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**DEVELOPMENT OF UNIT TRAINING AND EVALUATION
TECHNIQUES FOR COMBAT-READY HELICOPTER PILOTS:**

Task 2.

Assessment of ARTEP and ATM Training

Objectives and Requirements for

Maintaining Operational Readiness.

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and requirements for maintaining combat readiness. The research concludes that the documents have been well received and are being utilized effectively by field commanders; that they contain a valid, though not entirely complete, reflection of combat-readiness training objectives and requirements; but, that the required recordkeeping is burdensome and there is a need for a more effective feedback system between its users and its developers.

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Research Note 79-11

DEVELOPMENT OF UNIT TRAINING AND EVALUATION
TECHNIQUES FOR COMBAT-READY
HELICOPTER PILOTS

Task 2.

Assessment of ARTEP and ATM Training
Objectives and Requirements for
Maintaining Operational Readiness

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May 1979

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PREFACE

This report describes a part of the first year's research accomplished by Canyon Research Group, Inc. (Canyon) for the US Army Research Institute for the Behavioral and Social Sciences (ARI) on the "Development of Unit Training and Evaluation Techniques for Combat-Ready Helicopter Pilots," under Contract DAHCl9-77-C-0059. The report covers the research accomplished under Task 2 (one of two tasks) of the contract Statement of Work (SOW).

This task (Task 2) called for the "Assessment of ARTEP and ATM Training Objectives and Requirements for Maintaining Operational Readiness."

Task 1, "Development of an Instruction Program for Individual and Unit Training with Combat-Ready Pilots," was conducted concurrently and is reported in a companion report. Work performed on the two tasks often was interdependent, and much of the work done under Task 2 was a necessary prerequisite for work under Task 1 of this project.

The primary purpose of the review reported herein was to determine whether the content of the Army Training and Evaluation Programs (ARTEP) and the Aircrew Training Manuals (ATMs) was sufficiently accurate and adequate to use as a basis for the development of the "instruction programs" as required by Task 1. Its second purpose was to assess, in a general way, the extent to which these documents could be utilized effectively by units in the field, and any major shortcomings or deficiencies that should be brought to the early attention of Army agencies responsible for their development.

The SOW limited the scope of this effort to a maximum of 10 percent of the first year's research efforts (approximately 600 person hours). It called for a "brief report presenting an overview of the validity of the ARTEP and ATMs. . ." based upon "existing literature, previous surveys, personal contacts. . ." This report therefore represents a *qualitative* rather than a *quantitative* assessment of those documents, their utility and content.

INTRODUCTION

In 1975, the US Army Training and Doctrine Command (TRADOC) implemented a major change in its approach to Army unit training. The unit commander was given the responsibility for developing, as well as implementing, the training programs required to insure that his unit attained and maintained combat readiness. He was made responsible for continuously assessing the combat-readiness status of his unit, of deciding what specific training was required to correct deficiencies in that status at any given time, and for developing and implementing the required training program(s).

To implement the above changes, the detailed training guidance and standardized tests provided by the Army Training Program (ATP) and Army Training Tests (ATT) were replaced by documents more in line with the commanders' responsibilities. These documents, the Army Training and Evaluation Programs (ARTEPs) and the Aircrew Training Manuals (ATMs) are intended to provide the commander with a means of assessing organizational and individual readiness for combat. The commander is expected, through training which he defines, to meet that standard.

The ARTEP specifies the major tasks which a given organization is expected to perform. It establishes the conditions and standards under which that performance is to be judged. The commander is expected, in the context of his particular mission and operational environment, to measure his organization's capabilities against those performance requirements and to identify discrepancies. He must then plan and conduct training such that his unit achieves these defined criteria for combat readiness.

Unlike the ARTEP, which is directed at the collective training of all personnel assigned to an organization, the focus of the ATMs is on training individual Army aviators to operate specific aircraft systems. Prior to the publication of the ATMs, annual flying hour "minimums" for Army aviators on flying status were prescribed by AR 95-1. However, except for the requirements for certification of instrument flight qualification, standards of performance were not specified. The accomplishment of certain broad categories of flying within a specified period of time was assumed to provide assurance of minimum combat readiness qualification. The ATMs represent a radical change to this procedure.

The ATMs provide lists of individual flying tasks and the conditions and standards required for their acceptable performance. They are intended to permit the commander to assess the training status of each assigned aviator against the tasks applicable to particular operational needs. The commander then must schedule the flying time necessary to bring the aviators to acceptable combat-readiness flight proficiency. The first editions of the ATM gave commanders almost complete authority to decide what and how much flying each aviator had to accomplish to meet the unit's combat-readiness criteria. It is understood that revisions in progress may revert to listing specific requirements for practice of some maneuvers.

These ARTEPs and ATMs, while not training programs, are intended to provide the basis for determining training needs and developing training programs to meet those needs. It is necessary, therefore, to make certain they reflect valid requirements for attaining and maintaining combat readiness and that they are usable by units in the field.

The research reported herein was intended to serve two purposes. First, since these documents are still in the development stage, the investigation was intended to provide early feedback to those responsible for their development relative to any major deficiencies, shortcomings, or problems that should be taken into account in that development. Second, this research is a part of a larger program aimed at the development of unit training and evaluation techniques to "effectively accomplish the ARTEP learning objectives and ATM training requirements for combat-readiness training." Therefore, this research was intended to determine whether the ARTEP/ATM objectives and requirements were sufficiently valid and adequate to be used as a basis for developing training and evaluation techniques that would provide the required combat readiness.

APPROACH

Effective accomplishment of this research required an approach which permitted limited, yet "representative," sampling of both the documentation in question (ARTEPs and ATMs) and of field reactions to that documentation.

As a first step in selecting that approach, a search was made of available literature. The purpose of that search was twofold: to provide information pertinent to the objectives of the research, and to provide guidance in the selection of the most effective approach to its accomplishment. This search revealed no literature of any real use for either of these purposes. Field Manual (FM) 21-6,¹ the principal source of information pertaining to the conduct of individual and collective training, describes the ARTEP in a short paragraph pertaining to training publications and materials. It notes that the ARTEPs replaced the applicable ATP and ATT; that they set forth the collective performances for the crew/squad through battalion/separate company echelons; and, that they specify the minimum standards of performance these elements must meet. No mention is made of the ATMs.

Research by SofTech² provided an overview of the "new Army training and evaluation system." This work predated the ATMs, but it did include a survey of the ARTEPs. Their report states that the ideas and innovations of TRADOC (e.g., ARTEP, SQT) do not conflict philosophically or theoretically with each other but are considered as forming part of a single system. The SofTech report points out that there is a large dependency on the correctness of the ARTEP because units will "become" what is described in the ARTEP. They note, however, that no mechanism had been instituted to assess and/or control the validity of the ARTEP. They suggested that data be collected Armywide on ARTEP performance and other key indicators, and that these data be used by proponents to identify and analyze problems. However, the report provides little or no indication as to how this should be accomplished.

The approach that was selected for the review involved the three major steps noted below:

1. The selection of at least two aircraft systems based upon their importance to Army combat operations and the number and variety of organizations which employ these systems. This selection was accomplished through a review of relevant literature and interviews with personnel with operational experience.

2. Analysis of the ARTEPs/ATMs pertaining to the selected aircraft systems to determine:

¹FM 21-6, *How to Prepare and Conduct Military Training*. Washington: Department of the Army, 1975, p. 78.

²SofTech, Inc. *The Army Training and Evaluation System, Task 3 Report*. Waltham: The Software Technology Company, 1977, p. 5-4.

a. The basis for and procedures used in the development of mission objectives, requirements and tasks;

b. The compatibility between relevant ARTEPs and associated ATMs;

c. The compatibility between mission objectives/tasks of the ARTEPs/ATMs and other relevant Army documentation.

3. Collection of information from representative field units employing selected aircraft systems relative to the validity and adequacy of the relevant ARTEP/ATM documentation and its utility in an operational environment.

THE SELECTION OF REPRESENTATIVE AIRCRAFT SYSTEMS

As noted earlier, the intent of this activity was to choose at least two aircraft systems to use as the basis for selecting a sample of ARTEPs and ATMs that could be considered "representative" for the purpose of this review. The aircraft systems to be chosen were to be those considered to be highly important to the accomplishment of the Army's role in combat. They were also to be aircraft systems with widespread utilization in different Army organizations. The selection of systems on this basis had a secondary advantage. The results would be directly applicable to the concurrent work being done to develop training programs to be used in training combat-ready aviators. That latter effort was supposed to address aircraft systems for which training appeared most critical to combat readiness.

The task of selecting the appropriate systems did not involve a major amount of effort since the choice seemed fairly obvious. While all four of the Army's mission-oriented aircraft systems--Attack, Scout, Utility and Cargo--play a role in combat, the latter two primarily have "support"-type missions. The Attack and Scout aircraft missions are undeniably "active" combat missions. The most relevant Army doctrinal literature³ puts primary emphasis on the roles of the Scout and Attack systems. FM 100-5,⁴ which is considered to be the capstone of the Army's system of field manuals, sets the basic concepts of US Army doctrine. It states that battle in Central Europe against Warsaw Pact forces is the most demanding of the many combat missions for which the Army must be prepared and that the Army is now structured primarily for that contingency. It emphasizes the tank strength of the Warsaw Pact forces and the consequent importance of Air Cavalry and the anti-tank capability of Attack Helicopter forces.

A review of the Tables of Organization and Equipment (TOE) for aviation units shows that the systems are assigned to a wider variety of combat organizational units than other systems. They are assigned to Divisional Combat Aviation Battalions, Air Cavalry Squadrons and Attack Helicopter Battalions.

Moreover, the missions of the two often are closely interrelated and interdependent, and for the purposes of this review, should be considered together. Therefore, the Scout and Attack aircraft systems were chosen as the basis for selecting a representative sample of ARTEPs and ATMs to be used in this review.

³ FM 90-1, *Employment of Army Aviation Units in a High Threat Environment*. Washington: Department of the Army, 1970. pp. 2-1 - 2-24.

⁴ FM 100-5, *Operations*. Washington: Department of the Army, 1976, p. 1-2.

ARTEP/ATM ANALYSIS

The choice of the Attack and Scout aircraft systems resulted in the selection of two ARTEPs and two ATMs for analysis.^{5,6,7,8} The purpose of this analysis was to make an initial assessment of their validity and adequacy based upon the manner in which they were developed, and their content in relation to each other and to other relevant documentation.

The first step in accomplishing this analysis, therefore, was to review their development with personnel from the proponent TRADOC institutions for these ARTEPs and ATMs. Visits were made and discussions held with the following personnel with reference to the indicated documents:

Personnel from the Aviation Section of the Directorate of Training Developments (DTD) of the Armor School at Fort Knox, Kentucky, proponent for the Air Cavalry ARTEP and the Attack Helicopter ARTEP, as well as partial responsibility for the Scout and Attack Helicopter ATMs.

Personnel from the DTD of the Infantry School at Fort Benning, Georgia, proponent for the Combat Aviation ARTEP.

Personnel from DTD at USAAVNC, Fort Rucker, Alabama, which has overall TRADOC managerial responsibility for the ATMs.

In conducting these interviews, the following questions were discussed:

1. "Who" developed the ARTEP? The ATM?
2. How was task list derived? Validated?
3. What was design/development process for ARTEP? ATM?
4. Are revisions to task lists needed? Scheduled?
5. What is current schedule for revision of ARTEP?

The results from all of these visits and interviews can be summarized very simply. The ARTEPs were prepared on the basis of available information that had evolved over time. The ATMs were derived from the associated ARTEP.

Task lists, mission descriptions and requirements included in numerous documents, both official and unofficial, and the experience and knowledge of their authors, were used to prepare draft versions of these ARTEPs. These were reviewed formally and informally by a variety of personnel with operational experience and updated accordingly. In other

⁵ARTEP 17-205, *Army Training and Evaluation Program for Air Cavalry Squadron*. Washington: Department of the Army, 1976.

⁶ARTEP 17-385, *Army Training and Evaluation Program for Attack Helicopter Battalion*. Washington: Department of the Army, 1976.

⁷TC 1-136, *Aircrew Training Manual, Observation Helicopter (Draft)*. Washington: Department of the Army, 1977.

⁸TC 1-137, *Aircrew Training Manual, Observation Helicopter (Draft)*. Washington: Department of the Army, 1977.

words, they were based on what the authors considered to be "the best information available" and not on the systematic analysis envisioned in the TRADOC Instructional Systems Development process.

The task lists of the ATMs were derived from the mission objectives and description in the related ARTEP. The detailed descriptions of these tasks and their performance standards, like the ARTEPs, were based upon available information evolved over time and the experience of the authors. No detailed or systematic task analysis was accomplished. Significantly, in response to questions related to revisions, each of the interviewees noted the lack of reliable feedback information from the field upon which revisions could be based.

It should be noted that the Army's initial plan was to develop, test, revise and retest the ATMs in selected organizations so as to increase their validity prior to full implementation. This plan was not followed, however. The decision was made to implement the preliminary versions and make revisions as deficiencies were noted in the course of their utilization. As such, these documents should be considered as still in the process of development.

Since the ATM purportedly had been derived from the ARTEP, it was deemed worthwhile to investigate the extent to which the ATM adequately reflected the requirements of the ARTEP. A compatibility analysis was accomplished for this purpose. The procedures used for accomplishing this analysis are illustrated in Table 1. This table shows the results of the analysis of a combat scenario in which the Attack and Scout helicopters of an Attack Helicopter Battalion worked as a team in the attack of enemy targets. The numbers shown under Levels* 1, 2, and 3 correspond to the numbers assigned to these tasks in ARTEP 17-385.⁹ The numbers shown under the ATM column correspond to those used in TC 1-136¹⁰ and TC 1-137.¹¹

The results shown in Table 1 are typical of the results obtained from the entire analysis. As will be noted, most of the requirements specified by the ARTEPs have corresponding tasks in the ATMs. However, there are some notable exceptions such as "conduct local security," "request illumination," "adjust illumination," and "react to air attack." Such deficiencies are found in all of the ATMs examined.

The analysis was extended to determine if training in the various missions was addressed in institutional instruction conducted by the US Army Aviation Center at that time. It was also considered useful

*The term level as used in the ARTEPs refers to combat-readiness status, with Level 1 highest and Level 3 lowest.

⁹ARTEP 17-385, *op. cit.*

¹⁰TC 1-136, *op. cit.*

¹¹TC 1-137, *op. cit.*

TABLE 1

PRELIMINARY TASK COMPATIBILITY ANALYSIS

PRESENT USANVC COI		UPDATED DTD TASK LIST		ATM TASK	NUMBER	MISSION	LEVEL 3			LEVEL 2			LEVEL 1			
ATN	SOOBT	ATN	SOOBT				CREW	TEAM	COMPANY	CREW	TEAM	BATTALION	CREW	TEAM	COMPANY	BATTALION
						MOVE TO ASSY AREA	3-1-0	3-1-0				2-1-5			1-5-8 1-5-9	1-1-7
						TERRAIN FLIGHT						2-2-4 2-3-4				
X	Yes					SCOUTS	3-0-1 3-0-2				2-4-3 2-4-5		1-11-1 1-11-3	1-0-7 1-0-3	1-0-7 1-7-7	1-2-3 1-3-5
Yes	X					ATK HELOS	3-5-1			2-5-1			1-10-1 1-10-5			
						SCOUTS										
						ACQUIRE TGT	3-0-3						1-11-3			
						IDENTIFY	3-0-3				2-4-7			1-0-7		
						SELECT ATK POS	3-0-4						1-11-4			
						CONDUCT HANDOFF	3-0-5	3-4-0	3-3-0		2-4-9 2-4-10		1-11-5	1-0-9		
						CONDUCT LCL SEC	3-0-5				2-4-17		1-11-5	1-0-17		
						INDIRECT FIRE	3-0-6				2-4-8		1-11-6	1-0-8		
						TACTICAL AIR	3-0-7						1-11-17		(OFFENSE) 1-7-10 1-7-11 1-7-12 1-7-14	(OFFENSE) 1-3-7 1-3-8 1-3-9 1-3-11
						PROVIDE TARGET EFFECT		3-4-9			2-4-16			1-0-16		
						COORD WITH OTHER ANT		3-4-4			2-4-0			1-0-0	(DEFENSE) 1-0-0 1-0-1 1-0-2 1-0-3 1-0-4 1-0-5 1-0-6 1-0-7 1-0-8 1-0-9 1-0-10 1-0-11 1-0-12 1-0-13	(DEFENSE) 1-2-0 1-2-1 1-2-2 1-2-3 1-2-4 1-2-5 1-2-6 1-2-7 1-2-8 1-2-9 1-2-10 1-2-11 1-2-12 1-2-13 1-2-14
						ADJUST ILLUM					2-4-15			1-0-15		
						ATK HELO.										
						PREPARE A/C	3-5-2			2-5-2	2-4-4			1-0-4		
						RECEIVE HANDOFF	3-5-4	3-4-0	3-2-0	2-5-4	2-4-10		1-10-0	1-0-10		
						ACQUIRE TGT	3-5-5 3-5-6	3-4-7			2-4-12 2-4-0 2-4-14			1-0-4 1-0-12		
						ENGAGE				2-5-7 2-5-8			1-10-9 1-10-10			
						HOVER	3-5-5	3-4-0	3-2-0 3-3-7		2-4-14 2-4-10			1-0-14		
						RUNNING	3-5-6									
						REQUEST ILLUM	3-5-4			2-5-5	2-4-11		1-10-2 1-10-6	1-0-11		
						ADJUST ILLUM				2-5-6	2-4-13		1-10-7 1-10-11	1-0-13 1-0-15		
						ADJUST INDIRECT FIRE										
						REACT TO AIR ATTACK										
						OVERWATCH SETS			3-3-5						1-7-8	

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to know whether, in the absence of performance requirements in the ATM/ARTEP and/or institutional training, that such training was under consideration. This would be indicated by identification of the requirement in new or revised task lists being developed by the appropriate institutional Director of Training Development (DTD). Information relative to both issues is shown in Table 1 under columns headed "Present USAAVNC COI" and "Updated DTD Task List", respectively.

This analysis also addressed the compatibility between the ARTEPs and other relevant doctrinal literature. Doctrine for employment of these helicopters in a combat role in the Air Cavalry Squadron is described in FM 17-95,¹² and FM 17-47.¹³ Their employment in an Attack Helicopter Battalion is described briefly in FM 17-47 and in more detail in FM 17-50.¹⁴

The information in these documents was compared with that in the ARTEPs. More specifically, these field manuals were reviewed to determine whether they indicated any mission requirements or objectives not specified in the relevant ARTEPs. This review revealed no ARTEP deficiencies in that respect.

Finally, the analysis revealed a frequent lack of specificity and observability among the statements of performance standards found in ARTEPs and the ATMs, for example "demonstrate a thorough knowledge of . . ."; "able to analyze . . ."; "able to prepare . . ."; "use proper procedures to . . .".

¹²FM 17-95, *Cavalry*. Washington: Department of the Army, 1977.

¹³FM 17-47, *Air Cavalry Combat Brigade*. Washington: Department of the Army, 1977.

¹⁴FM 17-50, *Attack Helicopter Battalion*. Washington: Department of the Army, 1977.

FIELD RESPONSES REGARDING
ARTEP/ATM VALIDITY AND UTILITY

As a final step in assessing the validity and usability of the ARTEPs and ATMs, visits were made to different types of aviation units using the documents selected for review. Visits were made to major Army aviation elements of the 101st Airmobile Division, Fort Campbell, Kentucky; the 7th Infantry Division, Fort Ord, California; the 9th Infantry Division, Fort Lewis, Washington; and the 24th Infantry Division, Fort Stewart and Hunter Army Airfield, Georgia.

The purpose of these visits was to examine the validity and usability of the ARTEP/ATM system from the perspective of aviation unit commanders, Standardization Instructor Pilots (SIPs), Instructor Pilots (IPs) and assigned aviators. These visits also provided insight into the utilization of the selected aircraft systems in organizations other than Air Cavalry and Attack Helicopter units. Additionally, these contacts allowed a view of other rotary wing aircraft systems and the manner in which their associated ATMs and ARTEPs support their training requirements. As such, they provided an opportunity to confirm that data derived from analysis of the selected ATMs and ARTEPs were representative of field experience with other rotary wing aircraft systems.

To minimize bias, aviators, instructor pilots and training managers were interviewed both in and out of the presence of their commanders. Issues believed by the investigators to be critical to the research were questioned among similar organizations to obtain verification. Comments made spontaneously were pursued during subsequent interviews to confirm or reject them. The interviews were based on a set of questions prepared in advance. Those questions were used by the investigators primarily to stimulate discussion and to elicit unrestrained comment on the utility and validity of the ARTEPs and the ATMs. However, specific answers to these questions were not recorded since such detailed information was not considered necessary for the purposes of this investigation. Variations in group size and composition, time available, and interest shown by participants influenced the extent of questioning in any given group, but all the questions were asked at each location visited. The questions used in these interviews are listed below.

1. Is your organization required to perform any critical combat flying task that is not listed in your ARTEP? In the ATM(s) associated with it? What are they?
2. Which system of unit testing would you prefer in your organization--the Army Training Test or the ARTEP?
3. In your view is there consistency between the ARTEP and the ATMs which applies to your organization?
4. For maintaining individual flying proficiency, which do you prefer, the "annual minimums" concept of AR 95-1 or the ATM concept?

5. How long have you been training under the ATMs?
6. What records does your organization keep on ATM task accomplishment?
7. Is recordkeeping a problem to you? How? What suggestions for improvement do you have?
8. Is there a "crosswalk" between the ATM and the ARTEP? If so, at what level of the ARTEP do you see it?
9. Is the conduct of ARTEP T&Es a problem to you? What is (are) the problem(s)?
10. What is the effect of your organization of "formal" ARTEP?
11. Do you have the capability to assess your unit performance adequately? Individual performance? What are your problems?
12. What major shortcomings do you see in the ATM(s) which apply to you?
13. What tasks/missions in the ATM/ARTEP are particularly difficult for you to train? Why?
14. Do you have any immediate feedback for the authors of the ATM/ARTEP?
15. What model AH-1 (Cobra) aircraft do you have assigned? Will you receive the "S" model? When?
16. Is the UH1FS (flight simulator) available to you?
17. Do you have an adequate flying hour program to meet your training requirements?
18. At what level (Bn, Co, Plt, Team) do you conduct your training? At what level do you manage it?

The results from these field interviews are summarized in the following paragraphs.

The task lists in the ATMs and the training objectives prescribed in the ARTEP sampled are valid, though not altogether complete expressions of the combat performance requirements of those Army aviation units and the individuals assigned to them. (This consensus of the principal users of these documents is supported by the compatibility analysis described earlier.) The ATMs are regarded as a major improvement for use in the establishment of requirements for individual aviator combat-readiness training.

The ARTEPs are accepted less enthusiastically but are much preferred over their predecessors, the ATP and the ATT. The requirements for evaluators, support and/or participation of other commands, additional equipment, range/maneuver areas, etc., limit the commanders' abilities to use the ARTEPs in testing company-size or larger elements. The combination of the ATM and ARTEP provides a needed and reasonably effective aid to assist commanders in the development of training programs for attaining and maintaining combat readiness. The ATMs also provide a more systematic method for programming the flying hours needed to implement such training programs.

Some of the tasks listed in the ATMs are not required in field training documents. Tasks such as hover, takeoff, and normal landing are obviously a part of almost every flight. Their inclusion in these documents serves to increase the recordkeeping requirement, as each listed task must be recorded separately. The recordkeeping requirements imposed by the ATMs constitute a heavy administrative burden to aviation organizations and should be minimized as much as possible.

SUMMARY

A brief review of the ARTEPs and ATMs was conducted for the following purposes:

1. To assess their adequacy and validity for use in the development of training and evaluation techniques for combat-ready helicopter pilots; and
2. To assess their acceptability and usability in operational units in the field.

The investigation was conducted by: (1) selecting the ARTEPs and ATMs related to the Attack and Scout aircraft systems; (2) reviewing the manner in which they were developed; (3) analyzing the compatibility between the ARTEPs, the ATMs, and other relevant Army literature; and, (4) interviews with operational personnel in field units using those ARTEPs and ATMs.

The major results from the review can be summarized as follows:

1. Information obtained from the ARTEP and ATM proponents/authors indicated that:

a. The ARTEPs were developed from available information from existing documentation and review by personnel with operational experience.

b. The ATMs were developed from the ARTEPs.

c. No systematic mission/task analysis was accomplished for either of the documents.

d. There is presently no systematic method for providing feedback from field experience to the proponent developers of the ARTEPs and ATMs. Procedures should be established for this purpose.

2. Information obtained from operational personnel in field units indicates that:

a. The concept of using the ARTEPs and ATMs in assessing training status against combat readiness performance requirements is considered by operational personnel to be a major advance over past methods of establishing unit training requirements.

b. The ARTEPs and ATMs can be used effectively by field personnel in determining training requirements, although use of the ARTEP for assessment of company and larger unit level performance sometimes requires a prohibitive level of support from sources outside the unit being tested.

c. The ARTEPs/ATMs have many deficiencies which could be corrected through detailed, systematic mission/task analysis. Some critical combat tasks have been omitted and the standards specified often are ambiguous.

d. The recordkeeping requirements of the ATMs impose a heavy administrative load on field units and should be reduced where possible.

3. Based on the analysis of information obtained from the various sources used in the review, the researchers found that:

a. Both ARTEPs and ATMs represent valid, though not complete, information on mission objectives, requirements and tasks.

b. Information in the ARTEPs/ATMs can be used effectively as a *starting point* for the development of training programs.

c. Information in the ARTEPs/ATMs must be augmented with systematic mission/task analyses to complete the development of effective training programs.

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