORCE (STF), EFFECTIVE 22 JUN, TO REVIEW
AVIATOR WARRANT OFFICER PROGRAM, ENLISTED AVIATOR, AND AVIATOR SPECIALITY 15
STF IDENTIFIES AS AN IMMEDIATE PROBLEM TO DETERMINE THE MINIMUM DEFINABLE,
MEASURABLE REQUIREMENTS FOR AN APPLICANT TO PILOT AND EMPLOY ARMY AIRCRAFT
STF TASKS ARL, FORT RUCKER, TO DEVELOP A RESEARCH PLAN TO DETERMINE MINIMUM
REQUIREMENTS FOR AN ARMY AVIATOR (10 AUG)

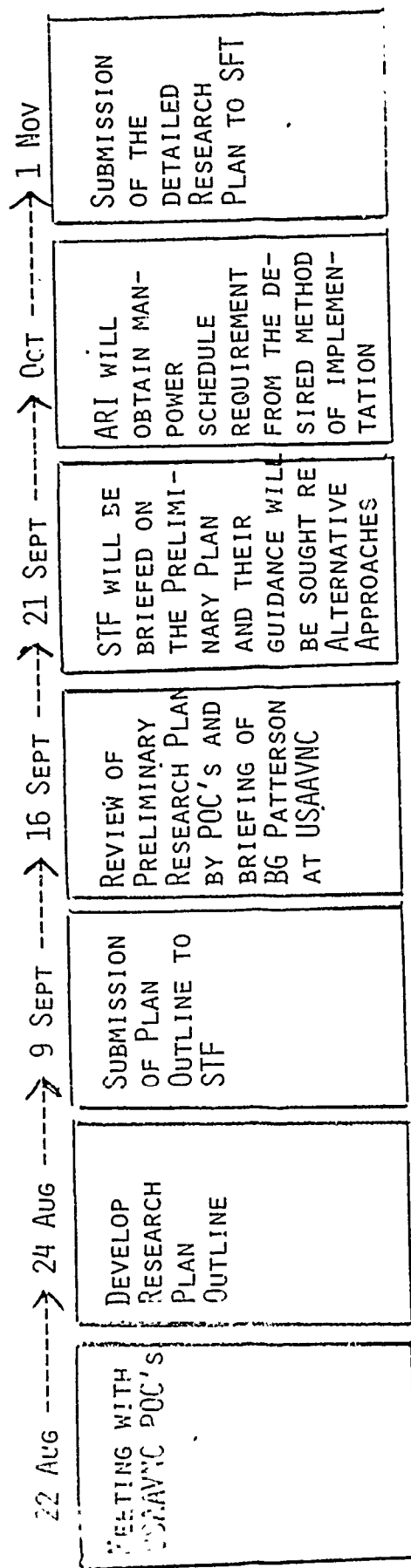
RESEARCH PLAN FOR DETERMINATION OF MINIMUM REQUIREMENTS
FOR AN AVIATOR

PURPOSE: TO DETERMINE THE MINIMUM DEFINABLE, MEASURABLE REQUIREMENTS THAT
AN APPLICANT MUST POSSESS TO PILOT AND EMPLOY ARMY AIRCRAFT

SCOPE: TO INCLUDE DETERMINATION OF REQUIREMENT FOR:
FLIGHT TRAINING, OPERATIONAL PILOTING AND TACTICAL EMPLOYMENT
OF ARMY AIRCRAFT

EACH CREW POSITION WITHIN ALL AIRCRAFT TYPE STUDIED
EXISTING EQUIPMENT AND THAT PROJECTED THROUGH THE 1980'S
FLIGHT MISSION RELATED OPERATIONS ONLY

ARI'S RESPONSE TO PREPARATION OF A RESEARCH PLAN



DETERMINATION OF RESPONSIBLE AGENCIES

◦ INTELLECTUAL CAPACITY

ARI

MILPERCEN

◦ PHYSICAL/MEDICAL

SURGEON GENERAL

USAARL

◦ PSYCHOMOTOR ABILITY

ARI

USAARL

HEL

PROPOSED APPROACH

DUAL TRACK EFFORT

TRACK A

IDENTIFICATION AND ASSESSMENT OF EXISTING REQUIREMENTS

TRACK B

DERIVATION OF REQUIREMENTS THRU DETAILED ANALYSIS OF MISSIONS

Q
1
∞

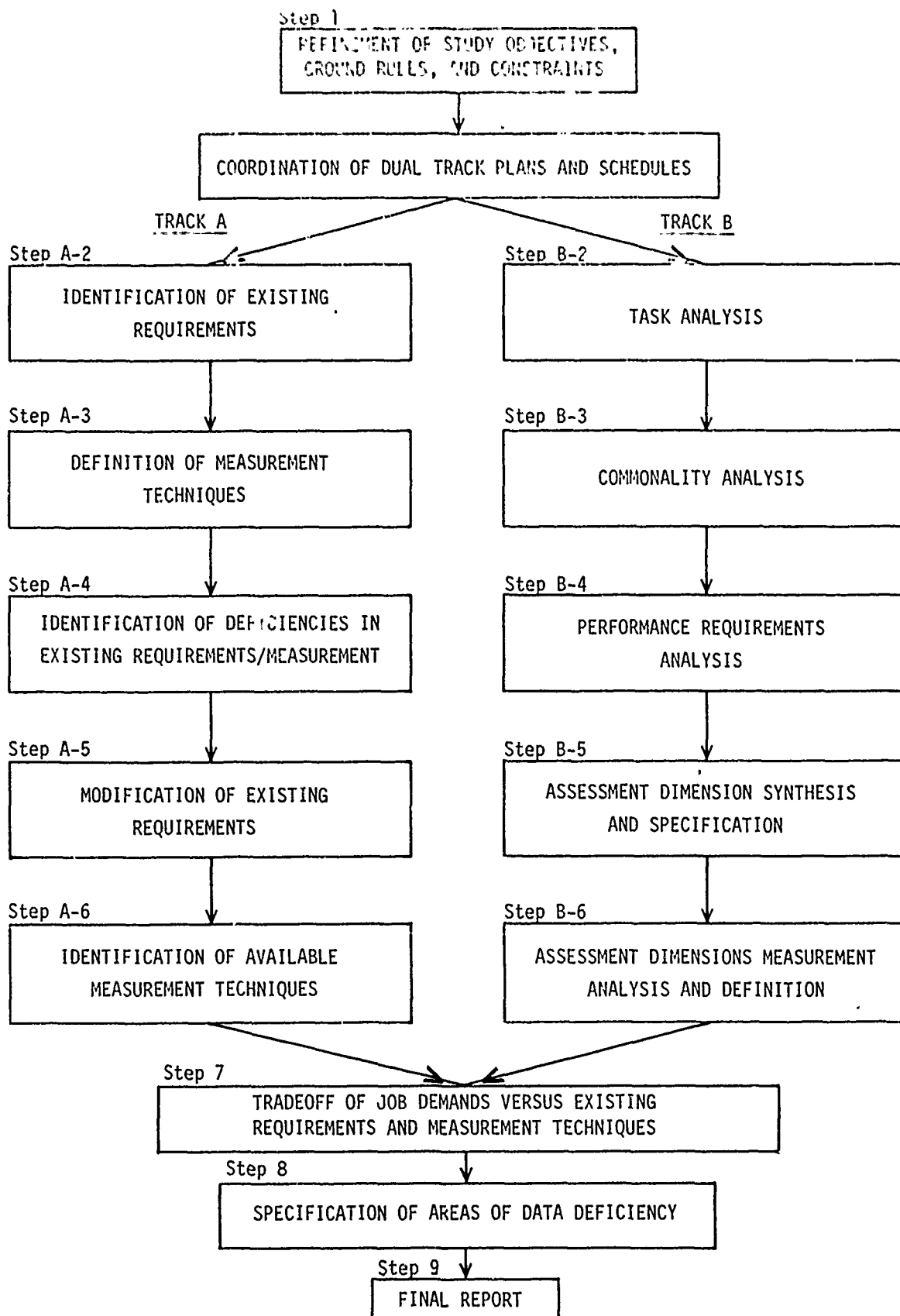
TWO SETS OF REQUIREMENTS TO BE DEFINED

CURRENT AIRCRAFT AND SUBSYSTEM

NEXT GENERATION AIRCRAFT AND SUBSYSTEM

CURRENT SYSTEMS EMPHASIS IN TRACK A

NEXT GENERATION SYSTEMS EMPHASIS IN TRACK B



TRACK A EFFORT

IDENTIFICATION OF EXISTING REQUIREMENTS STEP A-2

DEFINITION OF MEASUREMENT TECHNIQUES STEP A-3

IDENTIFICATION OF DEFICIENCIES IN EXISTING REQUIREMENTS/MEASUREMENT

STEP A-4

MODIFICATION OF EXISTING REQUIREMENTS STEP A-5

IDENTIFICATION OF AVAILABLE MEASUREMENT TECHNIQUES STEP A-6

DEFINITION OF ASSESSMENT DIMENSIONS

SYNTHESIZE GENERAL ASSESSMENT DIMENSION FROM REQUIRED CAPABILITIES

MEDICAL

EDUCATIONAL ACHIEVEMENTS

INTELLECTUAL CAPACITY

PERCEPTUAL ABILITY

PSYCHOMOTOR ABILITY

EXPERIENCE

SPECIFY MEASURES TO BE OBTAINED WITHIN ASSESSMENT DIMENSIONS. FOR EXAMPLE:

INTELLECTUAL CAPACITY

FAST SCORE

GT SCORE

PSYCHOMOTOR ABILITY

REACTION TIME

EYE HAND COORDINATION

STRENGTH

PHYSICAL/MEDICAL

ANTHROPOMETRIC LIMITS

VISUAL ACUITY

DEPTH PERCEPTION

PERIPHERAL VISION

ETC.

EXISTING REQUIREMENTS TO BE IDENTIFIED

- INTELLECTUAL
- EDUCATIONAL
- PHYSICAL

ANTHROPOMETRIC

STRENGTH

WEIGHT

SIZE

- PHYSIOLOGICAL

- PSYCHOMOTOR

- PERCEPTUAL

VISION

AUDITION

STEP-A-3-1

DETERMINATION OF EXISTING MEASUREMENT TECHNIQUES

TEST SCORES

EDUCATIONAL RECORDS

MEDICAL/PHYSICAL STANDARDS

TRAINING PERFORMANCE REQUIREMENTS (IERW)

STANDARDIZATION PROCEDURES

STEP-A-3-2

SPECIFICATION OF EXISTING MINIMUM CUTSCORES AND/OR STANDARDS

◦ INTELLECTUAL CAPACITY

GT-110

FAST-155/300

◦ PHYSICAL/MEDICAL

OFFICER CLASS 1A

WOCS CLASS 1

◦ PSYCHOMOTOR ABILITY

MEDICAL EVALUATION OF LIMB MOBILITY

SELECTION DURING TRAINING (PERFORMANCE BASED SYSTEM)

EVALUATION OF EXISTING MEASUREMENT TECHNIQUES AND
MINIMUM ESTABLISHED STANDARDS

- GT COMPOSITE OF THE ACB
- FAST BATTERY
- VISION REQUIREMENTS

ACUITY

DEPTH PERCEPTION

COLOR VISION

- PHYSICAL STANDARDS

SIZE

WEIGHT

LIMB MOVEMENT

BLOOD PRESSURE

- AUDITION

AUDITORY

RANGE OF SENSITIVITY

ACUITY

DEFINITION OF KNOWN SYSTEM REQUIREMENTS

LITERATURE REVIEWS

INTERVIEWS OF SUBJECT MATTER EXPERTS (TRACK B)

TASK ANALYSIS DATA AVAILABLE FROM A/C DEVELOPERS

PRELIMINARY TASK ANALYSIS FINDINGS

MATCHING OF EXISTING SELECTION REQUIREMENTS/MEASUREMENTS
WITH KNOWN A/C SYSTEM PERFORMANCE REQUIREMENTS

SPECIFICATION OF GAPS AND DEFICIENCIES FROM ABOVE PROCEDURE

STEP-A-5-1 & 2

DETERMINATION OF STATUS OF EACH PERSONNEL SELECTION
REQUIREMENT UNDER EXISTING SYSTEM

PRESENT SELECTION ADEQUATE

PRESENT MEASUREMENT METHODOLOGICALLY DEFICIENT

MEASUREMENT STANDARDS INCORRECT

NOT MEASURED

RECOMMENDATIONS FOR IMPROVEMENT OF SELECTION PROCEDURE

NEW TECHNIQUES

PERFORMANCE/BASED SELECTION SYSTEM

STUDIES TO DEFINE STANDARDS/CUTSCORES

STEP-A-5-1

SOURCES OF ADDITIONAL MEASUREMENT TECHNIQUES

AIR FORCE
NAVY
ALLIED MILITARY SERVICES
NASA
CIVIL AVIATION

ILLUSTRATIVE LIST OF SOURCES OF TECHNICAL SPECIFICATIONS
FOR NEEDED SELECTION PROCEDURES AND INSTRUMENTS

USAAVNC

ARMY RESEARCH INSTITUTE

US ARMY AEROMEDICAL ACTIVITY

US ARMY AEROMEDICAL RESEARCH LABORATORY

US ARMY AGENCY FOR AVIATION SAFETY

FORSCOM UNITS

DCSPER

TSARCOM

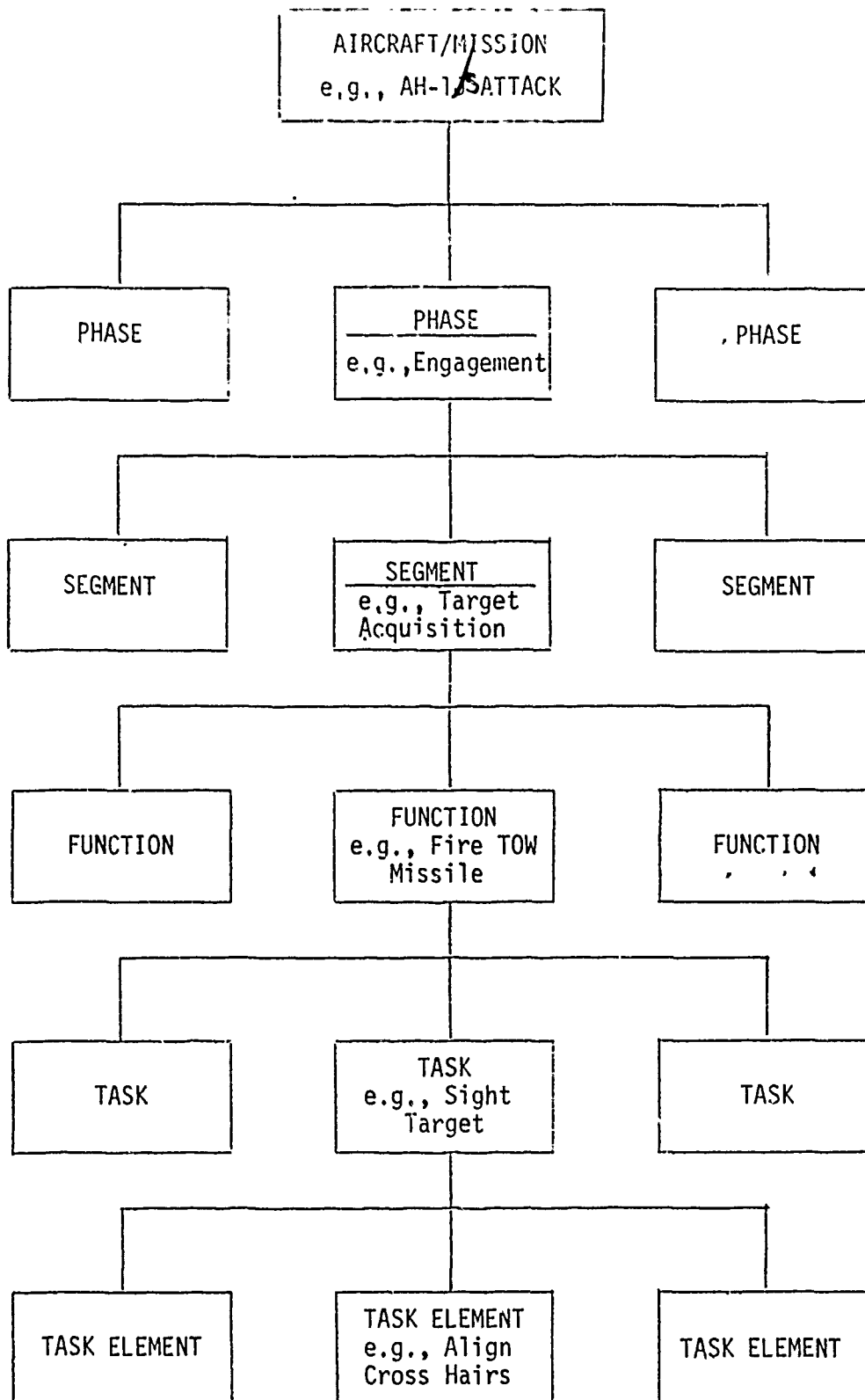
ARADCOM

HUMAN ENGINEERING LABORATORY

TASK ANALYSIS PROCEDURE

- DIRECTED AT NEXT GENERATION SYSTEM
- DETAILED MISSION ANALYSES BY AIRCRAFT TYPE AND CREW POSITION
- PRIORITY DETERMINED BY SYSTEM OPERATIONAL AVAILABILITY DATE
- DEVELOPMENT OF REPRESENTATIVE MISSION SCENARIOS .
- ANALYSIS OF MISSION PHASES
 - DETERMINATION OF REQUIRED FUNCTIONS/TASKS WITHIN EACH PHASE
 - ASSIGNMENT OF TASK TO RESPONSIBLE CREW MEMBER
 - DEFINITION OF SYSTEM/EQUIPMENT REQUIRED

Task Analysis Structure



Task Analysis Data Format

STEP-B-3-1

IDENTIFICATION OF AIRCRAFT/MISSION COMMON AND SPECIFIC TASKS

REDUCE DUPLICATION OF EFFORT BY DETERMINATION OF COMMON TASKS FOR DIFFERENT
AIRCRAFT AND MISSIONS

DETERMINATION OF UNIQUE/SPECIFIC TASKS FOR EACH AIRCRAFT AND/OR MISSION

IDENTIFY AND DEFINE THOSE TASKS WHICH ARE UNIQUE TO SPECIFIC CREW POSITION
(DIFFERENTIAL ASSIGNMENT)

PERFORMANCE REQUIREMENTS ANALYSIS

CATEGORIZE REQUIRED FUNCTIONS/TASKS

GENERAL TASKS

AIRCRAFT/MISSION SPECIFIC TASKS

CREW POSITION

ANALYZE REQUIRED FUNCTIONS/TASKS

SPECIFY TASKS IN OBSERVABLE TERMS, E.G., DETECT TANKS AT

3000 METERS

DETERMINE MEASURABLE BEHAVIORAL/PHYSICAL CAPABILITIES REQUIRED
TO PERFORM EFFECTIVELY

BASE CATEGORIES						
COMMAND						
AIRCRAFT/AIRCRAFT AIRCRAFT/GROUND COORDINATION						
CREW COORDINATION						
FLIGHT PLANNING AND NAVIGATION						
HANDS-ON CONTROL						
COPLOT						
PILOT						
PERCEPTUAL	TRACKING	CONTROL	COMMUNICATIONS	STRESS	JUDGMENT/	
Visual	CAPABILITY	MANIPULATION	Written/Oral/	TOLERANCE	PROBLEM SOLVING	
Audition	Continuous	Force	Pictorial			
	Tracking	Reach	Comprehension			
	Discrete	Endurance	Written/Oral			
	Tracking		Transmission			
	Dexterity					

PERFORMANCE REQUIREMENTS

Performance Requirements Analysis Data Format

STEP-B-5

DEFINITION OF ASSESSMENT DIMENSIONS

SYNTHESIZE GENERAL ASSESSMENT DIMENSION FROM REQUIRED CAPABILITIES

MEDICAL

EDUCATIONAL ACHIEVEMENTS

INTELLECTUAL CAPACITY

PERCEPTUAL ABILITY

PSYCHOMOTOR ABILITY

EXPERIENCE

SPECIFY MEASURES TO BE OBTAINED WITHIN ASSESSMENT DIMENSIONS. FOR EXAMPLE:

INTELLECTUAL CAPACITY

PSYCHOMOTOR ABILITY

FAST SCORE

REACTION TIME

GT SCORE

EYE HAND COORDINATION

PHYSICAL/MEDICAL

STRENGTH

ANTHROPOMETRIC LIMITS

ETC.

VISUAL ACUITY

DEPTH PERCEPTION

PERIPHERAL VISION

ASSESSMENT DIMENSIONS MEASUREMENT ANALYSIS

DEFINE NECESSARY AND DESIRABLE CHARACTERISTICS OF MEASUREMENT TECHNIQUES TO

BE EMPLOYED
OPERATIONALLY
FEASIBLE
QUANTITATIVE
OBJECTIVE
VALID, RELIABLE
REPRODUCIBLE

SYNTHESIS OF TRACKS A AND B RESULTS

DETERMINATION OF NON-TASK RELATED PERFORMANCE REQUIREMENTS

DETERMINATION OF TASK RELATED REQUIREMENTS

TRADEOFF STUDIES

DETERMINATION OF REQUIREMENTS FOR WHICH MEASUREMENT TECHNIQUES
ARE DEFICIENT

FINAL REPORT TO INCLUDE

FINAL LIST OF ALL REQUIREMENTS

NON-TASK RELATED AND "ABSOLUTE" REQUIREMENTS

COMMON/UNIQUE TASK RELATED REQUIREMENTS

RECOMMENDED MEASUREMENT PROCEDURES/DEVICES WHERE ASSESSMENT IS DEFICIENT

SPECIFICATION OF MINIMUM CUTOFF VALUES FOR NON-TASK RELATED REQUIREMENTS

GRAPHIC DISPLAY OF DISTRIBUTIONS OF REQUIRED ABILITIES, TRAITS, ETC. IN THE

APPLICANT POPULATION, E.G., PERFORMANCE-BASED TEST SCORES

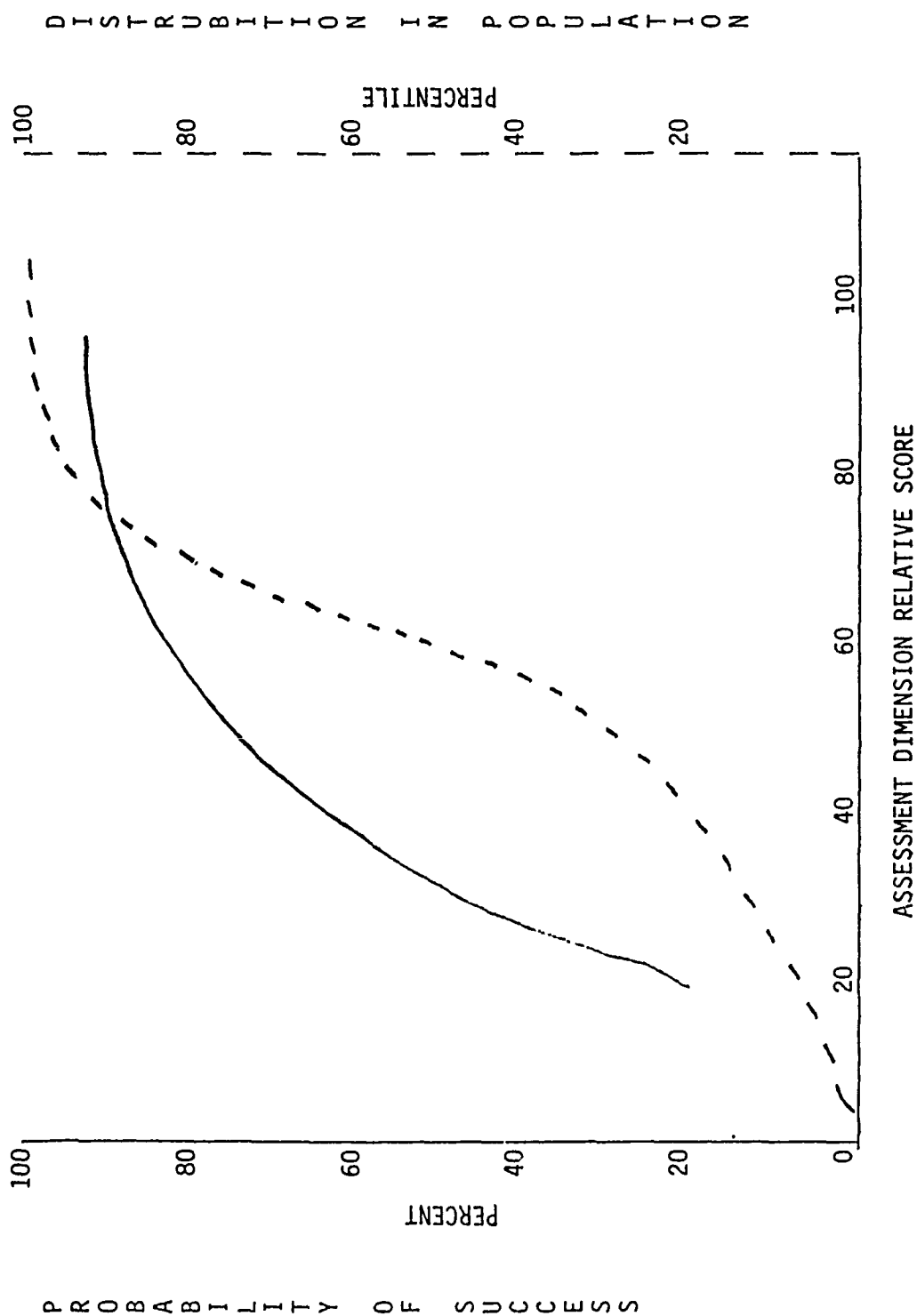
PRESENTATION OF RELATIONSHIP BETWEEN DIFFERENT ASSESSMENT MEASURES AND THE

PROBABILITY OF SUCCESS AS AN ARMY AVIATOR, E.G., PROBABILITY OF SUCCESS AS

A FUNCTION OF THE PERFORMANCE-BASED TEST SCORES OF IERW STUDENTS

DEVELOPMENT OF PROBABILITY OF SUCCESS/POPULATION DISTRIBUTION CURVES AS A

FUNCTION OF ASSESSMENT DIMENSIONS



ANNEX D

8 Sep 77

(DRAFT)

RESEARCH PLAN OUTLINE
FOR
THE DETERMINATION OF MINIMUM REQUIREMENTS FOR
AN ARMY AVIATOR

I. PURPOSE OF STUDY:

"To determine the minimum required, definable, measurable requirements that must be possessed by an applicant to pilot and employ an Army aircraft."

II. SCOPE:

1. The study will include determination of all requirements for entry into training for piloting and employing Army aircraft.

2. Requirements will be defined for each crew position and each aircraft type.

3. The operation of existing equipment and that planned through the 1980s will be considered.

4. Requirements will be defined for both training and operational flight.

5. Only flight mission-related operations will be considered.

III. APPROACH:

A. Approach Concept

1. Dual Track Effort

In accomplishing the study a dual track effort will be followed:

Track A. In Track A effort, all requirements presently used for screening or selection purposes will be identified. This will be accomplished through a thorough literature survey and interviews with personnel responsible for present screening and selection procedures. Measurement techniques used for determining a candidate's status relative to these requirements will be identified and described. Requirements identified through this process and the associ-

ated measurement procedures and techniques will then be assessed in terms of their adequacy for selecting applicants who can meet existing job requirements. Recommendations will be made for modifying existing requirements and an interim report will be issued for this phase.

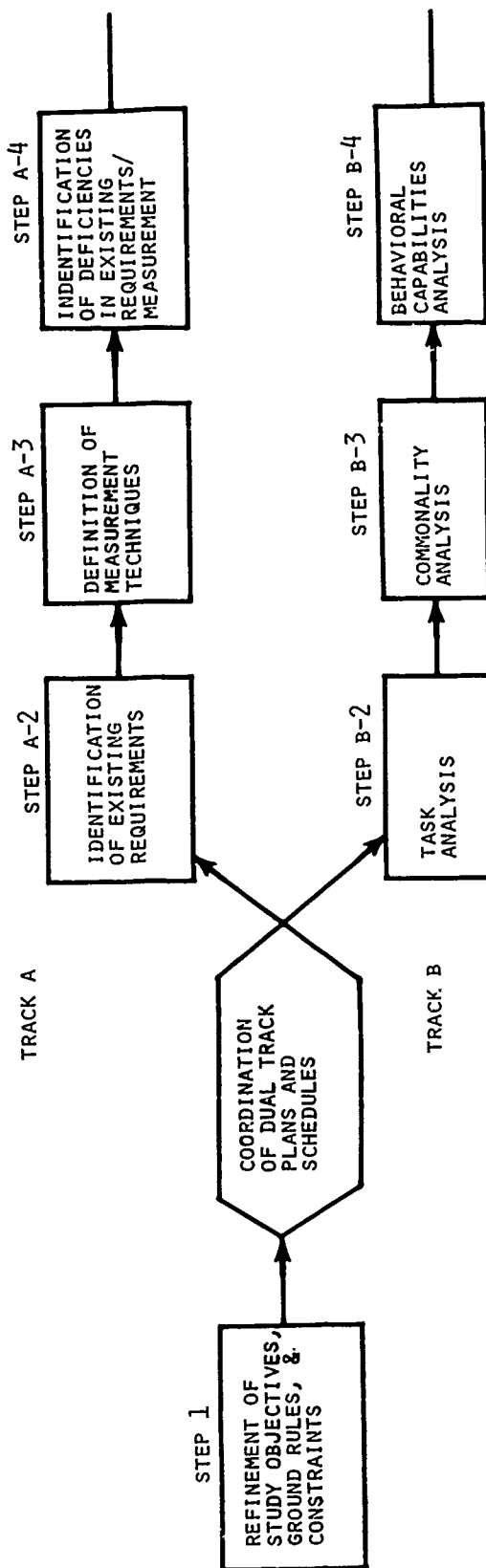
Track B. In Track B, the problem will be approached from the opposite direction. It will start with an analysis of the job to determine what tasks must be performed in order to "fly and employ" Army aircraft in all of their various missions. Based upon the results of this analysis the skills and abilities necessary to the performance of the tasks will be derived. Existing selection procedures and criteria will then be evaluated in terms of their adequacy to select candidates with the required skills and knowledges.

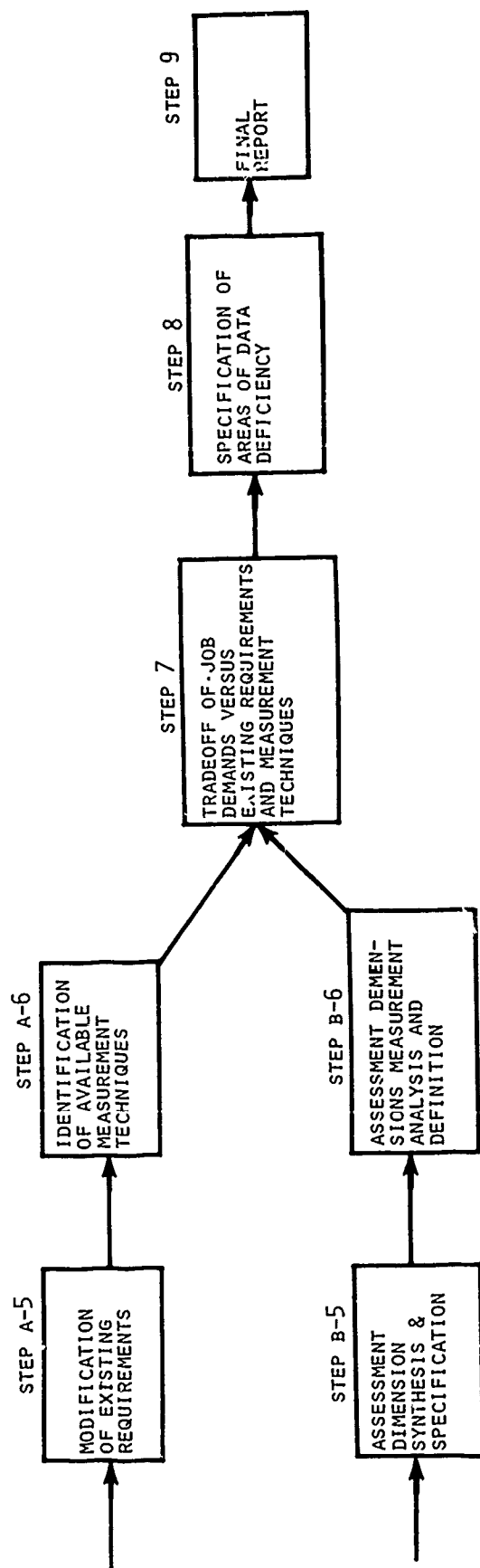
2. Certain Non-Task Related Prerequisites will be Identified.

There may be certain prerequisites deemed essential for selection for pilot training, operational duty, or career development, even though they are not task specific. These may include such items as general physiological characteristics, certain minimum levels of educational achievement, or background behaviors. These will be identified and defined as additional requirements after the task related skills, knowledges, and abilities are identified.

B. Approach Implementation

Figure 1 shows the flow diagram of steps required for the accomplishment of the study. As may be seen, Steps 1, 7, 8, and 9 are common to both tracks of the study. The other steps, designated with the prefix A or B are specific to the respective tracks.





Step 1 - Refinement of study objectives, ground rules, and constraints. This effort, which, as noted above, is common to both tracks of the dual track effort, will refine and spell out in detail the objectives of the study and the ground rules and constraints under which the study is to be conducted. Some of the major items to be clarified include: (1) a clear definition of the jobs for which requirements are to be defined; (2) the establishment of criteria to be used for defining "minimum" requirements; (3) a detailed format and approach for collecting and analyzing data; (4) a definition of the format required of the end-product/requirements, e.g., absolute standards versus success probability curves. Following completion of this step, the study effort will be divided as per the dual track approach noted above. The conduct of each track is described in greater detail below.

Track A.

Step A-2. Identification of existing requirements. All known requirements presently used for selection or screening will be identified and defined. This will be based on a thorough review of all relevant documentation and discussions with personnel responsible for screening and/or selection operation. An attempt will be made to determine the basis, or justification for each requirement identified. Requirements to be identified will include the following:

Intellectual

Educational

Physical

Anthropometric

Strength

Weight

Size

Physiological

Psychomotor

Perceptual

Vision

Audition

Step A-3. Definition of measurement techniques. Techniques or procedures presently used for determining the extent to which candidates possess the above requirements will be identified and described. This will include a definition of scoring methods, selection criteria and the equipment or tools used for measurement.

Step A-4. Identification of deficiencies in existing requirements/measurement. All of the known deficiencies or gaps in the existing requirements or measurement techniques will be identified and described. Two approaches will be used in accomplishing this step. The first will review and evaluate each identified requirement or measurement technique in terms of its adequacy to meet known requirements. The other will attempt to identify deficiencies or gaps through reviews of literature and interviews with personnel familiar with or involved in selection and screening operations.

Step A-5. Modification of existing requirements. Based upon analysis accomplished in A-4, recommendations for modifications and/or additions to the identified list of existing requirements will be developed.

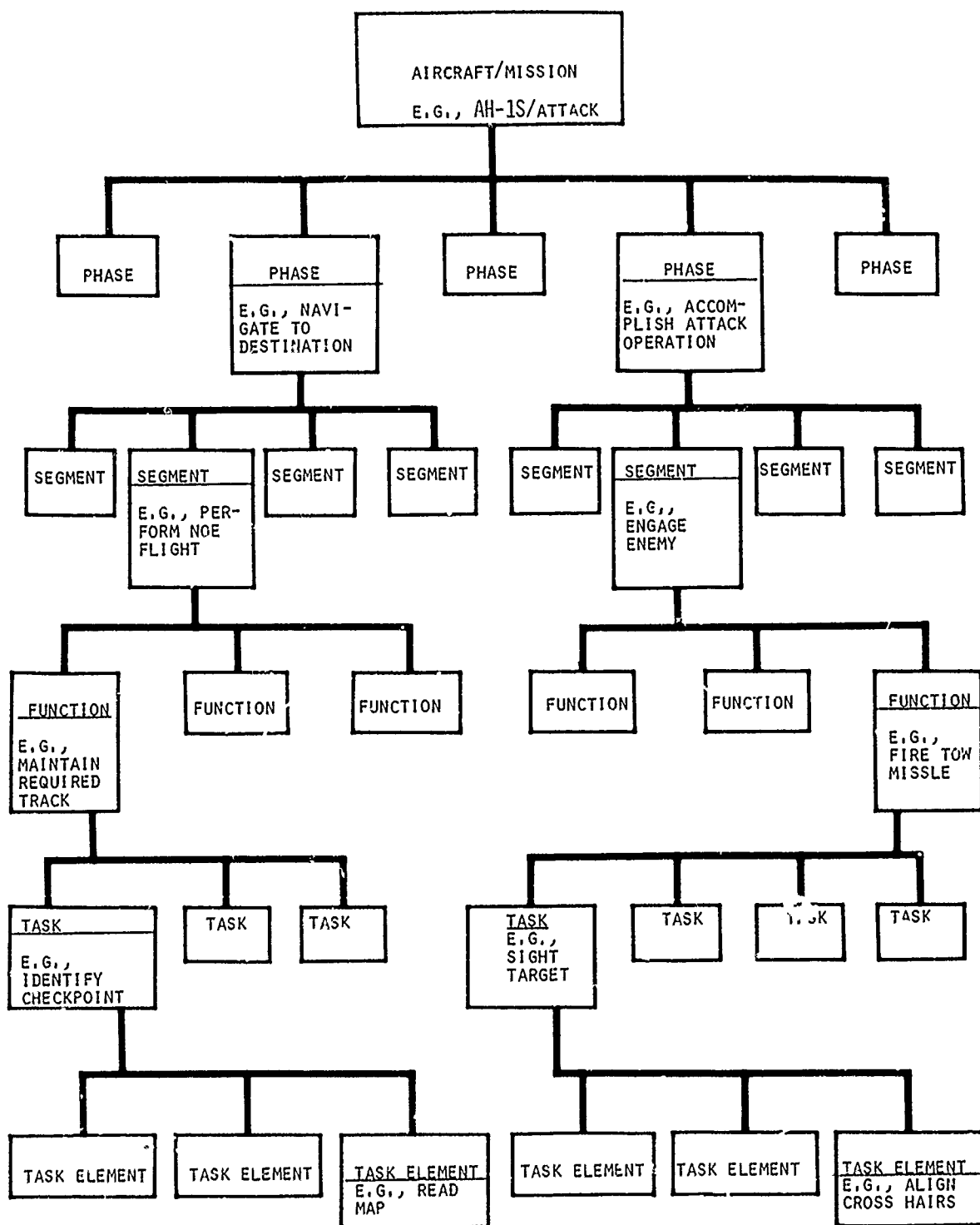
Step A-6. Identification of available measurement techniques. Measurement techniques not presently used in Army selection and screening, but available from other sources such as the Air Force, Navy or foreign military services, will be identified and assessed for their adequacy in measuring the requirement identified in A-5, above. A preliminary list of such sources follows:

SOURCES OF INFORMATION FOR ESTABLISHING AVIATOR REQUIREMENTS

1. U.S. Army Aeromedical Center, Fort Rucker, Alabama
2. U.S. Army Aeromedical Research Laboratory (USAARL), Fort Rucker, Alabama
3. U.S. Army Agency for Aviation Safety (USAAVS), Fort Rucker, Alabama
4. Directorate of Training, Fort Rucker, Alabama
5. Department of Undergraduate Flight Training, Fort Rucker, Alabama
6. Department of Graduate Flight Training, Fort Rucker, Alabama
7. Directorate, Combat Development Branch, Fort Rucker, Alabama
8. Directorate of Training Development, Fort Rucker, Alabama
9. Flight Surgeon's School, Fort Rucker, Alabama
10. Personnel Research Division, Human Resources Laboratory AFSC, Brooks AFB, Texas
11. Naval Aerospace Medical Institute, Pensacola, Florida
12. AR 40-501, Chapter 4, Medical Fitness Standards for Flying Duty, 29 January 1974 and 27 May 1976
13. FORSCOM operational Units for each aircraft type
14. Proponents for each aircraft type

Track B.

Step B-2. Task analysis. The first step to be accomplished in the Track B effort will be a detailed analysis of each aircraft/mission of concern to determine all of the functions or tasks that must be performed by crew members. Any task analysis requires extensive effort and involves many subordinate steps, each increasing in breadth and level of detail. The structure of such an analytic effort is illustrated in Figure 2.



D-9

FIGURE 2

The level of detail that will be required for this analysis cannot be specified precisely in advance and may vary from system to system and phase to phase. However, it will be carried to a level that makes it possible to distinguish between the demands imposed by different aircraft or missions. It is anticipated that for the most part this will require analysis to the "function" or subsystems operational level. For purpose of this analysis, the flight controls and instruments required for basic attitude control of a specific aircraft will be considered as a subsystem. The format and approach for the accomplishment of this effort is shown in Figure 3.

Each aircraft/mission of concern will be analyzed in terms of the eight common mission phases to determine the functions or tasks that must be performed by some crew member for successful completion of the mission. Tasks will be identified in terms of the five categories shown along the horizontal axis at the bottom of Figure 3.

AIRCRAFT MISSION	TASK CATEGORIES				
	HANDS-ON CONTROL	FLIGHT PLANNING AND NAVIGATION	CREW COORDINATION	AIRCRAFT/AIRCRAFT/AIRCRAFT/GROUND COORDINATION	COMMAND
	OV-1/ INTELLIGENCE/OBSERVATION				
	U-21/ COMMAND TRANSPORTATION				
	CH-54/ CARGO				
	CH-47/ CARGO				
	AH-64/ ATTACK				
	AH-1S/ ATTACK				
	OH-58/ AERO SCOUT				
	UH-1H/ UTILITY				
PRE-MISSION					
PLANNING					
TAKEOFF					
CLIMB OUT					
NAVIGATE TO DESTINATION					
PERFORM MISSIONS (MULTIPLE/BY ELEMENT)					
RETURN TO BASE					
APPROACH AND LAND					
DEBRIEFING					

FIGURE 3. TASK ANALYSIS DATA FORMAT

A representative list of the more probable missions to be analyzed is shown along the diagonal axis, and the eight mission phases on the vertical axis. The block designated "Perform Missions" obviously will involve multiple and alternative mission elements.

This analysis will be based upon and will follow completion of the following essential efforts:

- (1) Identification of aircraft/mission for analysis
- (2) Definition of crew positions for aircraft/missions
- (3) Development of typical mission scenarios
- (4) Definition of maneuvers for each aircraft/mission
- (5) Definition of system/equipment to be used

Step B-3. Commonality analysis. Many of the tasks required in operating Army aircraft will be common for different aircraft types and/or different missions. This step will identify those commonalities and thereby reduce the number of job tasks which have to be further analyzed to determine the skills and knowledges that must be possessed by all aviator applicants. It will also identify and define those tasks which are unique to specific aircraft crew positions for use in differential assignment.

Step B-4. Behavioral capabilities analysis. In this effort, each of the tasks isolated and defined above will be analyzed to determine all of the behavioral capabilities that will be required by different crew members in order to successfully perform these tasks. These "behavioral capabilities" will be specified insofar as possible in objective observable terms such as "detect tanks at 500 yards," "estimate distance from terrain within 20 feet under (specified) conditions of visibility," "manipulate rudder pedals located a (specified) distance from seat," or "maintain continuous attitude control requiring a (specific) amount of force."

The format and approach for the accomplishment of this effort are shown in Figure 4.

TASK CATEGORIES	COMMAND					AIRCRAFT/AIRCRAFT AIRCRAFT/GROUND COORDINATION					CREW COORDINATION					FLIGHT PLANNING AND NAVIGATION					HANDS-ON CONTROL				
	PERCEPTUAL VISUAL AUDITION	TRACKING CAPABILITY CONTINUOUS TRACKING DISCRETE TRACKING DEXTERITY	CONTROL MANIPULATION FORCE REACH ENDURANCE	COMMUNICATIONS WRITTEN/ORAL/ PICTORIAL COMPREHENSION WRITTEN/ORAL TRANSMISSION	STRESS TOLERANCE	JUDGMENT/ PROBLEM SOLVING	PERCEPTUAL VISUAL AUDITION	TRACKING CAPABILITY CONTINUOUS TRACKING DISCRETE TRACKING DEXTERITY	CONTROL MANIPULATION FORCE REACH ENDURANCE	COMMUNICATIONS WRITTEN/ORAL/ PICTORIAL COMPREHENSION WRITTEN/ORAL TRANSMISSION	STRESS TOLERANCE	JUDGMENT/ PROBLEM SOLVING	PERCEPTUAL VISUAL AUDITION	TRACKING CAPABILITY CONTINUOUS TRACKING DISCRETE TRACKING DEXTERITY	CONTROL MANIPULATION FORCE REACH ENDURANCE	COMMUNICATIONS WRITTEN/ORAL/ PICTORIAL COMPREHENSION WRITTEN/ORAL TRANSMISSION	STRESS TOLERANCE	JUDGMENT/ PROBLEM SOLVING	PERCEPTUAL VISUAL AUDITION	TRACKING CAPABILITY CONTINUOUS TRACKING DISCRETE TRACKING DEXTERITY	CONTROL MANIPULATION FORCE REACH ENDURANCE	COMMUNICATIONS WRITTEN/ORAL/ PICTORIAL COMPREHENSION WRITTEN/ORAL TRANSMISSION	STRESS TOLERANCE	JUDGMENT/ PROBLEM SOLVING	

CREW MEMBER

CREW MEMBER

CREW MEMBER
D 13

BEHAVIORAL CAPABILITIES

FIGURE 4. BEHAVIORAL CAPABILITIES ANALYSIS DATA FORMAT

The behavioral capabilities will be grouped, as shown on the horizontal axis at the bottom of the figure, into a number of categories descriptive of human capabilities that will facilitate further analysis required for the specification of "minimum aviator requirements."

The list of categories shown on the figure is preliminary and only intended to be representative of the categories to be included. It will be refined and extended prior to accomplishment of the analysis.

As noted, the capabilities required by the pilot and copilot will be separately designated. The tasks to be analyzed will be grouped as shown on the diagonal axis at the top of Figure 4 according to the five categories used for their identification in the task analysis.

Step B-5. Assessment dimension synthesis and specification. In this step, all of the behavioral capabilities identified and defined in the preceding steps will be synthesized in terms of the "assessment dimensions" defined below. An assessment dimension is a trait, attribute, ability, skill, or knowledge possessed by a candidate along which he may be measured or judged as to his suitability for entering aviator training, e.g., height, neurological disorders, eye-hand coordination, visual acuity, etc.

Assessment Dimensions (Major Categories)

Medical - The physiological, anthropological and psychiatric requirements, e.g., the standards given in AR 40-501 with modifications and amplification.

Educational Achievement - The measured achievement levels on specified capabilities, e.g., reading comprehension. Operationally defined as the score on a specific test of the trait, e.g., the Wide Range Achievement Test.

Intellectual Capacity - The measured capacity or ability on specified standardized tests, e.g., abstract reasoning, spatial relations or short-term memory. Operationally defined as the score on a specified test, e.g., Wechsler Adult Intelligence Scale.

Perceptual Ability - The measured response to specified stimuli - such response being conditioned by ideational associations which modify the primary sensation to the stimulus, e.g., per-

ceptions of depth, motion, distance, etc. which are operationally defined by the context or situation under which they are measured.

Personality Traits - Mesurable modes of behavior of the individual in his interaction with others, e.g., assertive, self-sufficient, tense, reliable, etc. These traits are operationally defined by scores on instruments designed to measure such traits, e.g., the Sixteen Personality Factor Questionnaire (16-PF) or the Gordon Personal Inventory and Gordon Personal Profile.

Psychomotor Ability - Muscular or motor action following directly from a mental process or perception, e.g., the coordinated manipulation of the aircraft controls, or, more operationally definitive, eye-hand coordination as measured by a specifically configured test apparatus.

Experience - (Background, biography) verifiable past behaviors which may be identified and may be related to success or failure for training as an army aviator, e.g., leadership behavior as demonstrated by being an officer of an organization, dependability as demonstrated by having held a full- or part-time job for a period of eight months or more, knowledge of tactics, etc.

Step B-6. Assessment dimensions measurement analysis and definition.

In this step the characteristics that will be required in measurement techniques and procedures to adequately assess the extent to which candidates possess the traits, skills, and abilities defined by the assessment dimension will be specified. It is proposed to develop a format for, and where possible, present data in terms of the relationship between assessment dimensions and probability of success in operating and employing Army aircraft.

The remaining steps will be common to both Track A and Track B.

Step 7. Tradeoff of job demands versus existing requirements and measurement techniques. Requirements as determined by the task analysis will be compared to those determined from Track A, and a final enumeration of minimum requirements will be made. Requirements will be enumerated across missions by aircraft and crew positions. Where possible, data will be presented in terms of the success probability relationship noted above.

Step 8. Specification of areas of data deficiency. An itemization of those areas in which data are insufficient for establishing minimum requirements and/or selection methods will be made. An order of priority will be established for research into these areas in terms of their importance to the selection of applicants who meet operational requirements.

Step 9. Final report (products of the program). The final report will consist of the following items:

- (1) Review of findings presented in the interim report.
- (2) Delineation of requirements by aircraft/aircrew position as determined from task analysis.
- (3) Final list of requirements based upon consideration of findings of the interim report and those of the task analysis.
- (4) Success probability/requirements relationship charts where data permits development.
- (5) Identification of those areas in which data are insufficient for definitive recommendations as to the appropriate minimum standards with recommended priorities for their investigation.

IV. RECOMMENDATIONS:

In order to accomplish the study in the most expeditious manner, it is recommended that:

- (1) Step 1 of the plan be accomplished in-house.
- (2) The Track A effort be accomplished in-house.
- (3) The Track B effort be accomplished via contract with an outside agency.
- (4) Steps 7, 8, and 9 be accomplished jointly by in-house and contract effort.

SECTION V

MANAGEMENT - MISSION TRACK SYSTEM

A. REQUIREMENT: To review the management and effectiveness of developing the required skills and career patterns.

B. BACKGROUND:

1. Training:

a. The Warrant Officer Flight Training Program as initially instituted in the early 1950's, consisted of 150 flight hours. One hundred thirty five hours were given in three phases: A presolo phase (10-15 hours), an intermediate phase with a progress flight check at 64 flight hours, and an advanced phase which culminated in a check flight at the 135 flight hours level. The student then went into a "transition" phase. This phase did not qualify the Warrant Officer Candidate in the Army Cargo Helicopter Pilot's Course, but only familiarized the students with more complex and larger helicopters such as the H-19 and H-25. After graduation the new warrant officers were qualified in the cargo aircraft of the day, the H-21 and H-34 helicopters. As these helicopters began to arrive in field units, advanced training centers were established. The H-34 transition course was located at Fort Sill, Oklahoma, while the H-21 transition course was taught at Fort Riley, Kansas. Those courses were attended in a temporary duty status.

b. In the 1956-1957 time frame, a policy was established that warrant officers qualified in single rotor cargo helicopters would continue in that type of aircraft. The policy was feasible with the single rotor series of H-13/H-23 observation helicopters, and utility helicopters such as the H-19, H-34, H-37, and in later years, the CH-54 cargo helicopters. The tandem rotor qualified aviator progressed from the same basic training observation helicopters into the H-25 in the transition phase, into the H-21 and, finally, into the CH-47 series tandem rotor helicopters.

c. In the late 1950's the training system was changed in two ways: warrant officers were finally permitted, after flying such complex aircraft as the twin engined CH-37 to become qualified in fixed wing aircraft. During this same period, the first series of the UH-1 helicopter came into the inventory in limited numbers. The more experienced high cargo time warrant officers were the first selected for training in fixed wing aircraft and the turbine powered UH-1A. The general trend by warrant officers at that time was to attempt to be-

come qualified in as many different aircraft as possible. This was not difficult to accomplish since neither the aircraft itself nor mission orientation was particularly complex. Missions were of a common character; transport, radio relay, search and rescue, cargo and resupply.

d. Vietnam Era Training. The Vietnam conflict saw a rapid growth in helicopter flight training coupled with statutory changes which required Army Aviators to have a minimum of 210 flight hours. There was a presolo phase taught in the Hughes TH-55, OH-13's and OH-23's at Camp/Fort Wolters, Texas. Upon completion, students were transferred to Fort Rucker where they received instrument flight training in the OH-13, a fully instrumented observation helicopter. The limited numbers of UH-1B utility helicopters, available to the aviation center were utilized in a tactics phase to prepare the students for Vietnam era tactics and techniques. During this period, multi-aircraft qualifications were common. It seems that many aviators were given additional transition courses enroute to second or third tours in Vietnam. This policy was satisfying to the individual and it did reduce combat exposure on subsequent tours, as the CH-47/54 or fixed wing aircraft assignment usually had less exposure to hostile actions than continuous airmobile operations.

e. Current Training. Today, total flight hours required to gain recognition as a rated military pilot is up to the discretion of the Service Secretary. The Army aviation program initiated in June of 1977 is a revised 38 week course of instruction. This course consists of a total of 175 flight hours taught in a presolo and primary phase in the Hughes TH-55 helicopter. This is a civilian contract phase of training, after which the student transitions into the UH-1H helicopter. The student then returns to military instruction for a 25 flight hour night phase utilizing night vision devices. Night navigation and night nap of the earth flight training is followed by a 60 flight hour, eight week combat skills training phase. The combat skills course is split into two phases with 25% of the students taking their training in the observation helicopter (OH-58) and the other 75% in the UH-1 utility helicopter. The students graduate and join utility aircraft/observation helicopter type units/assignments.

2. Career Assignments. DA Pamphlet 600-11, Warrant Officer Professional Development, projects utilization tours of three years. Upon completion of the 3 year service obligation, those who do not desire to continue their service are released. The other 64% who must request voluntary indefinite or RA status, may be selected for attendance at the warrant officer advanced course. During this tour they will receive a second aviation skill; in aircraft maintenance, aviation safety or in the operation and training area. After the initial

three year commitment some warrant officer aviators are selected for an additional aircraft qualification. Today, the additional qualification is limited to just one. No longer under MILPERCEN policy will the warrant officer aviator be permitted multiple aircraft qualifications. This career pattern reduces training costs associated with multiple aircraft qualifications. Unfortunately, this policy also insures that units having "advanced aircraft" i.e., AH-1, CH47/54 or fixed wing receive a disproportionate share of experienced aviators. This leaves the utility and observation helicopter units populated by the new inexperienced aviator who reported to his unit directly from initial flight training. Discussions with warrant officer aviators selected for additional aircraft qualifications reveal that they did not feel fully confident in the new aircraft mission until they had acquired about 200 flight hours.

3. The current aircraft in the active Army inventory consists of the aging UH-1 fleet, the OH-58 observation helicopter, the CH-47/54 cargo helicopters; and the AH-1G/S attack helicopters. The fixed wing fleet consists primarily of the OV-1D, the U-21, and C-12, (Utility twin turbine powered, aircraft). The remaining U-8 reciprocating engine fixed wing aircraft will be phased out of service. The rotary wing picture will be changing. The OH-58 will be upgraded to a "C" model and eventually replaced by the advanced scout helicopter in the mid 80's. The UH-1 helicopter density will be reduced slightly in 1978, as the first of the UH-60A, twin turbine utility helicopter (UTTAS) enters active service. The CH-47 A and B models will undergo a modification bringing its capability equal to that of the CH-54. The AH-1G's in the inventory will be modified and upgraded to the AH-1S series of anti-tank helicopters to be supplemented in 1983 with AH-64 advanced attack helicopters. In the fixed wing area, the U-8 and T-42 aircraft will all be replaced by the growing U-21/C-12 fleet, and the total numbers of OV-1's will be reduced. All of the aircraft by 1983, except the observation helicopter will be multi-engined, sophisticated aircraft with night vision capabilities, multi-communications, anti-radar/air defense warning devices with greatly increased pilot workloads.

4. Operating Costs.

a. The cost of operation of the aircraft will be increasing. Changes include high procurement and fuel costs. The current '78 OMA operating costs *based on POL costs and Field OMA Stock funded repair parts (DAMO-RQD) for the training fleet are:

TH-55	\$28.00 per hour
OH-58	49.00
UH-1	104.00

AH-1	204.00
CH47 A/B	516.00
CH-54	516.00
OV-1	201.00
T-42	59.00
C-12	55.00
U-8	61.00
U-21	84.00
OH-6	47.00

b. The projected costs on the new aircraft are as follows:

UTTAS	300
CH-47D	-
AAH	-

5. Experience:

a. The Army does not formally define aviation experience. Informally, experience has been defined in the past in terms of flight hours. A pilot with 2000 hours was considered to be more experienced than a 300 hour pilot. This approach has little validity in an environment characterized by realistic simulators and mission type aircraft. An attack helicopter pilot with 200 mission hours and 500 hours of total time is more qualified and experienced in attack helicopter operations than an individual with thousands of hours of fixed wing flight experiences who receives an attack helicopter transition. Tactics, nap of the earth navigation, anti-air techniques, and weapons systems have all drastically changed since the Vietnam era.

b. The Air Force defines experience in their publication, "Rated Management and Distribution Plan." In general terms, an experienced pilot is one who has 500 mission hours in type, series and model aircraft or 1000 hours of instructor pilot or first pilot time, of which 300 hours are mission flight hours in that series and model aircraft. USAF is considering changing these experience criteria due to the increasing use of flight simulators.

c. The U.S. Navy considers those who have completed a sea tour and are on a second sea tour as experienced. In their terms, it represents about 200 carrier landings. In the patrol squadrons, experience is based upon numbers of approaches and instrument procedures executed.

6. Management: The USAF has developed an extensive management plan for all "rated" duty positions, i.e., pilots, navigators, load masters, weapons systems operators, and flight engineers. Each of these, commissioned officer or enlisted, is addressed in the plan.

a. USAF flight training is a 1.3 year experience in undergraduate pilot training prior to receiving a rating. This plan defines experience by aircraft and mission, and determines the percentages of assigned pilots who must be experienced to allow that unit to maintain combat readiness. This same management plan takes the congressionally approved annual flying hour program and converts this factor to the number of months it will take for a new pilot just out of undergraduate flight training to gain the designated level of experience. It also determines the number of months that it will take a pilot coming from instructor status to gain experience (1000 hrs of instructor or first pilot time of which 300 is mission hours). Based upon the time needed to gain experience, the force management plan determines how many new (direct from undergraduate flight training) and how many instructors from undergraduate training courses, can be placed in the force and still maintain the desired experienced level, and therefore, unit readiness. The USAF does this by aircraft and model, i.e., F4H, RF-4E, F4N, etc. After determining the infusion capability from both sources of pilots, the force is structured and a distribution plan is developed. Those new graduates who can not go directly into an operational squadron, are cycled through an instructor pilot training program to become the instructor in the undergraduate flight training program. The Air Force student who completes the training program becomes rated but is not qualified beyond training aircraft.

b. The USAF student submits a preference statement while in undergraduate flight training. He selects the type of aircraft he desires to fly from the following categories: fighters, bombers or transports. A board of instructors in undergraduate pilot training reviews those who desire to go into fighter aircraft (TAC fighters, reconnaissance or interceptors) and based on their observations of the student during flight training, as well as needs of the service, select those students to be qualified in fighters.

c. After graduation from undergraduate pilot training, paid from Program 8 pilot funds, the newly graduated pilot is then sent to the appropriate command for transition training in the aircraft he will fly in the unit. These schools are run by major commands, (TAC, MAC, or SAC) and are funded by Program 2 funds. With rare exceptions, once an individual is qualified in an operational aircraft, that is the only system he will operate. There are no multi-aircraft qualifications. This provides the Air Force with a high level of experience, about 37-40% in each unit through continued assignment not only by mission but by a specific aircraft in that mission area.

C. DISCUSSION

1. In the 50's-60's, pilots accomplished similar missions in common aircraft in a combat support and combat service support role. Today's aircraft have specific missions as determined by the table of organization and equipment. The observation helicopter pilot in an air cavalry unit or attack helicopter company is a combat leader, the battle captain: a coordinating, controlling and participating member of the combined arms team. The observation helicopter pilot in the brigade flight section has to accomplish many of the same tasks as the scout pilot, but primarily is in a transport, command and control and support role. Lateral assignment mobility between those same aircraft of different units, frequently done in the past, would be of doubtful wisdom today. A commander would be hard pressed to insure the maintenance of the combat readiness of an air cavalry unit if it were fully manned by scout pilots experienced only in brigade flight section missions.

2. The complexity of today's aircraft and weapons subsystems radar warning devices, navigation systems, plus the differing tactics and techniques of various units, mitigates against frequent shifts between units or multiple aircraft qualifications. The Army's annual aviation written examination in FY 78 will be by aircraft assignment. It will be mission oriented and thorough in detail. The annual instrument check ride and instrument revalidation will be given either in the aircraft the pilot normally flies or in a flight simulator of that type if available. The Aircrew Training Manuals (ATM) being validated for use and implementation during FY 78/79 will identify specific flight training requirements, standards and conditions by aircraft. The ATM will eventually be the basis of the funded flight hour program. Administratively, the Army aviation program is stressing specialization in an aircraft and mission. Written and performance-oriented individual training/testing requirements such as ATM and ARTEP will not allow multiple aircraft qualifications.

3. Some goals of personnel management are; to provide experience to a unit, to provide a mobilization pool for wartime, and to determine training requirements while reducing personnel turbulence. Management and distribution should then distribute the experience and inexperience across the MOS providing units a balance of old and new. The current management plan, and career progression patterns rewards the quality aviator by qualifying him in a new aircraft and, usually assigning him a new mission to learn. This acts to constantly force the recent flight school graduates into observation and utility helicopter units, and concentrates senior warrants in cargo helicopter and fixed wing units. This leaves one of the most difficult and complex jobs in Army aviation, the scout pilot, to be consistently filled with the least experienced group of pilots, the recent Fort Rucker graduate.

4. The current policies try to provide a pool of qualified aviators by MOS, about 1.5 qualified per each requirement. This allows for the school, transients, and hospital account and leaves some assignment flexibility within the rules/guidelines on frequency of PCS moves, etc. There has been little interface between ODCSOPS requirements, force development in aircraft asset distribution, introduction of new weapons systems, force development changes, and MILPERCEN on long range planning and training forecasts. An example is the recently awarded contract to upgrade the attack helicopter fleet to the TOW equipped AH1-S model. Current Additional Skill Identifiers, (ASI), course listings, etc., do not allow MILPERCEN to determine those 100E attack helicopter warrant officers available in the system and qualified in the TOW weapons system, to allow for accurate training requirements by number and assignment in the POM years tracking. Additionally, the distribution plan scatters the AH-1S aircraft initially in units throughout CONUS.

5. The current student input into flight training is inadequate to match the anticipated losses. Output from flight school has been straight lined at 465 a year. Projected losses range from 384 in FY78, to about a 570 average per year. The shortage is made up by recall throughout the fiscal year. Shown below are total losses with some of the major contributing reasons.

<u>FY</u>	<u>TOTAL LOSSES</u>	<u>2ND PASS OVERS</u>	<u>RELEASED FROM A/D</u>	<u>COMPLETION OF OBLIGATION</u>		<u>CLASS SIZE</u>	<u>RESIG- NATIONS</u>	<u>DEATHS</u>
77	629	152	163	89	OF	293	27	7
78	384	0	118	65	OF	235	22	8
*79	563	145	118	114	OF	344	20	8
*80	570	145	118	90	OF	?	20	8
*81	All data continues as shown							

*Projected data

In FY 77, due to lower attrition in flight training, 499 were graduated and 261 were recalled to keep the force at budgeted strength.

6. Assignments for specific 100 series MOS, other than 100B, is through reassignment of qualified personnel after planning for future training requirements has been accomplished.

7. Planning is made more difficult due to the erratic and fluxuating losses of aviation warrants. During FY 77 MILPERCEN planned for 579 to leave the service for all reasons. Actual losses amounted to 756. Programmed output from the training center was 465. Actual graduates numbered 499. The planning problem is further compounded by the fact that there is no "year-group" within warrant officer ranks. Projected losses should be based and developed on months of active Federal service by MOS, 100B, C, E, etc., and retention rates for reasons shown below are questionable.

<u>START FLIGHT TNG</u>	<u>3YR OBLIGATION COMPLETE</u>	<u>RETENTION RATE</u>	<u>ACCURACY AFFECTED BY</u>
FY 68	FY 71	17.7	Direct Appointment Program
FY 69	FY 72	21.3	Direct Appointments and Early Outs
FY 70	FY 73	28.5	Direct Appointments and Early Outs
FY 71	FY 74	39.4	Direct Appointments and Early Out
FY 72	FY 75	55.1	Early Out Program
FY 73	FY 76	71.5	Only Year Not Affected By Changing Policies

8. If the Air Force approach of mission assignment during flight training and repetitive assignments thereafter were applied to Army Aviation, savings would be realized. It would also supply about 11% of the MOS each year, which could be accumulated without destroying the experience level of any one unit/MOS. If all warrant officer candidates were tracked in a mission aircraft, the percentage to sustain the observation, utility, attack and CH-47 cargo would be as follows:

Observation	22%
Utility	38%
Attack	31%
Cargo	9%

9. This approach does not address CH-54 cargo helicopters or any of the fixed wing aircraft. This was done to allow for relief of an aviator who may tire of one specific mission during some stage of his career. The utility pilot qualified today in the UH-1 could look forward to moving up into the twin engined UTTAS in FY 79. The attack pilot would move from the AH-1S into the advanced attack helicopters in 1983. The CH-47 pilot would qualify in the "D model" and the observation pilot would go from current models into the improved OH-58C and possibly into the advanced scout helicopter (ASH) in the late 80's.

10. A mission track program would have to be implemented over a period of years to insure fair and equitable treatment, during the transition period, to warrant officers now in the system who have been led to expect advanced aircraft qualification.

a. Utilizing the mission tracked system of instruction in FY 79 as an example, the following would be the break-out of training.

Category of Graduate	Warrant Officers		Commissioned Officers		
	Initial Entry	From Field	Initial Entry	Field	NG
Graduate (Total)	465		365		
Scout 22%	= 103		80		
Utility 38%	= 176		139		
Cargo 9%	= 42	33	33	19	40
Attack 31%	= 144	90	113	64	
	465	123	365	83	40

b. TRADOC has directed that courses be developed for a self progression mode. The field input could be trained either by superimposing those students on the initial track, or continue with the current transition course.

11. The Mission Tracked Program could allow for consolidation of training at Fort Rucker by merging the AH-1 and CH-47 transition courses into the initial qualification course. Those requiring transitions from the field, could be self paced and added to the initial entry students. This would allow for consolidation of flight instructors into one course. There would be a modest initial expense to establish the mission tracked course.

12. No changes in training dollars could be accommodated in FY 78 or FY 79. Changes requiring funds would have to be identified in the FY 80 POM submission.

13. Current management planning would need revision to allow for identification of training requirements by type aircraft/MOS and a supporting distribution plan.

14. The dual tracked initial training contains 60 flight hours in each track; 25% of the students fly observation/scout helicopters and 75% utility helicopters. The first class will not graduate until February 1978. It would be appropriate to monitor the success of this program prior to initiating other mission tracks by adding attack and cargo tracks. It should be noted that with the exception of the observation helicopter, all other helicopters in the active Army fleet are operating with a pilot/copilot configuration. This means that the

inexperienced pilot, well qualified in the mechanics of flight and mission responsibilities, will be working and gaining experience as the junior member of more senior and mission experienced crew.

15. To properly develop new or major modified courses under the Instruction System Development Model, TRADOC Reg. 350-10, and the TRADOC School Model organization, will require time. This course normally requires preparation of a "program change proposal" which identifies all costs to implement a new or revised course. The total preparation and validation of a program change proposal takes considerable time and should not be short circuited in the interests of expediency as manpower, support or other costs could be overlooked.

D. FINDINGS:

1. Continuation/retention rates do not apply to warrant officers due to the varying lengths of service at the time of appointment. The valid base for such continuation rates would be months of active Federal service (not months of active Federal commissioned service).

2. Short falls between budgeted strengths and active duty strength is made up in the warrant officer grades by direct appointments, additional training outputs, or a recall program.

3. Assignments to fill specific aircraft qualifications (MOS requisitions for warrant officers) are accomplished through reassignment of qualified personnel, or transition training for personnel enroute to new assignment. This provides, under current policies, two major aircraft qualifications to each warrant officer. This allows assignment officers greater flexibility in future assignments, but also provides for potential mal-assignment at post, camp or station. For example, twenty-six percent of the aviation warrant officers have been directed to assignments in positions other than those against which the requisition was submitted.

4. There has been little long range planning for anticipated field and training requirements in the out years. Accessions are based upon anticipated losses on a year to year basis and adjusted as the year progresses as the actual number of losses become known.

5. MILPERCEN Warrant Officer Division is gathering data which will allow for more accurate planning and forecasting.

6. Although the current training policy is meeting the needs of the field, it appears that providing aircraft qualifications by mission

track; observation/scout, attack, cargo and utility, would be less costly in training costs and manpower.

7. Increased flight hour costs of new aircraft will tend to preclude multi-aircraft qualifications. This policy is also affected by the annual written examination, annual instrument recertification and the Air Crew Training Manuals applicable to warrant officer aviators on an aircraft/mission basis.

8. Army Research Institute Field Officer, Fort Rucker, in conjunction with the Office of the Surgeon General, is developing measurable requirements by type aircraft for physical, mental and mission requirements. These analyses will allow for better selection methods to identify the proper individual for best utilization in aircraft and mission.

9. The mission tracked system, similar to the U.S. Air Force training program where pilots are assigned into TAC, MAC or SAC during initial flight training, would provide a better qualified pilot to the field. The combat skills phase of the initial entry program should provide approximately 60 flight hours in the mission aircraft. Fewer flight hours may be used through the use of simulators, now under testing, than the current training program/policy.

10. Repeated aircraft and unit assignments would elevate the experience level in those units. Infusion of newly qualified personnel by aircraft qualifications would be approximately 11% of the force each year - a number of newly qualified aviators which could more easily be absorbed into a unit.

11. Repeated assignments and limited dual qualified personnel available will preclude installations from directing newly arriving personnel to fill other requirements. Execution of this proposal could require a much improved management plan at MILPERCEN.

12 MILPERCEN would need a management and supporting distribution plan to provide better and more accurate training determinations for the POM years in conjunction with changing unit requirements and aircraft distribution plans from ODCSOPS.

E. RECOMMENDATIONS:

- 1 Mission tracked initial flight training program be prepared for implementation.
2. Monitor success of current limited tracked program to determine effectiveness/validity.
- 3 Develop program change proposal for total cost implications.
4. Implement attack track in FY 79 if no change in budget required, or include in FY 80 POM for attack and cargo mission tracks.
5. MILPERCEN in coordination with ODCSOPS, develop management and distribution plan.

SECTION VI

RETENTION POLICY

A. REQUIREMENT:

To review the current retention policy or service obligation incurred by personnel completing initial flight training and follow-on training in view of the relatively high costs of the training, and the training required to maintain proficiency on current and future sophisticated, systems with demanding tactics.

B. BACKGROUND:

1. Historically the service obligation and release policy of aviators has adjusted in the past to meet the needs of the services, the availability of candidates and the civil demands for aviators.

a. An aviation cadet in 1925 (after selection for the program) was sent for a year of flight training. After completion of initial training, the cadet, still in cadet status, was assigned to an operational squadron for the two year training period. Upon successful completion of this on the job training period, the cadet was discharged from enlisted/cadet status and immediately commissioned in the Army Air Corps Reserve. He was then released back to his home and could, if budget and space constraints allowed, be brought back on active duty for a maximum of two additional years, flying as a commissioned officer.

b. In the mid 1930's, the time spent with an operational squadron prior to commissioning had been reduced to one year with other commitments and obligations remaining unchanged.

c. The goals of these programs were to train a pool of pilots for eventual mobilization and, as a stated objective, to provide qualified pilots for the new and growing airline industry.

d. Since the 1950's, the Army has required a three year service obligation from commissioned and warrant officers completing fixed wing qualification training and Medical Service Corps commissioned officers and warrant officer candidates completing the Army Cargo Helicopter Pilot Course. The other services, Air Force, Marine Corps, Coast Guard, and eventually Coast and Geodetic Survey all had similar obligations.

2. Service comparisons:

a. The increasing costs of flight training, equipment operation, and maintenance complexities, have caused service obligations to increase. The service obligation and total commitment is as follows:

<u>Service</u>	<u>Length of Initial Flt Training</u>	<u>Service Obligation upon Completion of Initial Training</u>	<u>Total Commitment</u>
- Army	9 months	3 years	3 3/4 years
- Air Force	1 year	5 years	6 years
- Navy	1 year		
Pilot	1 1/2 years	4.5 years	6 years
Intercept Officer	1 1/2 years	3.5 years	5 years
- Marine Corps	1 1/2 years		
Pilot	1 1/2 years	4.5 years	6 years
Intercept Officer	1 1/2 years	3.5 years	5 years
- U.S. Coast Guard	1 1/2 years		
Fixed Wing	14 months	5 years	6 years 2 mos
Rotary Wing	12 months	5 years	6 years

b. Course costs were obtained to provide a comparison. The Army course consists of an initial entry rotary wing qualification program at Fort Rucker that graduates a "qualified" utility helicopter pilot, funded by Program 8 (training) monies, who is immediately deployable into field units. The Air Force costs shown below are for the Undergraduate Pilot Training Program that produces only a pilot with "Wings." The graduate is not mission qualified in any aircraft. The pilot is then sent to another school, operated by one of the major Air Force Commands, for qualification in a mission aircraft. The command operated courses are funded from Program 2, (OMA) funds. The follow-on courses range from eight months to a year and are accomplished in a permanent change of station status. The Navy and Marine Corps utilize a system similar to the Air Force.

c. Costs for initial Army entry pilot training (are estimated) and listed below along with Navy data provided by Commander's Martin and Miller, Telephone (202) 695-9544, and Air Force data from CPT Corwin, Telephone (202) 695-5220 or 54730. The Coast Guard trains with the Navy on a reimbursable basis.

- (1) Navy:

Jet	\$ 411,882
Propeller Patrol	153,887
Helicopter	115,726
Average Costs	\$ 241,170 per pilot
- (2) Air Force: \$238,737 in FY 76, per student graduated.
- (3) Army:
 - Rotary Wing Initial Entry Course
 - (a) Total cost including fixed and variable costs \$ 88,208
 - (b) Variable cost only - OMA, approximately \$ 31,520

3. Warrant Officer Candidate course make-up.

a. Upon institution of the warrant officer flight training program, selection for attendance to the Army Cargo Helicopter Pilot Course was limited to enlisted personnel (and a few warrant officers being retrained into another career area) selected from inservice ranks. Most candidates had several years service. One class, for example, had an average of ten years service among the enlisted candidates.

b. The demand for helicopter pilots during Vietnam caused heavy recruitment directly from the civilian population. Today, accessions into the program are 45% from Recruiting Command with 55% from inservice personnel. Two classes were cancelled for course realignment at Fort Rucker in FY 77 and, as a result, a suspension of inservice applications was imposed for six months to allow recruits with firm enlistment contracts to enter the program.

4. An analysis conducted, at the request of the Study Group was made by the Reserve Components Personnel and Administration Center (RCPAC) St Louis, Missouri, in an attempt to determine who leaves the Army - the individual who enlisted for the program or the inservice applicant. The analysis was requested to determine whether the Army is recruiting from the best source of applicants for retention and career stability, in light of rising training costs.

a. A records search was made at the Reserve Components Personnel and Administration Center by Captain Kwiatkowski, utilizing the following criteria to extract social security numbers from their data base of personnel transferred to the center:

- (1) MOS 100 series (Aviator)
- (2) Released after 32 Dec 1975
- (3) Date of Birth - after 1 Jan 47

b. There were 144 social security numbers that met the above criteria. One hundred of these SSAN's were random sampled. Captain Kwiatkowski then had to go to the archives and physically search through individual file folders searching for enlistment contracts and the data listed below:

<u>Reason for Release from Active Duty</u> (Total Records Reviewed)	<u>Enlisted Program</u> 82	<u>Entered from Inservice</u> 18
Completed Obligation	25.6%	22.2%
Requested Release	29.2%	22.2%
Request Reason: School	(50%)	
Job	(25%)	
Misc	(25%)	
Nonselected for Promotion	21.4%	22.2%
Miscellaneous (thought to include Reduction in Force)	23.8%	33.3%

5. The current training policy for warrant officers: After completion of the initial entry flight course, appointment as a warrant officer is made, followed by award of the Army Aviator rating. Warrant officers serve a three year obligation utilization tour. After this tour is completed, those not desiring to continue in service are released from active duty. For those remaining, additional flight qualification programs may be offered. The "total" course cost for this additional training varies, as do course length and service obligations. None of the obligations correlate with course lengths or costs. A partial listing is shown from DA Pam 351-4 (Formal School Catalog) with FY 78 dollar costs, arrived at by multiplying (76\$ x 1.1513).

<u>Course</u>	<u>Length</u>	<u>Status</u>	<u>Cost</u>	<u>Obligation (Yrs)</u>
Initial Entry Course	38 Wks	PCS	90,670	3
AH-1 Qualification	4 1/2 "	TDY	25,708	1
AH-1 Instructor Pilot	4 1/2 "	TDY	28,744	1
CH-47 Qualification	7 1/2 "	TDY	37,925	1
CH-47 Instructor Pilot	4 1/2 "	TDY	38,640	1
CH-54 Instructor Pilot	6 1/2 "	TDY	72,526	1
OH-58 Instructor Pilot	4 "	TDY	13,261	1
UH-1 Instructor Pilot	4 "	TDY	60,809	1
OV-1 Qualification	7 "	TDY	46,092	1
OV-1 Instructor Pilot	6 1/2 "	TDY	108,903	1
Fixed Wing Qualification	12 "	TDY	53,598	1

<u>Course</u>	<u>Length</u>	<u>Status</u>	<u>Cost</u>	<u>Obligation (Yrs)</u>
Avn Warrant Officer Advanced Course	21 1/2 "	PCS	17,274	2
Naval Test Pilot School	1 year	PCS	80,000	4

6. The Army regulation on service obligations (AR 350-100), prescribes the policy and means of notification pertaining to periods of obligated service incurred by commissioned and warrant officers attending courses of instruction and how these obligations are served in conjunction with precommissioning obligations. This regulation specifies that service obligations will be credited toward fulfillment of an initial obligation. This allows, with the exception of medical personnel, personnel fulfilling a three (3) or four (4) year precommissioning obligation and obtaining other courses requiring an additional two (2) or three (3) years of obligated service, to serve both obligations concurrently. The regulation does present some internal inconsistencies that make interpretation difficult.

7. Civil marketability. It was the intended purpose of early flight training, in the Army Air Corps to provide to the civil aviation sector, a pool of airline qualified pilots to assist in developing the fledgling commercial aviation ventures. Army aviation trained in excess of 20,000 helicopter pilots during the Vietnam conflict. The present force turns over every seven (7) or eight (8) years. The Army has provided the majority of the commercial helicopter pilots. Aviation warrant officer's released in the drawdown after Vietnam have, for the most part, dropped out of aviation. Today, due to high costs and the Aviation Career Incentive Act, the number of aviators to be trained each year are closely monitored and limited by the Office, Secretary of Defense (OSD). The decreasing number of pilots being trained by all services, coupled with an increasing {20%} commercial fixed wing airline market which peaks at the same time of mandatory airline retirements and coincides with a doubling of commercial helicopter operations in the next 10 years, makes civil marketability of flight skills a consideration in service obligations.

C. DISCUSSION:

1. Service obligations should be based upon the relative cost of a program. In civil schooling, the regulation states that the service obligation will be three times the length of the school course, starting upon completion of the training. Civil school costs include transportation and tuition costs. A year of civil schooling would cost about \$10-12,000 for a year. The service obligation is three years for any part of the first year. A flight course costing several times the amount of civil schooling and with almost the same degree of civil marketability, carries an obligation of one year. The following service obligations are proposed for the aviation courses listed below:

<u>Course</u>	<u>Proposed Service Obligation</u>
AH-1 Transition or Instructor Pilot	2 years
CH-47 Transition or Instructor Pilot	3 years
CH-54 Instructor Pilot	3 years
OH-58 Instructor Pilot	2 years
UH-1 Instructor Pilot	2 years
OV-1 Transition	2 years
OV-1 Instructor Pilot	3 years
Fixed Wing Transition	3 years

2. Current regulations allow for addition of obligations to four years. This appears proper and logical, but should be cumulative to the five year point where after serving part of one obligation, a new school obligation is incurred.

3. Civil marketability should be considered when selecting personnel for training. The dramatic increase in fixed wing airline requirements should cause consideration for fixed wing transition training to take place at an age, when coupled with the service obligation would place individuals overage for commercial airline service, in an effort to conserve Army resources.

4. The proposed mission tracked initial entry flight training, if adopted, may cause some dissatisfaction among aviators. However, this approach, will make a portion of the aviation warrant officer force less employable in the civil sector. Hundreds of flight hours in the Army's cargo or attack helicopters have little marketability, there being no comparable civil aircraft; however, this could change in the near future. Other services have experienced few retention problems with pilots who fly fighter aircraft, although retention is a problem with transport pilots operating military versions of civil aircraft.

5. The new aircraft now under procurement and due to join the inventory shortly will be more expensive. Most are multi-engined which will result in higher fuel consumption and fuel costs. Training costs must be reduced to the minimum, yet provide a qualified pilot to field units. One method of obtaining lower training costs would be to increase service obligations requiring one or two additional years service from the same individual.

6. Extension of service obligations would have an impact on training requirements. Output of the training center is not sufficient in the POM years, 79-83, to offset anticipated losses. Output from the school is programmed at 465 a year. With the exception of FY 78, losses are programmed to be near 550-570 a year. This has placed a dependency upon the recall program to make up the aviator short fall.

In FY 77, 499 Warrant Officer Candidates were graduated from flight training, yet 261 aviators were recalled to sustain the warrant officer rated aviator strength. The average loss at completion of the current three year obligation is about 35% or 160 of each year group. A one year obligation increase to four years would hold those aviators seeking release for an additional year. This would reduce requirements by about 40 pilots per year, thereby reducing dependence on the recall program. If the initial obligation were extended to five years, approximately 300 would be retained and recall dependency would be reduced by 60 per year.

7. Recruiting Command has expressed concern about the probability of successfully recruiting with a 5 year obligation and strongly favored a 4 year commitment. (ANNEX A). The Army does not require a college degree for entry into the program and does not offer commissioned officer status to the aviation candidate as do all other services. Therefore Army training costs are lower and a four year service obligation appears appropriate.

8. The Air Force and Navy are monitoring their attrition rates. They are considering either increasing the basic obligation by an additional year, or requiring a contract specifying a specific service obligation for training in those units which are consistently losing pilots to the airlines. (Navy patrol units have had 100% resignation rates within two years of training). If these services increase their initial service obligation to 5.5 years for the Navy and 6 for the Air Force, it would be appropriate to increase the Army obligation by an additional year to 5 years.

9. Dependency on the recall program should be reduced. The quantity and quality of recalled warrant officers is declining. Personnel released in 1972 at the end of U.S. involvement in Vietnam, have settled into other vocations, and are becoming less likely to be attracted by a recall program. Deterioration of aviation skills may operate to insure that those recalled are less qualified than those released for nonselection for promotion.

10. The source of candidates for the aviation program was reviewed.

a. There is more career orientation and higher retention of those recruited for the flight program from inservice applicants than the young person who enlists specifically for the flight training enlistment option. It appears inconsistent to stress recruiting for the program with Recruiting Command providing 45% of the accessions into the program, with the first taste of military life being an expensive flight program. Improved selection of qualified personnel could be made through observation of inservice personnel. They are older, more

mature, and have demonstrated their personal traits and leadership. When the inservice person volunteers for the program, he does so with some knowledge of and interest in a military career.

b. Current policy requires commissioned officers to serve two years in a primary specialty prior to attendance at flight training. The goal of this policy is to develop officers who are well grounded in the Army and specialty operations. Yet, the same basis of professional development is not apparently deemed necessary for the warrant officer aviator, who makes up 80% of the operational pilots. If recruitment were emphasized from inservice assets, a more mature responsible, career-oriented individual would be acquired.

D. FINDINGS:

- 1 Service obligations for initial flight training and additional flight training are not consistent in terms of cost, or comparable with civil schooling.
- 2 In FY 77, 64% of those completing their initial service obligation continued in voluntary indefinite status. Data on reasons personnel did not desire continued service are not known nor are these data collected.
3. The majority who leave service are those who enlisted specifically for the flight program as compared to those drawn from inservice resources. There is more career orientation from the the inservice individual who enters the program with a military background and is knowledgeable of a military career as compared to the enlistee facing his initial military experience in a high cost program.
- 4 Current source of accessions into the program is 45% from Recruiting Command and 55% from inservice assets. Actual FY 78 gains will show about 50% coming from Recruiting Command enlistments.
5. Extension of service obligation upwards from three years would reduce dependency on the recall program as current and projected training rates will not sustain the warrant officer aviator force.
6. Recruiting with a 5 year service obligation would be more difficult to acquire personnel as opposed to a four year obligation. Especially, since those who do not complete the initial flight training course become an Army enlisted person for the remainder of their total service obligation.

E. RECOMMENDATIONS:

1. Increase initial entry obligation to four (4) years.

2. Adjust service obligations based on cost, marketability as follows:

AH-1 Instructor Pilot course	2 Years
CH-47 Instructor Pilot Course	3 Years
CH-54 Instructor Pilot Course	3 Years
OH-58 Instructor Pilot Course	2 Years
UH-1 Instructor Pilot	2 Years
OV-1 Transition Course	2 Years
Fixed Wing Transition Course	3 Years
Naval Test Pilot School	4 Years

3. Make service obligations additive up to 4 years and serve in their respective component--active duty, USAR or National Guard.

4. Reduce input into initial flight training from Recruiting Command from 45% to 15%; and monitor why personnel leave voluntarily.

ANNEX A



USARCRM-M

DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY RECRUITING COMMAND
FORT SHERIDAN, ILLINOIS 60037

3 MAY 1977

SUBJECT: Proposed Enlisted Aviator Program

HQDA (DAPE-MPO-S)
WASH DC 20310

1. Reference letter, DAPE-MPO-S, HQDA, dated 30 March 1977, subject: Determination of Officer Requirements.
2. This Headquarters has evaluated the concept of the proposed enlisted aviator program and our capability to support the recruiting objectives. USAREC's ability to sell the option will be reduced significantly from the current WOFT Candidate Program; however, it has been determined that the recruiting objective could probably be accomplished.
3. The 5-year obligation will obviously be the biggest deterrent to recruiting for the program. Should the 5-year obligation be retained, the option might be more marketable if it provided for a 4-year written obligation upon successful completion of flight school. Additionally, reverting to a combat arms MOS for male enlistees, if flight school is not completed, will be a difficult selling feature and could easily have an adverse effect on future recruiting. It is understood that the needs of the Army and personal qualifications will be considered for women not completing flight school. Recruiting would probably be improved if this same criteria applied to male enlistees as well.

FOR THE COMMANDER:

A handwritten signature in cursive script, reading "Shirley R. Heinze".

SHIRLEY R. HEINZE
Colonel, GS
Chief of Staff

SECTION VII

AVIATION WARRANT OFFICER REQUIREMENTS

A. REQUIREMENT:

To examine the current procedures for stating and justifying aviation warrant officer requirements and recommend appropriate procedural changes.

B. BACKGROUND:

1. The process for determining, stating and justifying the total Aviation Warrant Officer requirements should reflect and be consistent with the approved force structure, tactical doctrine, and crew ratio of one crew per flyable aircraft.

2. The statement of personnel requirements during the Planning, Programming and Budgeting System (PPBS) is dependent upon the documentation which reflects the approved force structure and corresponding personnel requirements and authorizations. Frequent decisions are made during the planning, programming, and budgeting cycle which change the approved force structure and/or unit requirements and authorizations. These force and manning decisions, coupled with decisions which reflect manpower and budget constraints, interact to create differences between the actual personnel requirements that may exist and that which is documented, stated and justified in the budget request.

C. DISCUSSION:

1. The operation of Army aircraft requires the services of trained aviator personnel. Army aircraft, unlike some other items of military equipment, cannot be effectively operated in an emergency by other unit personnel who have not received formal training. Formal flight training requires considerable time; a minimum of forty-two (42) weeks is now required. Current HQDA staff planning for wartime operations is based on the 180 day scenario. The length of the formal flight training course precludes utilization, within the 180 day scenario, of personnel who enter formal training after combat operations commence. Upon mobilization, aviators from the National Guard, Army Reserve and the Individual Ready Reserve (IRR) could not be counted on as Active Army Unit fillers. The size of the IRR continues to decline. Utilization of Army Reserve and National Guard aviators to fill active units would require individual training on equipment not currently in reserve component inventories and could preclude the utilization of

reserve component units whose aviators have been used as fillers. To insure immediate utilization of aircraft assets during combat operations, trained aviator personnel must then be already on hand in or available for immediate reassignment to the units. Trained personnel, in the appropriate numbers will be available only if requirements are identified and plans for personnel procurement and training are formulated during and within the Planning, Programming and Budgeting System (PPBS).

2. Before total aviation warrant officer requirements can be accurately presented in the PPBS system they must be identified and reflected in specific documents. This documentation process, because of the numerous agencies, commands and methods involved may require a period of several months. Although a specific decision may have been made which changes the personnel requirements for a particular grade and MOS during a specified period, that decision must be reflected in the programmed force and the corresponding requirement and authorization document(s) before that change is accurately included in the PPBS.

3. The actual crew requirements to attain maximum utilization of Army Aircraft during combat operations, in accordance with current doctrine, are not reflected in current requirement documents. Current TOE's reflect a requirement of 1 crew/aircraft. This crew ratio would not permit sustained operation of those aircraft that could reasonably be expected to be available on a daily basis. The aircraft availability rate is based on the anticipated parts supply and maintenance capability and the availability of fuel and ammunition. Actual crew capabilities for sustained operations employing current tactical doctrine and operational techniques is not known, however, for analysis purposes a 140 hour/month limit was used. This crew capability was based on the Vietnam experience and may or may not be similar to crew capabilities during a future conflict. While the ARCSA III Study concluded that a crew ratio of 1.5 to 2.0 crews/aircraft is required for sustained operations, this increased ratio is not reflected in Table of Organization (TOE), Modified Table of Organization and Equipment (MTOE), and Table of Distribution and Allowances (TDA) documents.

4. There is neither a common viewpoint nor common usage of the terms "requirement" and "authorization". Force planners and programmers define the terms as follows for PPBS Computational purposes:

a. Structure Strength: The full strength TOEs and the "required" strength for units organized under MTOE or TDAs. The terms "TOE/TDA strength" and "structured strength" are synonymous.

b. Authorized Strength: The strength reflected in the "Authorized" column of TOE/MTOE/TDAs. It is that portion of the "required" manpower, as constrained by budget and force structure decisions for which a unit/command can plan and program.

5. Budget and manpower constraints do not always permit the staffing of all units at the TOE required (Level 1) level of fill. These constraints are reflected in an MTOE which authorizes a specified number of personnel by grade and MOS to each actual or programmed unit. Constraints applied in a non-TOE/MTOE unit are reflected in that unit's TDA. The total personnel authorized a unit by MTOE may or may not correspond to those required at Level 1 by the TOE document.

6. The projected aviation warrant officer requirements/authorizations for a specific time frame are made from an aggregation of organizational systems to provide the best data possible. Late or unexpected decisions effecting manpower or force structure which may occur outside the fixed cycle of any of these systems pay a price of delay in reaction time. This ultimately has an adverse impact on personnel/equipment/and fixed dollars. The emphasis on "plan/program ahead" cannot be overstated since the management information systems are only as accurate as the functional input.

7. ODCSOPS provides to ODCSPER a compilation of personnel needs by quantity, grade, branch, and MOS, for a specified future period through a Force Development and Management Information System (rDMIS) subsystem known as the Personnel Structure and Composition System (PERSACS). PERSACS information is derived by merging the personnel data for each unit in the approved, programmed force structure contained in the Force Accounting System (FAS) with the detailed requirements and authorizations data contained in the Army Authorizations and Document System (TAADS). TAADS contains documentation for units organized under an MTOE or TDA. For those units whose MTOE is not present in TAADS, information from the TOE computational system is substituted for the purpose of PERSACS computations. PERSACS states personnel needs in two quantities, those needed to staff all units at the required level (Level 1) and those needed to staff all units at the authorized level as reflected in TAADS/TOE documents. The PERSACS statement of needs is based and dependent upon the documentation that exists within the FAS, TAADS, and TOE computational system when the PERSACS computations are performed. The FAS contains unit personnel strength data for each category; officers, warrant officers, and enlisted, at the total level of detail only. PERSACS is dependent on data in the TAADS and the TOE system to provide the individual grade and MOS level of detail.

8. Under current procedures decisions are made at HQDA which change the number of personnel required or authorized a specific unit(s). Depending on the decision level, these personnel changes may in some cases be permitted without regard to the budgeted strength ceiling for a specific category or grade. These personnel changes are also approved without concurrent supporting TAADS documentation since the Army Forces Program system permits from 45 to 90 days to complete such documentation once the M-Force(FAS) has been updated. While procedures provide for immediately updating the unit strength data in the FAS, this is not always accomplished in a timely manner. Thus, the failure to update FAS sometimes results in the major command (MACOM) submitting a correct TAADS document that does not agree with the HQDA FAS file. While the MACOM is permitted a 45-90 day period to change and submit the supporting TAADS documentation, this 45 day period may in some cases extend past the suspense for a period of several months. This temporary mismatch in personnel authorizations data that exists between the FAS and TAADS systems may result in a PERSACS statement of needs that is less refined than would otherwise be submitted if both systems were documented to reflect current authorizations.

9. The current sequence for determining the firm aviation warrant officer budgeted end strength, the flying hour program and training program dollars are not synchronized. Firm aviation warrant officer budgeted strengths are not determined until extremely late in the PPBS Cycle. These strengths are derived only after all OSD and congressional constraints have been imposed and the total officer ceiling has been established (Annex A). Only then can DCSPER balance the available and budgeted assets against total force requirements to determine the final officer/warrant officer mix and the budgeted aviation warrant officer strength. However, by this time the flying hour program (OMA) and training program dollars have been fixed. This decision sequence does not result in training output and flying hour programs designed to match the budgeted end strength nor does it permit an accurate estimate of flying hours needed to meet unit training requirements.

10. The present and forecasted initial training output is inadequate to sustain the current aviation warrant officer force. As a result of this training shortfall, heavy reliance is being placed on the recall program to meet the budgeted strength. To meet the budgeted strength for FY 77, a total of 261 aviation warrant officer accessions from the recall program were required to augment the trained output of 499. The recall program will again be required in FY 78 to augment the budgeted training output of 465 if the budgeted end strength is to be met. Although some training costs may be realized by relying on the recall program to provide a significant portion of aviation warrant

officer accessions; the quantity and quality of personnel available for recall is steadily declining. While the budgeted strength has been maintained by relying on a combination of training output and recall accessions, there still remains a large shortfall between the budgeted force and actual mobilization requirements. With the recall pool steadily decreasing in both quality and quantity, the need to increase the training output has become increasingly important.

D. FINDINGS:

1. There is no personnel substitute for an aviator in units, e.g. Plt SGT for Plt Ldr.
2. An aviator cannot be trained in time to meet the 180 day scenario.
3. Trained aviator personnel must be on hand in, or immediately available for assignment to units to gain immediate utilization of combat assets.
4. Present TOE's do not represent the actual requirement. (ARCSA III=1.5 to 2.0 crews/aircraft) As a result the true total aviation warrant officer requirement is neither justified nor presented and therefore understated.
5. Unit authorization changes are being approved without timely submission of supporting TAADS documentation, and in some cases are being implemented without regard to budgeted strength/ceilings.
6. By the time firm warrant officer aviator budgeted strengths are provided, the flying hour program (OMA) and training program dollars are fixed.
7. Aviation warrant officer budgeted strength is determined after the total officer/warrant officer strength is approved by OSD/OMB.
8. Present and forecasted initial training output is inadequate to sustain the current aviation warrant officer force. FY 77 required 261 recalls in addition to the training output of 499 to meet the budgeted strength.

E. RECOMMENDATIONS

1. True requirements must be identified in TOE submissions.
2. Proposed MTOE documents should be required to accompany MACOM's request for authorization changes.
3. Synchronize force structure changes with the budget cycle.
4. Determine minimum warrant officer aviation requirements at the beginning of each Army POM.

ANNEX A

AVN WO REQUIREMENTS

(ARCS III PERSACS/BUDGET)

	<u>FY 77</u>	<u>FY 78</u>	<u>FY 79</u>	<u>FY 80</u>
REQUIREMENT	6088	6315	6388	7110
AUTHORIZED	5382	5745	6388	6676
BUDGETED	5508	5455	<u>DEC 77</u>	<u>DEC 77</u>
AVAILABLE TO FILL UNITS	4899	4868		
NOT AVAIABLE TO FILL UNITS	609	587		
TRANSIT SCHOOL, HOSPITAL	(386)	(367)		
REIMBURSABLES	(24)	(25)		
AVN WO APPROVED TO FILL OFFICER POSITIONS	(199)	(195)		

SECTION VIII

CREW REQUIREMENTS

A. REQUIREMENT:

To determine whether the current Army policy of assigning one crew per aircraft in TO&E units is adequate to support the combat missions assigned.

B. BACKGROUND:

1. The Army pays a certain price for the reliability, availability, and maintainability (RAM) it designs into the equipment it procures. Return on the RAM price can be viewed in two ways:

a. An item with high RAM values, which is also a comparatively low-priced item of equipment, returns value in terms of convenience. The item needs little attention and care, it works well and can be counted on to continue to work well. This convenience also supports an economic rationale for high RAM. Since fewer people are needed to maintain the item, fewer to operate and manage the support systems associated with the item; life cycle costs for the item are held down. Counted among such items are personal weapons, small vehicles, and nearly any item of equipment issued to the individual soldier.

b. An expensive item of equipment usually demands high RAM data. Reasons such as criticality of need in combat, safety, and return on investment supplement the reasons for high RAM given for the less expensive items. The greatest return on investment requires higher utilization. Higher utilization requires continued operation. Some such expensive items commonly include tanks, aircraft, artillery weapons, and other high dollar critical need items.

2. As RAM increases, the ability of a machine to operate continuously, or nearly so, quickly outpaces the ability of an operator. The operator/operators needs rest, food, and an amount of time each day to attend to personal needs. To receive the greatest return from our machinery, it becomes necessary to have additional operators for continuous operations. Industry has long recognized this requirement by setting up shifts, time sharing of expensive computers and assigning multiple crews for one aircraft.

C. DISCUSSION:

1. Tables of Organization and Equipment in Army aviation units assign one crew per aircraft. RAM data for aircraft is defined in terms of operational ready (OR) rates, and vary between 70-75% depending on aircraft type. That is, 100% of the subsystems are ready 75% of the time. OR rates will be higher for new aircraft now undergoing development as all RAM aspects improve. These OR rates mean that an aircraft can theoretically accumulate up to 500-540 hours of flight time during each 720 hour month with the remaining 180-220 hours being used to conduct maintenance. While these theoretical limits have never been approached, even during peak flying times in Vietnam, it is apparent that these limits far exceed the human limits imposed on flight crews. Current regulations limit flight crews to 140 hours per 30 day period. This limit is based on practical experience gained in Vietnam, but was rarely a 24 hour operation. With recently acquired night vision devices and navigational devices on new families of aircraft, the UH-60 and AH-64 will allow near around the clock operation. These capabilities coupled with greatly improved RAM will considerably improve our ability for continuous operations. The stresses and demands of terrain flying in a mid-intensity environment evoke the intuitive judgment that the 140 hour limit may be somewhat too high, never-the-less, the 140 hour limit is used for the remainder of this analysis.

2. Another way of viewing OR rates is in terms of additional crews available from non-OR aircraft to relieve the primary crews of OR aircraft. For example, if 100 aircraft are assigned and the OR rate is 75%, then 75 crews are available to fly the ready aircraft and 25 crews are available to relieve the primary crews. This is a built-in crew ratio of 1.33 crews per aircraft. If each crew accumulates 140 hours of flight time in a 30 day period, each OR aircraft will accumulate 186 hours. Similarly, if the OR is 70% the aircraft/crew ratio is 1.4, and the aircraft can accumulate a limit of 196 hours. This 6.5 airframe hours per day is still far short of the theoretical aircraft limit, but well within the practical maintenance limit.

3. Aircraft limits can be viewed in several ways. Aviation logisticians believe that present manning levels of maintenance units will support 8-10 hours flying time per day. In theory, an aircraft with a 75% OR rate should be able to attain 18 hours per day. In relating aircraft hours to crew hours, arithmetic computation i.e., aircraft hours per month divided by the limit of 140 crew hours per month, reveals the following:

<u>Aircraft</u> <u>hrs/days</u>	x 30	<u>hrs/mo</u>	<u>Ratio</u> <u>required</u>
5		150	1.07
6		180	1.29
7		210	1.50
8		240	1.71
9		270	1.93
10		300	2.14
12		360	2.57
13.6		408	2.91
14		420	3.00

If the aircraft is to fly 10 hours per day, the overall crew ratio should be 2.14 crews per aircraft. The temptation to multiply the number of aircraft assigned by the crew ratio should be avoided. Instead, to determine the number of crews required, multiply the number of OR aircraft expected by the crew ratio. For example, a light observation helicopter platoon of 12 aircraft with a 75% OR rate is required to fly 10 hours per day. 9 OR aircraft times 2.14 crew/aircraft = 19.26 crews; 20 crews, an increase of 8, can fly the required hours without exceeding 140 hours per crew.

4. Another approach to the question of aircraft limits versus crew limits is to examine a tactical scenario. An Attack Helicopter Company with 12 OH-58, 21 AH-1S, and 3 UH-1H aircraft are required to sustain fires against an enemy force. This will be done by rotating platoons with one platoon in contact, one at the forward area rearm/refuel point (FARRP) and another enroute between the area of operation (AO) and the FARRP. Each platoon, consisting of 3 OH-58 and 5 AH-1S helicopters will spend 20 minutes enroute to and from the AO, and one hour expending ammunition on the enemy targets. If expected to sustain a continuous 24 hour operation, the following model applies:

	<u>Platoon 1</u>	<u>Platoon 2</u>	<u>Platoon 3</u>
Take Off	0800	0900	1000
Arrive at AO	0820	0920	1020
Complete Mission	0920	1020	1120
Return FARRP	0940	1040	1140

Each platoon rotates in the above fashion for a 24 hour period, with each mission involving 1.7 hours of flight time and each platoon conducting eight missions in the 24 hour period. Combat damage, combat losses, and other unscheduled maintenance is not considered. Each of the flyable company aircraft (12 OH-58, 15 AH-1S) will fly 13.6 hours daily. This equates, under present manning criteria, to between 9 and 10 hours per day on each crew. This means that all crews, both OH and

AH, will reach the 140 hour limit in approximately 14 hrs. Given a current crew-aircraft ratio of 1.4 for the AH-1S (70% OK), what additional crews are necessary to limit all crews to 140 hours or less? For the AH-1S platoons 15 (OR A/C of 23 assigned) $\times 2.91 = 44$, an increase of 23 crews or 46 people. For the OH-58 platoon $9 \times 2.91 = 26$, an increase of 14 crews or, in this case, 14 people.

5. The U.S. Air Force uses crew ratios between 1.25 and 1.5 for their rotary wing aircraft (Annex A). This calculation is based on the number of aircraft assigned rather than the number of aircraft OR. That is, a unit assigned 100 H-53 helicopters would be authorized 150 crews. Assuming the OR rate to be 75%, the actual crew ratio is 2.00. While these ratios are authorized, it is unreasonable to expect the services to man at these levels during peacetime. Budgetary and strength limitations force the services to authorize these ratios but to carry certain numbers of them as wartime augmentations in much the same way that doorgunners are wartime augmentations for Army helicopters units. The Army will encounter difficulty in reaching these numbers. For example, approximately 256 additional attack helicopter trained warrant officers (MOS 100E) would be required to bring the ten attack companies in Europe and six in CONUS up to nine hour level. Similar adjustments would have to be made for commissioned officers and for commissioned and warrant OH-58 pilots. While the individual ready reserve (IRR) could be used to overcome these strength limitations, the IRR is not authorized attack helicopters. The National Guard, which will begin to receive AH-1S assets in FY 83, is designed for unit replacements only. One possible compromise would be to issue AH-1S aircraft to the National Guard and require them to train selected members of the IRR.

6. Other factors for consideration are as follows:

a. Sustaining with two attack companies of a battalion (12 hours on and 12 off) and employing the third company to mass fires occasionally will obviously decrease by half the flying hours of the companies in contact. Crew ratio then drops to 1.45. Required crews for the AH-1S platoon is 22, an increase of 1. For the OH-58 platoon, 1 additional crew is required.

b. Maintenance workload will increase. Approximately 3 additional maintenance crews will be required to handle the maintenance flow of 2 AH-1S aircraft per day and 2 OH-58 aircraft every two days.

c. Each team will reach the AO with 40 TOW missiles. That figure represents a potential expenditure of 960 TOWS per 24 hour period. By the same token, a company will consume nearly 21,000 gallons of JP-4 fuel during the same period under the model outlined.

FINDINGS:

1. Current crew staffing does not support doctrine or aircraft availability.
2. Aviation logisticians believe that 8-10 flight hours per day is the maximum limit that aircraft can be expected to fly given current levels of manning in the maintenance support system. If true, a crew ratio of from 1.71 - 2.14 is required under the 140 hours crew limit.
3. The ARCSA III study (Appendix U to Volume III) concluded that a 1.5 to 2.0 crew ratio is required for a sustaining operation. Appropriate changes to TO&E units have not been submitted.
4. The flight hour level that aircrews can tolerate is unknown. While this discussion centered on a 140 hour limit, this figure was based on Vietnam experience which would probably be dissimilar to that required in a future war due to changes in tactics, operational techniques to defeat the threat and near continuous operations (nap of the earth flight, etc). The maximum limit under the new parameters a crew can tolerate is unknown.
5. The flight hours an aircraft can reasonably be expected to fly on a daily basis is a function of parts supply, maintenance man-hours expended, and the availability of fuel and ammunition. While these figures, 8-10 hours, have a firmer basis in experience than do crew hours, the limits that can be expected are not well defined. The Air Force, for example, uses a logistics composite model to establish support requirements based on an expected rate of flying.
6. While the discussion has focused on an Attack Helicopter Company, other aviation units could have a greater or lesser crew ratio requirement depending on a variety of factors such as mission, type aircraft, type unit, and location. It is possible that some units could be manned at a far smaller crew to aircraft ratio than the Attack Company. For example, a TDA flight detachment with a mission of supporting range operations at White Sands Missile Range, could man at a .7 crew/aircraft ratio or less, providing crews for operational aircraft only. Exact needs of units for crew staffing should be developed based upon these considerations.
7. Reserve components will be of little assistance to alleviate Attack Helicopter shortages in the foreseeable future. The Reserve is not authorized any attack units and the National Guard will not receive prime attack helicopter assets until FY 83.

RECOMMENDATIONS:

1. Consider staffing all active duty attack helicopter units at 100% of present required TOE strength, with additional staffing based on adjusted requirements and subject to program budget review.
2. ODCSOPS develop utilization scenarios for each type of aircraft, unit and mission in mid-intensity conflicts.
3. ODCSLOG refine the maximum number of flight hours supportable by type aircraft and TO&E/TDA based on support considerations.
4. Office of the Surgeon General determine by aviation units, mission, and aircraft the maximum crew flight hour limits for sustained operations in a mid-intensity conflict.
5. TRADOC, utilizing the data from 3-5, develop crew staffing criteria by aircraft, TO&E and mission, and publish staffing for TDA units.
6. ODCSOPS in conjunction with the National Guard and Reserve examine the feasibility and timing of assigning limited AH-1S assets to the National Guard with the requirement to:
 - a. Train National Guard Attack Helicopter Units
 - b. Establish a nucleus for a mobilization training bases.
 - c. Provide Attack Helicopter training to selected members of the Immediate Ready Reserve.
 - d. Implement a mobilization designed reserve program for aviators to provide an immediate fill capability for active units.

ANNEX A



DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR MILITARY OPERATIONS
WASHINGTON, D.C. 20310

REPLY TO
ATTENTION OF: MFR

SUBJECT: USAF Crew Manning Criteria

1. Per 270900 Sep 77 telcon with LTC DAAB, USAF, subj as above the following information was gained:

a. Air Force fighters are manned at 1.33 or 1.31 to 1. That is for 100 aircraft, 133 crews are assigned. Driving consideration is the sortie generation rate, the amount of time it takes to rearm and refuel a fighter at home base.

b. Crew Rest and aircraft hours per day pace the larger multi-engine aircraft. Crew requirements range from 1.25 for the B-52 to 4.0 for the C-5A.

2. Per 270930 Sep 77 telcon with Maj Nemicheck, USAF, the following information pertaining to helicopters was gained. The UH-1N and F models are found in detachments of 3-4 helicopters. 5 crews are authorized for 4 helicopters or less. The H53 aircraft, used for search and rescue are manned at a 1.5 ratio.


GEORGE FULLER
Major, Armor

SECTION IX

AIRCRAFT QUALIFICATION TRAINING

A. REQUIREMENT:

Determine whether the current policy of having a requirement to attain 500 flight hours and three years experience prior to allowing transition into an advanced aircraft is desirable.

B. BACKGROUND:

1. DA Pam 600-11, Warrant Officer Professional Development, outlines aviation warrant officer development phases and specifies eligibility criteria for advanced aircraft qualification. Paragraph 6-13 specifies that entry into the second development phase (fourth year of rated aviator service), aviators will be considered for ADVANCED AIRCRAFT QUALIFICATION in attack helicopters, cargo helicopters, or fixed wing aircraft.

2. Prerequisites and hours of flight instruction for specific aircraft are listed in TC 1-34, Qualification Training in Army Aircraft. Appendix A, as a course prerequisite requires transitioning aviators in the CH-47 and CH-54 aircraft to have a minimum of 500 hours rotary wing time, either as pilot or instructor pilot, of which 250 hours must have been logged in utility or cargo helicopter.

3. Military Training Policy and Procedures (Policy # 18-77) Warrant Officer Division, MILPERCEN, discusses policy concerning warrant officer aviator functional training and years in service required for assignment to aircraft qualification courses. This policy for the second development phase, states in part:

"(1) No warrant officer aviator functional training will be given prior to completion of THREE YEARS as a rated aviator. At the three year level, only aircraft qualification courses will be considered.

(2) Training will be limited to a maximum of one ADVANCED AIRCRAFT and one career track e.g., maintenance, safety, or operations and training".

C. DISCUSSION:

1. The requirements of TC 1-34 and DA Pam 600-11 have combined to evolve what is commonly referred to as the "Advanced Aircraft

Transition Policy", e.g., 500 flight hours and 3 years experience. Technically speaking, it is not Army policy in the true sense of the word because it lacks definition and a written policy statement. The term "Advanced Aircraft" is not specifically defined in any military publication, therefore, it means different things to different people. This tends to cause confusion as to what constitutes an advanced aircraft.

2. DA Pam 600-11 implies that advanced aircraft are "attack helicopters, and fixed wing aircraft". TC 1-34, implies that it is the CH-47 and CH-54 helicopters exclusively. This raises the question as to whether or not the term "advanced aircraft" requires definition. The Air Force and Navy do not classify any of their aircraft as being "advanced". The FAA categorizes aircraft classes by weight, i.e., over 12,500 lbs certificated weight, however, they do not define the term. This question can only be resolved by either defining the term and establishing a written policy or eliminating the term from our military publications, such as DA Pam 600-11.

3. The 500 hour requirement has no firm basis. A lengthy search of pertinent historical documents and coordination with the Army aviation community in general, failed to produce a "source document". The 500 hour figure dates back at least, to the early years of Army Aviation where 500 hours was a prerequisite for transition into certain aircraft, and in order to meet currency requirements of a given category aircraft, an aviator needed to have logged 500 hours as P or IP. NOTE: The present requirement under AR 95-1 is 700 hours P or IP. Although this figure is not safety driven, the U.S. Army Agency for Aviation Safety (USAAVS) position is that it is valid from a safety standpoint. Safety personnel equate the time required to accrue 500 flight hours as being the point in time where an aviator gains "airmanship and airsense". They recognize however, that there is nothing magic about the 500 hour requirement as an absolute quantity. They contend that a reduction in that number would have little or no effect on students who are a "cut above", however, it could impact adversely on the average student. Since the 500 hour requirement does not present any major problem at this time, there is no valid justification for an immediate reduction. However, the time is close at hand where the requirement will have to be adjusted downward in order to allow for more flexibility for commanders in the field and to compensate for the downward trend in the flying hour program.

4. The MILPERCEN rationale for the "three year experience" requirement is one of economics. Simply stated, it is to eliminate the possibility of spending training dollars on individuals who have not made a commitment to the service, e.g., (RA or Voluntary Indefinite). Therefore, under conditions/restraints governing today's aviation

training program, the 3 year policy is considered cost effective. In addition, to the extent that all available aircraft qualification training quotas are being filled, it is also supporting personnel aircraft requirements. On one hand it is acknowledged that during the first three years, the aviator gains a certain amount of aviation experience in terms of flight hours and maturity. This, coupled with a positive aviation safety aspect, is very desirable. On the other hand, the Army may derive more output for the training dollar if aviators were transitioned into specific aircraft while in the final phase of flight training or immediately upon completion of flight training. The Air Force and Navy have no such "time requirement". The Air Force student, as an example, goes directly from Undergraduate Pilot Training (UPT) to Combat Crew Pilot training (CCPT) to his unit of assignment, and reports in "airframe" qualified. He then needs only to fly a certain number of missions to be completely qualified as pilot in command. It may become necessary to change this advanced aircraft policy if the obligated 3 years tour increases to 4 or 5 years, and also to insure there is more flexibility for commanders in the field.

5. Under the present system as outlined in AR 350-100, obligated service incurred for attendance at aircraft qualification courses are not additive, e.g., do not cumulatively add on to the initial 3 year obligation or to the 1 year obligated service upon acceptance of voluntary indefinite status. This policy appears to be counter productive to Army personnel management training/retention goals and is questionable in terms of cost effectiveness. A detailed analysis of the service obligation question is contained in Section VI.

6. During August 1977, the United States Army Aviation Center (USAAVNC) conducted a comparative study of certain aviator assignments. The purpose was to determine which of the four assignment (UH-1, AH-1, CH-47 and OH-58 aeroscout) was more demanding in terms of training, ability, and specialty skills. Pure aircraft transition tasks, e.g., perform normal take off, etc., common to all transitions, were purged from the lists in order to compare only mission-type tasks. Findings determined the OH-58 (aeroscout) tasks were the most demanding, closely followed by the AH-1 attack helicopter. The CH-47 came in third, followed by the UH-1. The panel concluded that an aeroscout pilot must perform under adverse conditions and at the same time, divide his attention and talents more so than other pilots.

7. A dichotomous situation exists in regard to the training and assignment of aeroscout (OH-58) aviators. On the one hand, it is acknowledged that their job is the most demanding of aviation assignments, requiring the utmost in combat skills to include airground coordination, fire intergration, and overall aviation expertise. On

the other hand, the individual most likely to be assigned this important job is the recent warrant officer flight school graduate, - a W-1. Upon reporting to his unit of assignment, he is neither airframe qualified nor tactically trained to operate in the aeroscout environment. This places a considerable training burden on the unit commander and raises the question as to whether this aviator has the necessary qualifications and aviation experience to successfully accomplish his combat mission. Based on discussions with aviation tactical unit commanders, it is evident that this situation has created a real problem; particularly as it impacts on the training requirement. This adverse situation will start improving during February 1978 when 25% of the initial entry rotary wing graduating class will be (OH-58) aeroscout tracked students. This equates to approximately 120 students per year. An expanded single tracked aircraft training and management system appears to be an absolute necessity if we want to match the right faces with the right spaces.

8. All things considered, the current policy of 500 hours and 3 years experience is less than desirable, however, it should not be changed until such time as sufficient data is available to determine the impact on the existing flight training program, personnel management considerations, and aviation safety considerations. The best approach would be to phase out the 3 year 500 flight hour requirement as a policy over a three year period, to coincide with the increasing output of the mission tracked trained aviator. Delete the phrase, "advanced aircraft" from all Army publications; substitute the phrase, "aircraft qualification". Publish appropriate changes to DA Pam 600-11, TC 1-34, and Warrant Officer Division (MILPERCEN) Training Policy # 18-77.

D. FINDINGS:

1. The term "Advanced Aircraft Transition Policy", e.g., 500 hours, and 3 years experience, is not Army policy in the true sense of the word. (Evolved from requirements contained in DA Pam 600-11 and TC 1-34).

2. The term "Advanced Aircraft" is not defined.

3. Aviation Training Circular (TC 1-34) is not consistent in applying the 500 hour requirement.

4. The 500 hour requirement has no firm basis.

E. RECOMMENDATIONS:

1. Phase out 3 year/500 hour requirement policy over several years.

2. Publish appropriate changes.

SECTION X

WARRANT OFFICER FORCE STRUCTURE MANAGEMENT

A. REQUIREMENT:

To examine warrant officer strength management to determine if warrant officers should continue to be included in the total officer strength for budgetary and accounting purposes.

B. BACKGROUND:

1. During periods when budgetary pressures are brought to bear to reduce officer (warrant and commissioned) strength, resource managers are tempted to ask for a total separation of officer and warrant officer strength. This temptation is prompted by the supposition that separation would allow increases in warrant officer posture without corresponding pressures to decrease the commissioned officer strength. Thus, without a total officer constraint, all warrant officer spaces that are justifiable could, in theory, be approved without losing commissioned strength.

2. The methods for determining warrant officer strength have varied considerably from the time that warrant officers were first included in the force structure in 1920. For approximately 30 years warrant officer positions were not recognized as a necessary part of the force structure but were authorized as a reward for enlisted service. As a consequence, warrant officer strength was controlled through legislation and rose and fell with the particular military or political climate. In recent years warrant officers have been authorized as an integral part of the overall officer force structure.

C. DISCUSSION:

1. For manpower accounting and budgetary purposes, officer strength (commissioned and warrant) is authorized by OSD as a bulk figure. OSD does not specify that portion of the bulk figure that may be designated for warrant officers.

2. Title 10, US Code provides the following definitions pertaining to warrant officers.

- a. "Officer" means commissioned or warrant officer.
- b. "Commissioned Officer" includes a commissioned or warrant officer.

c. "Warrant Officer" means a person who holds a commission or warrant in a warrant officer grade.

3. Since warrant officer strength is included in the bulk number of officers authorized by OSD, any increase in either the commissioned or warrant officer strength must be made at the expense of the other category.

4. Warrant officers are not included in Title 10, US Code, Section 3202, Officer Grade Limitation Act (OGLA). The OGLA merely limits the strength of general and field grade officers as a fixed ratio of total authorized commissioned strength. However, since warrant officer strength increases cause like decreases in officer strength, and increase in warrant officer strength would cause a reduction in the number of general and field grade officers authorized. Conversely, a decrease in warrant officers without an increase in commissioned strength will not effect general and field grade officer strength.

5. Warrant officer strength in the officer force structure is determined by ODCSPER based upon an evaluation of current relative need for warrant/commissioned officers reflected by authorization documents processed as well as by longer range assessment of the impact of procurement and losses on officer career development and future availability.

6. Title 10, USC 101 defines an "officer" as either a commissioned or a warrant officer. A separate accounting classification for warrant officers would be contrary to that law. Additionally, changes to definitions in Title 10 would generate changes in Title 37 concerning pay and entitlements. If a change in definition occurred, warrant officers could be classified as a separate category or as an enlisted person. If placed in a separate category, it is almost certain that the total warrant officer strength would still be deducted from the officer authorized strength, thus negating any potential gain in officer strength because of the adjustment. If changed to an enlisted category, there is a strong likelihood that pressure would be applied to reduce pay rates to that commensurate with other enlisted grades. An enlisted warrant officer program would have connotations of eliminating the warrant officer program as known today.

7. Because of continuing efforts on the part of Congress and OSD to reduce officer strength it is advisable for the Army to procure up to the total authorized officer strength by the end of each fiscal year. Failure to have the authorized number of officers on board is likely to lead toward future cuts as base planning usually starts with

year end strength levels. It is unlikely the Army would be authorized more officers in future years than were on hand at the end of a previous year. Warrant officers require little time to procure because of present personnel procurement policies (except for warrant officer flight school candidates, physician's assistant, bandmasters, AD Hawk Missile and Chaparral/Vulcan organizational maintenance technicians) and provide the Army with flexibility to meet year end strength levels. Even with warrant officer aviators, flexibility is maintained because of the recall program. For example, in March 1977, WO aviators were found to have 518 projected losses for FY 78; however, training funds for only 465 warrant officer training spaces were programmed but the difference will be made up by the recall program. If the Army did not have this flexibility to procure warrant officers to make up for commissioned officer shortfall (or overages) and total warrant officer spaces were fixed, it is apparent that both warrant officer and officer numbers could be reduced.

8. Contact with Officer Manpower Division, Bureau of Personnel, US Navy revealed that the Navy would oppose any change to Title 10, that would change the current status of warrant officers. Accounting for warrant officers in the budget and accounting process is much the same for the Navy as it is in the Army. Navy warrant officers are an integral part of their officer management program and they have no current plans for making changes in the program. Without support from the Navy, it would be extremely difficult to propose a change to Title 10.

9. If separate categories were approved for warrant officers, then OSD or Congress would be deciding the total officer/warrant officer mix for the Army. Past experience does not indicate that requirements would be the deciding issue in determining this mix. It is more likely that decisions would be heavily weighted by costs rather than needs.

10. There are no indications that benefits would be achieved by excluding warrant officers from the officer strength. On a best case assumption, warrant officer strength could be increased without a corresponding reduction in officer strength. However, according to Program Analysis and Evaluation Directorate, the probability of this positive effect is extremely small. Congress and OSD would most likely still deduct warrant officers from the total officer strength since the positions occupied by the warrant officers would have been previously identified in the officer strength.

D. FINDINGS:

1. Changes in methods of strength management for warrant officers would require legislation which would be extremely difficult to accomplish at this time.

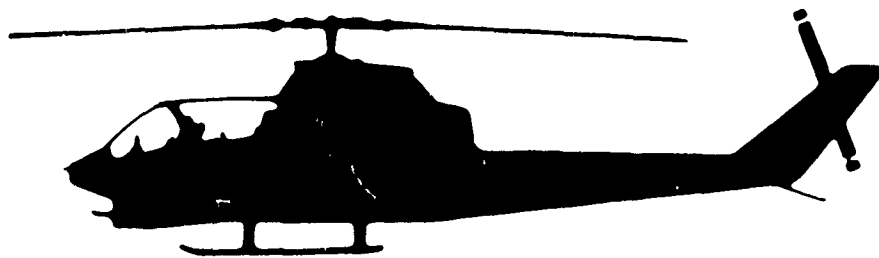
2. There are no conclusive benefits to be gained by separating warrant officers from officer strength accounting. Conversely, the adverse effects of the loss of flexibility are conclusively known.

E. RECOMMENDATION:

That warrant officers continue to be included in the total officer strength for budgetary and accounting purposes.

CHAPTER II

ENLISTED AVIATOR STUDY



SECTION I

ENLISTED AVIATOR/WEAPONS SYSTEMS OPERATOR

A. REQUIREMENT:

To review the enlisted aviator/weapons systems operator proposal for feasibility and desirability.

B. BACKGROUND:

1. Historical background of the Army Aviation Warrant Officer (provided by LTG (Ret.) R. R. Williams)

a. The Army Aviation Warrant Officer Program has been one of the truly great successes during the past twenty-five years. It has produced in war and in peacetime an adequate number of exceptionally well qualified and motivated pilots to meet the Army's requirements. It has at the same time provided for the U. S. Army an effective solution to a problem that has historically plagued all military services: the problem of providing a strong corps of experienced pilots while permitting broad professional military development of a commissioned officer corps to meet command and staff requirements.

b. In 1942, when the present Army Aviation was born, its founders believed that the flying of the aircraft could be left to enlisted pilots with a few supervisory positions filled by commissioned officers. It was also recognized that the standards to be set for the entry of individuals into flight training should be compatible with the standards set for pilots in civil aviation and the other services. During 1942 many enlisted personnel entered into flight training and graduated as Staff Sergeants. They were immediately sent overseas and into combat. Because the standards set for their entry into flight training were exceptionally high, and in combat they habitually filled the role of an artillery forward observer, (a commissioned officer's position requiring special knowledge) the majority were given battlefield commissions. The Army soon found that although they were training enlisted pilots, the objective of 20% commissioned and 80% enlisted was defeated. Very few pilot graduates remained in enlisted status as artillery pilots. Recognizing this fact, the Army changed the program to all commissioned officers.

c. A similar situation prevailed in the Air Force and Navy. Both of these services had a few enlisted pilots at the beginning of World War II. As in the Army, many met the qualifications for commissions and were commissioned. Those who remained enlisted were found to have limited application. All U. S. Services abandoned their enlisted pilot programs.

d. During the late 1940's while the Army was rapidly shrinking in numbers, studies were being conducted of career patterns that must be followed by aviators to maintain a viable army aviation program. Two conflicting requirements became evident. On one hand, if army aviation was to continue to expand and maintain its detailed integration with the various arms and services, the officers must have repeated tours of ground duty assignments in their individual branches. This would take them away from flying. On the other hand, the Army recognized a requirement for a large group of highly professional aviators trained in ever increasingly sophisticated aircraft. This would require many to devote their entire career to flying to generate the necessary experience. Out of consideration for these two conflicting requirements came the solution of the warrant officer aviator.

e. The warrant officer program was initiated in the 1949-50 time frame. The timing couldn't have been better. The Army, Air Force, Navy and Marines were all rapidly reducing in strength and experienced, well qualified commissioned pilots of all services were being released. These were men who had built up considerable flying experience during World War II. They desired to stay in the flying business and were happy to go into positions that promised them a life in the cockpit. The Army opened the doors to fill the initial positions of warrant officer aviators and thus started the program with a most commendable bank of aviation expertise.

f. These men had been commissioned officers. Their flying ability and other qualifications were well recognized. They, therefore, were never considered as second class or junior aviators. They belonged to the same fraternity of military aviators as the commissioned officer, having all the privileges of commissioned officers. They were a highly respected group. Respect for the warrant officer pilots and the acceptance of their being in officer status has continued to the present. This is a most important consideration in analyzing the warrant officer aviation program, and differentiates it in many respects from the previous enlisted pilot programs of all the services.

g. During the 1950's and early 1960's the warrant officer program continued to provide the Army with the competent pilots required to fly all types of missions, while it freed the commissioned officer in limited numbers for ground assignments. The real proving ground for the warrant officer program was Vietnam. Two aspects of the program were most significant. First, the combination of the lower age limit, nineteen years, and the high standards set for entry into the program brought in large numbers of bright young men who were truly of officer caliber. They were at least the equal of their older contemporaries who went to OCS. Second, it was the senior warrant officer with thousands of flying hours who provided the capability for the Army to

absorb these fine young pilots, commissioned and warrant, and bring them from pilot, to first pilot, to aircraft commander in combat. Most of the commissioned officers including senior officers remember that it was the old warrant officer who gave them their indoctrination in combat flying and scraped the rust off their flying techniques.

h. Although in theory, and by regulation, the warrant officer pilot is supposed to be a technician, not so in practice. Warrant officer pilots have repeatedly, particularly in combat, functioned in positions of considerable responsibility that definitely included the aspects of command. They flew missions requiring the knowledge and appreciation of tactics expected of commissioned officers.

i. The role of the warrant officer pilot in Vietnam was recognized in a 1969 speech by General Bruce Palmer, then Vice Chief of Staff of the Army. He stated, "the young warrant officer referred to at the beginning of my talk, wears the silver star and two purple hearts. He possesses courage typical of the roughly 22,500 aviators in the Army today of whom about 11,700, a little more than one-half, are flying warrants -- the real workhorse of aviation."

j. In recent years many technical fields such as engineering test pilot and higher level maintenance positions have been opened to the warrant officer pilots. This has continued to enhance the prestige, broaden the potentials, and increase the morale of the warrant officer. Yet, their established career program continues to focus their education and utilization very specifically in the highly technical field of flying.

2. On 3 December 1976, Chief of Staff Army, Memorandum 76-570, subject: Determination of Officer Requirements, was forwarded to various staff elements. One short term initiative, number five in this memorandum, was to examine warrant officer positions for possible conversion in selected fields to be made either civilian positions or enlisted positions in a similar career management field.

3. The Office, Deputy Chief of Staff for Personnel (ODCSPER) received the Chief of Staff Memorandum and tasked MILPERCEN to develop a management plan for the enlisted aviator, if the program were to be approved. This management plan identified positions to be filled with the enlisted aviator, detailed attrition rates in flight school/training, annual attrition and continuation rates of enlisted aviators, the planned selection by years of aviation service for those to be appointed warrant officers, and possible career progression for enlisted persons promoted out of flight positions at grades, E-7 or E-8.

4. ODCSPER was prepared to recommend to the Chief of Staff, Army, to drop further consideration of the proposal based upon the field input as to the lack of desirability/feasibility of the program and the non-supportive analysis developed by ARI in their research project. However, as the Aviation Warrant Officer/Specialty 15 study group was in session, it was determined to have the initiative transferred to this study group for further analysis.

C. DISCUSSION:

1. The Office, Deputy Chief of Staff for Personnel asked major commands to respond to the proposal for enlisted aviators. (Annex A) The one command supportive of the proposal was Criminal Investigation Command. That command does not have any aviation assets or aviators; however, they thought it would enhance the prestige of enlisted persons of the Army by giving them greater responsibility. An additional seven commands were against the proposal. They cited problems with command and control; morale of the warrant officer corps, which could be perceived to be the start of the end of the warrant officer corps within the Army; possible legal problems, acceptability by commanders and senior officers, warrant officers and other enlisted personnel; declining quality over the long term, command relationships, pay disparities, enlisted versus officer duties, and sociological factors were all seen as serious problem areas. Seven other commands either thought the proposal warranted further study or were noncommittal. Three of those being noncommittal were DARCOM, Military Traffic Management Command, and Health Services Command. These three commands were minimally affected by the proposal. The general officer correspondence had one general supporting the proposal, fourteen others against, and two thought additional study was warranted. The one general officer that supported the plan caveated his response with three pages of problems that had to be resolved. Several discussed the class system that would surely develop within the enlisted program. There would be commander's and leader's in the commissioned officers. There would be those enlisted soldier aviators good enough to be selected for warrant officer status and the remainder would be the left overs, a third class of aviator looked down upon as not being good enough to be selected for the warrant officer program. There was also serious concern about career progression as promotions up the ladder and out of flying occurs. The E-7/8 would be poorly trained and ill qualified to enter other career fields at that grade level. Field support by the general officers and major commands showed little acceptance, support or desirability for the program.

2. ODCSPER requested research assistance from the Army Research Institute Field Office, Fort Rucker, Alabama. A survey was requested to answer specific questions on the desirability, feasibility, recruiting impacts, retention and other possible problems with the program. ARI determined that a responsive study would have to assess the attitudes and opinions of those groups who would be most affected by an enlisted aviator program, i.e., potential civilian applicants, inservice enlisted personnel, warrant officer candidates and aviation warrant officers. (Annex B)

a. In a structured questionnaire later administered to 144 warrant officer candidates, the "desire to fly", as expected, came out highest in the top two categories (completely agree, moderately agree) at 99%. However, officer status was one of five additional factors that appeared in the 97% range, others included self-improvement, stepping stone to future success, added responsibility and a more interesting job. Because the warrant officer flight training program is a voluntary program leading to later duty consisting predominately of flying, it was anticipated that the "desire to fly" would be the prime motivator for getting into the program. However, the questionnaire data show that other factors are very important to program entry. Many of these factors are those which would later be important in retaining an aviator in the Army. In another part of the structured questionnaire, the individuals were asked to respond on a scale of six from "completely agree" to "substantially disagree" to fourteen specific reasons for entry into the flight program. Considering the first two rankings, "completely agree" and "moderately agree" there were six reasons indicated by 90% or more of the individuals for program entry; (1) desire to fly, (2) attaining officer status, (3) self improvement, (4) stepping stone to future success, (5) added responsibility, and (6) more interesting job. As expected, "desire to fly" came out highest, however, most of the other important factors in the 90% or better range are related to officer status.

b. An enlisted aviator opinion questionnaire was administered to 111 aviation warrant officers in advanced training at Ft Rucker. They felt strongly that enlisted aviators would complicate command relationships within and between units, particularly in combat. In addition, they thought enlisted aviator's should have the same flight duties and responsibilities as an aviation warrant officer. Accepting desire to fly as a given, officer status was an overwhelming career incentive for these warrant officers. Seventy-three percent indicated enlisted base pay would not be adequate to retain enlisted aviators. In addition, a majority (60%) felt that flight pay would have to be at the W2 level or higher to be an incentive. The data obtained from the aviation warrant officer samples would appear to reinforce the same problem areas identified in the questionnaire given to the

enlisted persons in advanced training. Army Research Institute cautions, the opportunity to fly might be a dominant recruiting factor, but it may not be as strong a motive for aviator retention. The fact is, there is an existing and growing opportunity for experienced helicopter pilots in civilian industry. A rated Army aviator has a marketable skill in civilian life and therefore, represents an expensive potential loss to Army aviation. However, the prestige and benefits associated with officer status, and the corresponding high level of importance of these factors to many warrant officers who were inservice accessions contributes to the present high retention rate.

c. An enlisted aviator questionnaire was administered to 83 EM (predominately E5's & E6's) attending advanced training at Fort Rucker. Eighty-six percent of the individuals were in aviation series MOS (i.e., aircraft maintenance, flight operations and air traffic control). These MOS provide a significant percentage of in-service applicants to the WOFT program. Seventy-four percent of the EM indicated a definite or possible interest in an enlisted aviator program. However, they felt that E8 should be the highest attainable rank in the career field (70%) and the potential for warrant officer status as an incentive for entry and retention was important (77%). The sample indicated that the enlisted aviator would be limited in the scope of aviation duty assignments (primary use - copilot). Less than half the sample indicated that jobs such as IP (36%), Safety NCO (48%), or Maintenance Test Pilot (46%) should be filled by enlisted aviators. This implies a limited aviation capability for the enlisted aviator and an increased burden for the remaining aviation officers. The EM felt that flight pay, as an incentive, would have to be at the W2 level or higher to attract and retain enlisted aviators (69%). Forty-seven percent anticipated problems arising from social distinctions between officers and enlisted aviators. There was a strong interest among this sample in the enlisted aviator program, however, this interest was qualified by several factors, i.e., promotion potential, flight pay incentives, enlisted aviator utilization, promotion to warrant officer at a later point in time, and probable difficulty on the job resulting from the possibility of lack of social interaction with officers.

d. High school students, both local (Ft. Rucker area) and distant (Chicago and Los Angeles) were sampled. Twenty-eight percent, (90 of the total sample 329), indicated both an intention to enter military service and that they might be interested in becoming an aviator. Eighty-two percent of those students were ROTC. For both local and distant schools, the ROTC students indicated becoming an officer as the primary motive, with career, pay and excitement as secondary motives. For the local non-ROTC students, pay was the primary motive with becoming an officer and excitement being of secondary importance. No significant differences were found among the distant non-ROTC students.

e. ARI found the "desire to fly", one of the items cited as the main reason people attend flight school and must be considered a prerequisite for all applicants for the program, regardless of rank. Pay, officer status, and self improvement were the points of greatest interest in the survey to the warrant officer candidate. Results obtained from warrant officer candidates who were "in-service" accessions, indicated that officer status was as strong a motive as the desire to fly. When the two motives were later pitted in the survey, one against the other, in a forced choice situation, the desire to fly was confirmed to be a stronger motive. When the desire to fly is put in proper perspective, as a prerequisite for any student pilot, then the importance of other motives for successful recruitment and retention of aviators becomes apparant. The survey demonstrated that rank, pay, benefits, degree of authority and responsibilities are very important motivational factors to a majority of the warrant officer candidates. The ARI survey generally supported those who opposed the proposal. Questionnaires indicate that it may be difficult to recruit and especially to retain enlisted aviators of the caliber found in the present aviation warrant officer. The responses of the enlisted persons surveyed also suggests enlisted aviators will not be satisfied with less incentive pay than officers. Both EM and aviation warrant officers foresaw potential morale problems resulting from the possibility of a lack of social interactions among aviators within the Army. What may be the most significant pitfall associated with an enlisted aviator program according to a survey of experienced aviators, is the potential for complications of command/leadership relationships at the unit level, and in combat, involving enlisted aviators with other EM and enlisted aviators with warrant officer aviators. Added to these survey results, the later ODCSPER report uncovered UTTAS task analysis data which raises the possibility that the enlisted aviator population may be a marginal group with respect to future performance requirements of Army Aviation to fly sophisticated aircraft. The various survey findings indicate that implementation of an enlisted aviator program would be risky from several standpoints, e.g., recruitment, retention, command/leadership relationships, system complexity, and warrant officer morale. In addition, an aviation program composed of three echelons; enlisted, warrant and officer, and the associated command/management complexities involved, cast doubt on the operational feasibility of an enlisted aviator program.

3 A legal review was accomplished. It was found that while there is no legal prohibition against enlisted aviators, it would be necessary to change Title 37, USC to allow for the payment of incentive (flight) pay to enlisted aviators, a primary requirement to assist in retention of enlisted aviators as cited in the ARI field survey. Additionally, while Title 37 tells who may receive incentive pay, the definition of

those positions, flight officers of various categories, is defined in Title 10, USC. This leads to the proposal that would probably require change to Title 10 USC, in order to implement incentive pay. It had been proposed that as an interim solution to the incentive pay problem, selected and trained individuals could be paid proficiency pay. This aspect was quickly denied as there is no money in that account. The Army would have to go to Congress to acquire funds prior to making payment. It was felt that such a ploy would appear to be a circumvention of Congressional intent when passing the Career Incentive Act of 1974 (Public Law 93-294) and change the United States Code.

4. Other Services.

a. Other services were contacted regarding their experience with enlisted pilots. The Air Force had them in World War II, in liaison and air commando squadrons. (Annex C) The liaison pilots were primarily supporting field artillery and liaison operations, most were commissioned due to quality and performance. Starting out with 80% enlisted, 20% commissioned officer program it quickly developed that the program had 80% commissioned and 20% enlisted due to the performance capabilities of enlisted pilots to accomplish officer missions and tasks. The Navy also had enlisted aviators, to compete for enlistments with the Air Force program. The Navy found there was no viable career progression for these pilots. (Annex D) They were overtrained enlisted personnel and undertrained officers. They could not be assigned the normal additional duties associated with Navy enlisted men and were not qualified to accomplish the officer type additional duties. Both the Navy and Air Force phased out their enlisted pilots soon after World War II and do not plan to return to the program. The Navy still has one enlisted pilot on active duty, who will retire in FY 78.

b. Equipment became more sophisticated after World War II. The Air Force utilized enlisted electronic countermeasure personnel and weapons systems operators within Strategic Air Command. The equipment became more and more sophisticated, complex, and almost required an electrical engineer to operate and understand these systems. At this point, the Air Force converted the positions to commissioned status. The stated problem was qualification to operate the equipment and the high training costs directly attributed to high turnover of enlisted personnel in these career positions. The Air Force Action Officer said it simply. "Enlisted men get out, officers are career oriented to stay in." To reduce training costs and keep trained personnel, the USAF went the officer route, as policy since 1946.

c. The Air Force has recently purchased dual inertial navigation systems for their long range aircraft that normally use navigators.

They are currently planning to phase out their 10,000 commissioned officer navigator positions with the acquisition of the navigation system. However, it was found in Strategic Air Command and in the air to air refueling requirements of Tactical Air Command, a navigator with limited capability was required to cross check/update and verify the inertial systems to insure link up with the aircraft needing fuel. They tried test programs in SAC and TAC. The SAC program utilized E-9's as test personnel and the program worked. The TAC approach was to utilize E-6 personnel. Their experience was such that they could be trained to do the job; however, the scope of the training program was limited, and training was taking about as long as the old course which taught the full navigator program to college educated commissioned navigators. Additionally, for enlisted crew members, the Air Force is having to train about 30% of the MOS requirements per year to sustain the MOS. The Air Force is going to monitor their enlisted navigator program closely. If attrition is as high as perceived, without much of a civilian market for these skills, they may be forced to revert back to commissioned officer positions to keep these billets filled.

d. Discussion with the USMC determined they also have an enlisted navigator program. (Annex E) Navigators of all services are taught at the Joint Services Training Center at Mather Air Force Base, Sacramento, California. The Marines operate an intensive screening process, consisting of a three day testing program, selecting the cream of the "few-good-men" with an average GT Score of over 120. The program has been revised to an eighth grade level of instruction, with 46 being trained this year. Thirty-six or 75 percent are expected to graduate. However, apparently the reading levels of entry students are such that 50% are failing. Their re-enlistment rate upon completion of a four year tour is so low, that to fill the few positions they have, (70 total, of which 25 are filled with warrant officers), they are having to replace the force every two years to sustain the required number. The USMC is going to screen those who complete the program and appoint more warrant officers because of better retention of their personnel resources under this program.

e. The USCG approached the navigator training center about the possibility of training enlisted navigators for their C-130s. The USCG with their new patrol mission because of the 200 mile fishing limit has developed a requirement. The navigator training center recommended that the USCG program be developed by modifying the current program. This would be done by reducing the academic day downward to a 4 hour training day as opposed to the present six, thereby allowing for more studying in the afternoon and lengthening the course from 20 to 28 weeks. Reading problems, lack of study habits, and weak academic background are cited as probable causes of this training problem.

5. The civilian employment situation was surveyed.

a. The commercial and airline market was found to be very lucrative, with a wide open market about the time the enlisted aviator would be completing his first enlistment. Every Pan American Airlines Captain will be mandatorily retired by 1981. Of 33 airlines, 20 have no pilots on furlough status and there are only an estimated 2000 on retainer with the other 13 airlines. Hirings are up from 30 per month industry wide in 1976, to 153 a month average in 1977 and the peak of replacement needs will not arrive until the early 80's. 10,000 to 12,000 commercial pilots a year will be dropping out of the inventory of available pilots. Although the Army helicopter pilot is not fully qualified for that type of service, the airlines, commercial and corporate pilot requirements will in all probability absorb Navy and Air Force pilots for that segment of the market. The Navy is anticipating losing one of every five lieutenants in the service - 350 to 400 a year. They are considering extending their service obligation or requiring a service contract to be signed prior to training in aircraft with commercial adaptation - i.e., their patrol squadrons, some of which are running a high resignation rate. The Air Force does not feel they will have a problem unless the 20% increase in commercial aviation occurs, which is what the industry, Department of Labor and the FAA forecast for that time. Then, the Air Force expects to lose pilots at an unacceptable rate to the airlines.

b. The commercial helicopter market is equally dynamic. The fleet is forecast to double in the next 10 years due to the increased usage of helicopters by industry as reliability, maintainability, multiengine, all weather capability becomes available with the new family of aircraft coming off of the assembly lines. This applies to both foreign and domestic markets. Pay is \$15-20,000 per year. Working conditions, although not soft, are comfortable with either a 5 hour day or a 5 and a half month work year for pay equal to or above enlisted pay entitlements. Additionally, the FAA is tightening down controls on helicopter operations, bringing them into the same standards of flight control and flight management as is now applied to commercial fixed wing operations. American Air Lines is going into the helicopter training business with the acquisition of a flight simulator. This is an effort to seek some of the greatly expanding training market to upgrade the dwindling helicopter pilot pool by providing the same professional pilots to the commercial and corporate helicopter market that they now provide to the fixed wing market.

c. The commercial market seeks military trained pilots. They are looking for flight hours, stability, experience, and instrument flight experience, all attributes and qualifications that the enlisted

aviator would possess. Seventy percent (70) of the commercial and airline pilots are military trained and the enlisted aviator program would allow for this percentage to be maintained.

6. Retention and continuation rates.

a. Retention rates were considered. The MILPERCEN management plan considered that for the first years of service the enlisted aviator would attrit from the service at the same rate that has existed historically for enlisted men. The study group did not feel this was true. If the standards and quality were maintained, it was felt that the attrition rate would follow closely that of the warrant officer candidate after completing initial flight training and up until he fulfills his obligated service commitment. This is something less than 1% as compared to the 10% per year the enlisted force suffers. The MILPERCEN plan also used a 10% reenlistment rate at the end of the obligation. This was felt to be high, although it is the 5-6 year re-enlistment rate historically, it still would be the first term re-enlistment for the individual and even with a long service obligation, (5 year proposed) the re-enlistment rate would not meet the 60% level.

b. The first term re-enlistment rate for the year ending June 1977, was only 31.2%, the DA goal was 37%. The study group looked at some MOS/skill areas where the individual holding these MOS would feel there was a market for their talents in the civilian sector. It is known that the Army does not want to age the force under the enlisted force management plan. The proposed plan called for 60% of the force to be first term enlistees with less than 3 years; however, when training programs are as expensive as aviation training, and where retention is desired for safe operations it is not felt the budget will permit high training costs annually due to high turnover. In marketable MOS, the first term reenlistment rate ranged from 19 to 25%.

c. The other services in flight positions/crew members are also having turnover. The Air Force is training 240 flight engineers for the C-130 aircraft to fill 762 positions. Boom operators for in-flight refueling, load masters, marine navigators are also experiencing high attrition and low continuation rates.

d. The warrant officer in FY 77, had an overall continuation rate of 64% while aviation warrant officers had 61%. It is felt that with the recommended four year obligation, decreased dependency on Recruiting Command for accessions, and a modified promotion plan, retention will raise to the MILPERCEN (DAPC-OPD) projection of 72.2% without difficulty.

7. Alternatives considered.

a. The all enlisted program was reviewed and dropped due to the problems of abolishing the current warrant officer aviation force. The attrition rates of enlisted persons projected by the MILPERCEN study, or those developed by the Study Group of only 1% a year for three years and then 35% re-enlisting at the end of a four year obligation, would require an accession rate of nearly 800 a year to sustain the force and the training costs were prohibitive compared to the current and projected training load for the POM out-years of only 465 a year.

b. The MILPERCEN plan was considered and used as the basis of cost comparisons. It was found able to support all other alternatives considered; an all co-pilot force, 3000 enlisted co-pilots and 2500 warrant officers. This alternative was possible as planned continuation rates would provide the 3000 co-pilots and required less than the planned 270 a year accessions into the warrant officer ranks. The MILPERCEN plan would also support the enlisted aviator entry program whereby at the end of an obligated tour of four years, the necessary warrant officers could be selected, about 270-300, and the remainder of the group, eliminated from flying. As stated, the MILPERCEN plan would, with minor modification, support any of the above alternatives. The basic MILPERCEN plan was also used for cost development.

c. Elimination of the co-pilot position in all UH-1 helicopters was also considered. To accomplish this appeared simple. Change TOE/TDA's of all affected units. However, there are three problem areas. Initially, when the UH-1 was introduced into the inventory, it was a single pilot operated aircraft. Then as the instrument program developed and the instability of the helicopter was discovered, it was regulated that to fly under instrument weather conditions a co-pilot was required. This also occurred about the time the FAA required civilian operators to have a co-pilot when flying in designated high density areas. FAA rules do not apply across the board to the military however, it is quite prudent and desirable to closely follow FAA procedures. Today, we have added night vision devices to the inventory. This requires the co-pilot to be rated in order to monitor the instruments due to focusing limitations of the night vision goggles. A third consideration is the greatly increased dependency on "nap-of-the-earth" navigation that requires almost full attention to obstacle clearance by the pilot while the co-pilot navigates, follows the map, monitors the instruments and communicates during the flight. The aircraft is also unsuitable, except in the most calm and smooth weather, for single pilot instrument flight as now configured. With the addition of certain stabilization equipment which would allow for hands off operation, and some modification to the flight instruments,

the aircraft could be flown in instrument flight conditions and the co-pilot could be deleted from those missions. There should be about 2000 UH-1s in the inventory until after the mid-80's. It may well be worth further developing this alternative for selected units in order to free pilot/aviator spaces for other aviation needs with the increasing fleet and pilot requirements of the early 80's. The cost of modification could not be accurately acquired by the study group. This conversion however, was estimated to cost \$100,000 per airframe.

d. The weapons system operator position was reviewed. Fort Rucker accomplished a hurried task analysis of the front seat of the AH-1 and the pilot seat in the back of the aircraft cockpit. There were 72 tasks indentified for the weapons system/gunner/co-pilot position. Of these, 26 were common with the back seat. The Course Development Division, in conjunction with the Task Analysis and Design Division outlined a course of instruction with some flight time to make the operator capable of handling the aircraft in emergency situations and weapons system training, to include emergency flight of the AH-1 from the front seat. The course was estimated without validation, to require about 60 hours of flight time, about a third of the current flight course. MILPERCEN developed a proposed management plan for that position. It looks questionable as a solution for aviator shortages forecasted for the 1980's. This position is being thoroughly analyzed by both the Army Research Institute and Surgeon General's Office to determine tasks, mission loading, etc. TRADOC validation of a training program may prove this alternative too lengthy; that when attempted may make the current program worth the extra cost. If it appears to be a feasible solution after analysis is complete, it would appear appropriate to establish a trial program, train personnel, staff selected units, test and evaluate their effectiveness before formally instituting the program.

8. Cost data was developed.

a. The MILPERCEN plan was utilized as the basis of the enlisted/warrant officer program. Cost data assumed that the individual had one year and three months at the time of starting flight training. The individual attends flight training as an E-5, drawing crew member flight pay while undergoing training. Then after graduation, remains an E-5, being promoted to E-6, E-7 and E-8 at the normal averages of today's Army. As an E-8, he would no longer be on flight status. During the third year of aviation service, 40 would be selected for warrant officer appointment. Additional program participants would be selected from other years per the MILPERCEN plan through their 15th year of active Federal service, with a total of 270 a year being selected for warrant officer. Warrant officer promotion would occur at

today's rates- two years as W01, 6.7 years as a CW02 and 6 years as a CW03 and selection rates at 75% to CW03 and CW04. 60% would desire to continue with service and the MILPERCEN continuation rates would apply throughout the career.

b. The MILPERCEN plan and current programs were compared with one modification; all would serve a four year obligation (rather than the five proposed in the MILPERCEN plan, and three year obligation today). The Warrant Officer Candidate was assumed to enter flight training with 3.3 years average active Federal service, graduate from flight training at four years, spend two years as a W01 and at three years, serve 6.7 years as a CW02 before being promoted to CW03, and after six years in grade, be promoted to CW04. Promotion rates were expected to be 80% first time considered to both CW03 and CW04.

c. The overriding cost of the MILPERCEN training program is the training cost differential. MILPERCEN computes that they would have to start 808 personnel a year in order to graduate 606, the number necessary to sustain the force. The current training of 465 does not sustain the force today. However, with a four year obligation, greater recruitment from in-service, and promotions not attriting 37% of each years output, the 465 would sustain the force. The cost differential between the 465 and the 606 outweighs the pay and allowance differential between the all warrant officer program and the mixed, enlisted aviator/warrant officer program proposed by MILPERCEN.

9. Mobilization considerations.

a. The aviator is unique in that there is no trained substitute. The infantry platoon leader has an experienced sergeant to fill in for him in both peace time and combat. The aviator has no such replacement. The total available pool consists of warrant officers, primary and secondary Specialty 15 commissioned officers and about 1200 personnel who's records indicate that at some time they attended flight training but have dropped from the program. There is no indication whether these people/officer's would continue to volunteer to fly if called upon, or if, in a mobilization situation the Army could quickly and immediately pull these people from the equally critical jobs they would be filling to move into an aviation billet. It is unrealistic to think that this would be possible. It is doubtful that all the previously trained artillery or armored officers would be immediately transferred into tank or field artillery units in mobilization to fill shortages. Their career development patterns, and common sense/logic says they are needed elsewhere at that critical time. The same logic applies to Specialty 15 aviation officers, as with the Specialty 12's and 13's.

b. Aviators cannot be accessed into the system and trained as quickly during mobilization as equipment can come off in-production assembly lines.

c. One of the alternatives available for immediate expansion is through the use of selected single pilot operation. Enlisted pilots would then become pilots in command. Additionally, there would be little expansion capability for direct commissions to rapidly gain officer middle managers with an enlisted rather than a warrant officer aviation program.

10. OSD was informally contacted about the enlisted aviator proposal. Below are some of their general comments:

a. OSD would probably support an enlisted aviator program if the Army could show some firm advantage for the program. Conversion of the spaces saved into commissioned officer spaces would not, be considered a sole advantage. Spaces saved would have to be sufficiently justified that OSD would allow the Army to retain them.

b. They would probably support an additional 2000 officer spaces for combat positions, but would continue to look hard at some of the Army's administrative spaces, such as JAG and Medical spaces.

c. Enlisted aviators would be very hard to sell in light of the Army's request for more highly sophisticated and expensive weapons systems. The OSD representative questioned the advisability of the Army wanting to place out on the modern battlefield, an enlisted man in an attack helicopter having more fire power, lethality, and, devastation than is contained in an entire infantry company.

11. Training Allocations.

a. Current initial flight training allocations for warrant officers do not sustain the warrant officer aviator force without dependency on the recall program. The quality and quantity of the recall program is declining and should not be depended upon for long range planning.

b. The training allocations are presented to OSD in Annex F of the Army POM. Regardless of what the desires of the service may be, the number of personnel allowed to be trained each constrained by limited resources. The accessions into the warrant officer program, and the commissioned officer program are tightly controlled and managed on a yearly basis by OSD.

c. Conversion of spaces from warrant officer to enlisted would not allow for a dramatically increased training of personnel to meet the needs of the service, and would have to pass the scrutiny of OSD.

d. OSD indicates that a distinct advantage would have to be presented to obtain approval of the program. That the resulting necessity to increase the yearly training output of the Army Aviation School from 465 to 606 just to sustain a force of enlisted aviators could not be supported.

12. A major problem proposed in the enlisted aviator concept is that of command, as identified in AR 600-20. Situations would/could exist where the pilot in control, would be out-ranked by the crew chief. As an example, if there is a problem identified during the preflight inspection and the E-5 pilot informs the E-6 crew chief or E-7 Platoon Sgt to fix an item before he will fly the aircraft and then orders it fixed before he will operate the aircraft. If the E-6 or E-7 refuses, was it a lawful order? If it is, the entire command structure in the enlisted ranks could be undermined.

13. Other services have commented about the Army's program of primarily training warrant officer aviators, while they only train commissioned officers. The Army has stood firm with the warrant officer pilot and are receiving credit for the program. It is still viewed by the Air Force and Navy as substandard as it is either not understood or viewed as a threat to their pilot programs and career progression. The enlisted aviator program would place Army aviation in the eyes of the other services, as a third rate program, training enlisted pilots, some warrant officers and commissioned officers. Acceptability with the other services would be questionable.

14. The Enlisted Force Management Plan (EFMP) establishes policy for the Army. If the enlisted aviator proposal or the weapons systems operator program was graded as an enlisted position, upper grades would tend to violate the upper six limitation and the 40% careerist program contained in the EFMP. Other career fields would have to take grade shortages in order to make this program viable - this appears totally unacceptable in that other careers fields would then want to be an exception.

D. FINDINGS:

1. The Enlisted aviator program is not desired or considered feasible by Army personnel of all grades, including general officers. Factors cited from the field are morale, program acceptance, pay questionable career viability, enlisted versus officer duties, and sociological factors.

2. Aviator program flight training inputs will continue to be limited and tightly managed regardless of type (commissioned, warrant officer or enlisted).

3. The enlisted aviator program was not found to be cost effective due to increased training costs to sustain the force.

4. OSD would not support the program unless a distinct advantage could be identified and justified.

5. The EM program is not a short term fix but would require months to implement. (15 to 24 months to execute.)

6. Would require a change in USC, Title 37 and probably Title 10.

E. RECOMMENDATIONS:

1. The enlisted aviator program as a concept be deleted from further consideration.

2. Feasibility of weapons system operator be deferred until completion of the ARI/Surgeon General task analysis.

ENLISTED AVIATOR
COMMAND/AGENCY CONSOLIDATED POSITIONS

	<u>FOR</u>	<u>AGAINST</u>	<u>NONCOMMITTAL</u>
USAREUR	X		
FORSCOM	X		
TRADOC	X		
EUSA	X		
USA JAPAN		X	
DARCOM		X	
HEALTH SERVICES		X	
INTELLIGENCE & SECURITY	X		
COMMUNICATIONS COMMAND		X	
MDW		X	
MILITARY TRAFFIC MGT		X	
CID	X		
USAREC			X
OCAR		X	
NGB		X	
	<u>1</u>	<u>7</u>	<u>7</u>

ARI CONCLUSIONS OF ENLISTED AVIATOR PROGRAM

("DESIRE TO FLY" A PREREQUISITE)

★ WOC (144)

OFFICER STATUS 97%

SELF IMPROVEMENT 99%

STEPPING STONE 95%

RESPONSIBILITY 98%

INTERESTING JOB 96%

★ AVN WO (111) & EM (83)

REINFORCED PROBLEM AREAS

COMMAND RELATIONSHIPS 88%/85%

PAY $\geq$ W.O. S NEEDED FOR RETENTION 73%/69%

LACK OF SOCIAL INTERACTION 93%/47%

MORALE

★ EM SAW ENLISTED AVIATOR AS ROUTE TO OFFICER STATUS. 77%

★ HS STUDENTS (329) MOTIVATED BY:

PAY - REQUIRE WO PAY MINIMUM

OFFICER STATUS

ANNEX B

ANNEX C

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, D C.



REPLY TO
ATTN OF:

DPXXXXF

22 SEP 1977

SUBJECT:

Flight Crew Background Data (Your Ltr, 2 Sep 1977)

TO:

DAPE-MP (Brigadier General Sweet)

1. The Air Force currently uses enlisted crew members in five areas as primary crew members and 71 areas as optional crew members. The primary crew member positions are: Inflight Refueling Operator, Flight Engineer, Loadmaster, Defensive Aerial Gunner, and Pararescue/Recovery. The 71 optional areas are authorized for crew duty to specifically supplement a particular weapons system mission. Attachment 1 provides retention data on enlisted crew members.

2. The Air Force has pursued an all commissioned officer pilot force since 1946. Therefore, data available on enlisted pilots and flight officers is somewhat limited. The Aviation Cadet Act of 1941 authorized the AAF to train pilots as aviation cadets. Prior to that time aviation candidates were trained as privates. The Aviation Cadet Program was originally designed to satisfy increased pilot demand with a training program that was competitive with the Navy. Since aviation cadets would be commissioned as 2nd lieutenants upon completion of training, it was required that they possess two years of college or equivalent training. By late 1941 the requirement to train pilots had risen so sharply we could not fill the demand with personnel who met the educational requirements. To meet this shortfall, we began training enlisted pilots. This was an emergency measure, designed specifically to meet the training shortfall. By 1942 it became apparent that with the large Aviation Cadet Program we were turning out pilots who, while capable of flying, were not officer quality. Similarly, there was an inequity concerning enlisted personnel who qualified as pilots and were overqualified for enlisted duties. To accommodate this problem, a third category, flight officer, was created. Aviation cadets who successfully graduated, but were not officer quality, were made flight officers rather than 2nd lieutenants; similarly, enlisted personnel upon completion of training were made either enlisted pilots or flight officers based on their overall quality. Flight officers received the pay of a warrant officer and were treated as "third lieutenants." Enlisted pilots and flight officers were used in reconnaissance, search and rescue, passenger carrying, and other miscellaneous flying duties.

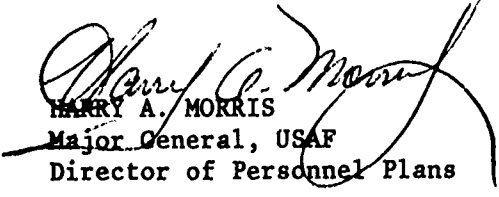
3. As the training requirement decreased, we were able to terminate the emergency action enlisted pilot and flight officer programs. In Oct 1945 the liaison pilot program was terminated and in May 1946 an AAF/CC policy decision was made to pursue an all commissioned officer pilot force. The Aviation Cadet Program was terminated in 1960 following a policy decision to procure only college graduate officers. We were

able to meet our training/education requirements from ROTC/OTS/Academy resources. The history of enlisted/officer navigators and bombardiers closely follows the pilot force management decisions.

4. In the late 1940s and early 1950s, the Air Force was using enlisted crew members in electronic countermeasure positions. However, as the weapons systems evolved in complexity and sophistication, it became apparent that personnel with a broader educational background were required. Accordingly, these positions were converted to officer positions.

5. The Air Force has consistently maintained a policy of an all officer pilot force, with enlisted pilots and flight officers as an emergency exception primarily during the years between 1941 and 1945. The decision as to whether a given crew position is officer or enlisted is based on a combination of factors including educational background required to complete the training, and the decision/judgment parameters of the position. The all college graduate officer force concept derives primarily from the requirement that the military system develops its own leaders. The potential flexibility for future utilization and development of a pilot trainee who has a college degree is significantly higher than the potential for one without a degree. Completion of the degree is predictive of the probability of completing training in highly complex systems as well as the ability to cope with the demanding decision/judgment, multi-task environment of a pilot in today's weapons systems. Additionally, the college trained officer has higher management potential as a senior officer. Pilot/navigator training for non-college graduates would increase training costs through increased attrition; would decrease the quality of our combat force; and would adversely impact our ability to generate future managers.

6. If we can provide any additional information or assistance to your study group, please feel free to contact our action officer, Major George Greenwood, at extensions 73474 or 50995.


HARRY A. MORRIS
Major General, USAF
Director of Personnel Plans

1 Atch
Enlisted Crew Retention Data

EXPECTED RETENTION RATES OF ENLISTED FLIGHT CREW*
 BASED UPON MARCH 77 PROJECTIONS

TAFMS	IN FLIGHT REFUELING TECHNICIAN	FLIGHT ENGINEER	LOADMASTER
1	.873	+	.871
2	.861	+	.862
3	.876	+	.881
4	.517	+	.583
5	.933	.850	.842
6	.744	.889	.882
7	.806	.866	.918
8	.761	.899	.901
9	.974	.952	.977
10	.978	.976	.982
11	.963	.968	.983
12	.976	.968	.987
13	.975	.982	.984
14	.984	.980	.985
15	.993	.989	.989
16	.978	.980	.982
17	.992	.992	.991
18	.996	.992	.992
19	.987	.991	.987
20	.633	.668	.704
21	.631	.757	.838
22	.864	.816	.845
23	.727	.716	.799
24	.899	.905	.894
25	.899	.763	.902
26	.420	.597	.584
27	.369	.704	.713
28	.899	.502	.515
29	.899	.516	1.000

* Sample sizes for gunners and para rescue too small for inclusion, other year group sample sizes may be too small for meaningful results

+ Enlisted personnel must hold rank of E-5 to be trained as flight engineers



ANNEX D
DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON, D.C. 20350

IN REPLY REFER TO
Memo 597/1323
27 SEP 1977

MEMORANDUM FOR DEPUTY DIRECTOR OF MILITARY PERSONNEL MANAGEMENT, U. S. ARMY

Subj: Enlisted Pilot Program

Ref: (a) Department of the Army ltr DAPE-MP of 2 Sep 1977

1. The following comments are offered in response to reference (a).
2. The Navy last reviewed enlisted pilot programs in 1965. The results of that review indicated that the Navy program, which began in 1916 and was terminated in 1949, had been characterized by personnel turbulence and management difficulties engendered by the creation of two markedly diverse segments within naval aviation. Dissimilarities in educational background, pay scales, motivation, and career opportunity spurred the conflict between the enlisted pilot community and the officers. The former group was characterized by personnel who were completely motivated for flying and content to a career in a "skilled trade" environment while the officers, on the other hand, considered themselves professional naval officers who were, in addition, uniquely qualified for assignments in aviation and whose desire for promotion to positions of increased responsibility was paramount.
3. An enlisted pilot program creates a significant community of pilots, limited in background, duty assignment, career growth, and a number of other areas where restrictions create an undesirable and unnecessary impediment to naval planning and policy implementation. The Navy has no plans to reintroduce an Enlisted Pilot Program.

W. P. Lawrence

W. P. LAWRENCE
Assistant Deputy Chief of Naval
Operations (Air Warfare)

ANNEX E



DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR MILITARY OPERATIONS
WASHINGTON, D.C. 20310

REPLY TO
ATTENTION OF: DAMO-RQD

26 AUG 1977

MEMORANDUM FOR RECORD

SUBJECT: Enlisted Navigators in the USMC

1. Contacted CWO Claussen, USMC, at Mather AFG, 828-2802/2835, the coordinator for marine corps Navigator Training. He provided the following data:

a. This is a highly selective program. First, applicants are screened very closely which eliminates 80% of applicants. The 20% are brought in for a 3 day testing session. These people all have GT scores in excess of 120.

b. The course has been designed at the 8th grade level. They plan for an expected attrition rate of 30%. The current attrition rate is 50%. They are starting to train 46 this fiscal year, hope to graduate 36.

c. The men sign up for a 4 year enlistment. The training program is nine months in length. If they stay in the program there is potential for promotion to warrant officer. Currently there are 25 warrant billets and 45 enlisted billets for a total of 70 in the Marine Corps Navigator Program.

d. Retention rate is very poor as evidenced by training to graduate 36 this year with a historic probability of graduating 23 or $\frac{1}{2}$ their requirement. They are planning to make more warrant officers positions as the warrants do not leave the service except to retire. This greater retention will provide a more constant force and reduce training costs.

e. The records available show that the retention rate of those trained between 1965 to 1975 was 0.7%. During the same time frame, they designated 3 warrants who were all retained.

f. They pay their navigators normal crew member pay up to \$105 per month.

2. Mr. Claussen said the Coast Guard had a letter submitted to the Joint training center at Mather AFB, requesting the training of enlisted navigators for the Coast Guard. The Coast Guard currently does not have any and their new expanded missions now require them. The Air Force has recommended a slower paced course, reducing the scheduled training day from 6 hours to 4 hours (allowing 4 hours for special training assistance each day) and changing the course length from 20 to 28 weeks.

DAMO-RQD

SUBJECT: Enlisted Navigators in the USMC

3. When told this group was looking at enlisted Aviators Mr. Claussen laughed and said how do you expect to retain those guy? We're having trouble keeping navigators and there's not much of a market.


ROBERT M. FURNEY
LTC FA